

ACC 1150

Fundamentals of Business Math

Credit hours: 3

Designed for the business student as a review of mathematical principles, techniques, computations, and their applications to business problems. Topics include: checking accounts and bank reconciliations, percents, solving for the "unknown," discounts, markups and markdowns, payroll, simple interest, discounting notes, present and future value, depreciation, inventory, taxes, insurance, stocks and bonds, annuities, sinking funds, and calculator procedures. Lab access fee of \$13 applies. Canvas Course Mats \$85/McGraw applies

Course Learning Outcomes

1. Solve algebraically for unknown quantities, including story problems, and deal with percentages and ratios.
2. Demonstrate skill in retailing operations, e.g., markups and markdowns based on either cost or market prices.
3. Learn common business practices in the areas of banking (deposits, checking, reconciliations); payroll (compensation and employee and employer payroll taxes); general taxes (sales, property, income); and insurance (computation of premiums, rebates, etc. for life, property and automobile).
4. Learn to calculate the time value of money functions simple and compound interest, present and future values, and amounts and annuities.
5. Demonstrate an understanding of credit concepts (installment buying, cost of credit, credit cards, mortgages) and will be able to read and discuss stock, bond and mutual fund quotations.
6. Read, analyze and interpret the basic accounting financial statements (balance sheet and income statement), including ratio and trend analysis; and also calculate depreciation, using several methods, and inventory costing (FIFO, LIFO, Average, Specific Identification) and estimation (gross profit and retail, turnover, overhead).

ACC 2010

Financial Accounting

Credit hours: 3

Teaches concepts and methods underlying preparation of financial statements utilizing generally accepted accounting principles (GAAP). Includes the accounting cycle; income determination for service and merchandising operations; and the reporting of assets, liabilities, and owner's equity for sole proprietorships and corporations. Lab access fee of \$25 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Apply the concepts and principles relating to the accounting cycle;
2. Account for service and merchandising businesses;
3. Interpret basic corporate transactions;
4. Identify the characteristics of the Income Statement, Balance Sheet, Statement of Owner's Equity, and Statement of Cash Flows;
5. Make ethical judgments through the use of case studies.

ACC 2110

Principles of Accounting I

Credit hours: 3

Teaches basic accounting methods and tools for business decision making. Incorporates financial and managerial accounting to provide basic understanding of generally accepted accounting principles (GAAP). Applies analytical tools to assess profitability, relevant costs, and investment decisions. Canvas Course Mats of \$115/McGraw applies.

Course Learning Outcomes

1. Interpret basic corporate transactions and their effect on the accounting equation
2. Identify the characteristics of financial statements
3. Define asset, liability, and equity accounts
4. Evaluate cost behavior and apply to profitability analysis
5. Categorize relevant costs for decision making
6. Analyze performance measures and evaluate investment options

ACC 2120

Principles of Accounting II

Credit hours: 3

Teaches technical accounting concepts from both financial and managerial accounting. Includes generally accepted accounting principles (GAAP) to support understanding of the accounting cycle and financial statements. Includes managerial accounting topics such as costing methods, budget preparation, and performance evaluation tools. Canvas Course Mats of \$115/McGraw applies.

Course Learning Outcomes

1. Explain the concepts and principles relating to the accounting cycle
2. Define the accounting equation and the form of financial statements
3. Summarize U.S. GAAP for assets, liabilities, and equity accounts
4. Explain the different costing models which would impact business decision making
5. Construct a master budget and describe its use for short- and long-term decision making
6. Calculate performance measures and evaluate financial statements

ACC 2125

Introduction to the Accounting Profession

Credit hours: 1

Teaches topics related to the accounting profession, including career options in accounting, certifications in accounting (CPA, CMA, CIA, CFE, etc.), ethics in the profession, current issues in accounting, professional standards, and professionalism skills. Discusses the educational requirements for the accounting undergraduate and graduate degrees.

Course Learning Outcomes

1. Compare the various career options in accounting.
2. Evaluate the various certifications in accounting, their respective requirements, and the settings where each certification is most useful.
3. Propose ethical actions and decisions commonly found in the accounting profession.
4. Evaluate their own personal level of professionalism.
5. Compare the accounting degree options to create an optimal educational path toward their desired degree.

ACC 2250

Small Business Accounting

Credit hours: 3

Addresses accounting issues from the perspective of a small business owner. Includes choice of business entity, payroll preparation, internal control systems, and the basic application of applicable income and sales taxes. Teaches accounting software to classify, record, summarize, and report transactions and to generate financial statements. Course fee of \$50 for testing services applies.

Course Learning Outcomes

1. Identify the legal types of business entities with their respective advantages and disadvantages.
2. Record and classify transactions using the accounting equation.
3. Prepare and interpret basic financial statements using accounting software.
4. Apply appropriate payroll laws to calculate and record employee payroll.
5. Summarize the purpose of proper internal control systems.
6. Apply basic tax law governing the taxation of business sales and income.

ACC 2500

Data Analytics in Accounting

Credit hours: 3

Introduces data analytics and data visualization tools and techniques in accounting. Provides hands-on experience in analyzing accounting data, creating visuals, and interpreting results using various data analytics and visualization software. Canvas Course Mats of \$85/McGraw applies.

Course Learning Outcomes

1. Identify accounting questions that can be answered using data analytics.
2. Prepare accounting-related data for analysis.
3. Describe the principles of appropriate and valid design for data visualization.
4. Apply data analytics in accounting using modern statistical software.
5. Apply data analytics and data visualization to inform accounting related decision making.

ACC 2600

Business Law and Ethics

Credit hours: 3

Examines legal and ethical issues needed to make sound business decisions. Provides an overview of the legal system, constitutional law, ethical decision-making frameworks, business entities, contract law, business crimes and torts, compliance and regulatory issues, agency law, and bankruptcy law.

Course Learning Outcomes

1. Summarize the key historical developments of the American legal system.
2. Define common business legal terms and interpret their use in legal documents.
3. Interpret basic legal concepts in business law, such as contracts, labor law, small and large business entities, and accountant's liability.
4. Apply different theories of ethics to contemporary issues in accounting and business.

ACC 3000

Financial Managerial and Cost Accounting Concepts

Credit hours: 3

Provides students in computer science and the technologies with knowledge of financial, managerial, and cost accounting concepts and applications. Prepares students to utilize accounting information in making business decisions. Lab access fee of \$13 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Identify the characteristics of financial statements.
2. Define asset, liability, and equity accounts.
3. Evaluate cost behavior and apply to profitability analysis.
4. Categorize relevant costs for decision making.
5. Prepare and interpret basic financial statements using accounting software.

ACC 3010

Intermediate Accounting I

Credit hours: 3

Reviews and expands on fundamental accounting material learned in beginning classes. Covers an overview of the primary financial statements, revenue recognition, and the accounts on the asset portion of the balance sheet. Introduces the Conceptual Framework and current accounting standards to provide a theoretical foundation upon which practical applications are based. Lab access fee of \$13 applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Apply the accounting concepts and skills obtained from introductory financial accounting courses.
2. Describe the conceptual framework of accounting and the way in which accounting principles and standards are established within that framework.
3. Prepare financial statements and related accounting information in accordance with US Generally Accepted Accounting Principles (US GAAP).
4. Interpret financial statements and accompanying accounting disclosures properly.
5. Apply the accounting concepts discussed in class to real-life companies and scenarios.
6. Critically evaluate accounting issues to determine the best application of accounting principles and standards.
7. Describe the best approaches to meet the ethical complexities that accounting professionals often face.

ACC 3020

Intermediate Accounting II

Credit hours: 3

Addresses debt and equity financing, investments in debt and equity securities, leases, deferred income taxes, employee compensation (payroll and pensions), earnings per share, accounting changes, and error corrections. Lab access fee of \$13 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Illustrate the accounting for debt securities and equity securities.
2. Explain accounting for investments in debt and equity securities.
3. Explain lease accounting and deferred tax accounting.
4. Illustrate the accounting for pension and payroll accounting.
5. Calculate the various forms of earnings per share.
6. Record accounting changes and how to analyze and record error corrections.
7. Differentiate between U.S. GAAP and International Financial Reporting Standards.

ACC 312G

International Internal Auditing GI

Credit hours: 3

Introduces students to the international internal auditing standards through global auditing case studies. Emphasizes theories of governance, risk, control concepts, audit techniques, and reporting practices.

Course Learning Outcomes

1. Analyze global or intercultural issues.
2. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
3. Evaluate how one's own cultural values compare with those from different backgrounds.
4. Summarize the International Standards for the Professional Practice of Internal Auditing.
5. Perform a risk assessment.
6. Apply control processes to manage risks.
7. Apply internal auditing techniques.
8. Report audit findings.

ACC 3300

Cost Management

Credit hours: 3

Provides a strategic approach to cost management and the development and use of relevant information for management decision making. Builds a foundation by discussing the various concepts of cost, cost behavior, and cost estimation techniques. Addresses costing of products and other cost objects using job order and process costing, activity-based costing, and cost allocation. Introduces management control topics of budgeting and performance evaluation through variance analysis. Concludes with current topics in cost management. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Use traditional costing methods to cost products, segments, and customers
2. Illustrate methods of cost allocation
3. Utilize activity-based costing for accurate product costs
4. Use costing information to make a variety of cost management decisions

ACC 3400

Fundamentals of Taxation

Credit hours: 3

Studies the federal taxation of individuals, corporations, and partnerships/LLCs. Covers the accounting theory and practices of federal income taxation based on a study of the laws, regulations, and income tax decisions. Lab access fee of \$13 for computers applies. Canvas Course Mats \$116/Pearson applies.

Course Learning Outcomes

1. Perform core taxation responsibilities expected of newly licensed Certified Public Accountants.
2. Analyze items of income and expense for inclusion and/or exclusion from taxable income.
3. Apply tax laws related to Individuals and business entities.
4. Calculate tax liability for individual and corporate taxpayers.
5. Describe the different methods of taxation and the hierarchy of tax law.
6. Prepare individual and business federal income tax returns.

ACC 3510

Accounting Information Systems

Credit hours: 3

Teaches analysis design and implementation of accounting information systems. Emphasizes accounting cycles, internal controls, and computerized environments. Lab access fee of \$13 applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Design and implement an accounting information system
2. Analyze business procedures for internal control weaknesses
3. Document business cycles
4. Operate a computerized accounting information system in a small business environment

ACC 4110

Auditing

Credit hours: 3

Provides an introduction to independent audits of financial statements in accordance with generally accepted auditing standards, the environment in which audits are performed, and professional ethics. Includes basic audit concepts and procedures related to planning, testing internal controls, investigating reported financial results of business process cycles, and required auditor communications. Lab access fee of \$13 for computers applies. Canvas Course Mats \$85/McGraw applies

Course Learning Outcomes

1. Define auditing decisions within the framework of generally accepted auditing standards.
2. Apply auditing procedures and judgments to a wide variety of business processes.
3. Identify the critical need for integrity in the practice of auditing.
4. Describe the AICPA Code of Professional Conduct which provides an ethical guide to the practice of accounting and auditing.

ACC 6060

Professionalism and Leadership

Credit hours: 3

Enhances the ability to interact and communicate with others in the professional world. Builds skill development in oral and written communication, interviewing, networking, and leadership. Explores and enhances emotional intelligence. Canvas Course Mats \$49/BlueEQ applies.

Course Learning Outcomes

1. Competently perform as public speakers as related to the accounting profession, regardless of current skill level;
2. Display high levels of emotional intelligence in business relationships;
3. Provide constructive evaluation and feedback;
4. Utilize self assessment and editing tools to enhance ones public speaking skills;
5. Utilize self assessment and editing tools to enhance ones writing skills.
6. Competently perform as writers as related to the accounting profession, regardless of current skill level;

ACC 6250

Financial Reporting and Analysis

Credit hours: 3

Discusses financial reporting requirements and choices that impact the evaluation of firm performance and strategy. Examines the role of management and corporate governance in financial reporting. Teaches skills for analyzing financial reports, disclosures, and management communication of financial performance. Focuses on financial reports prepared for external stakeholders to a firm.

Course Learning Outcomes

1. Describe financial reporting requirements for publicly listed firms
2. Describe the role of management and corporate governance in financial reporting
3. Explain various external stakeholders' interests in financial reports
4. Evaluate the impact of financial reporting choices related to accounting judgments and financial statement disclosures
5. Analyze management communication of firms' financial performance

ACC 6300

Advanced Data Analytics in Accounting

Credit hours: 3

Covers advanced data analytics, data visualization, and statistical analysis skills and techniques in accounting. Provides an applied approach to financial data analytics, cost accounting, audit analytical procedures, and financial statement analysis. Develops data analysis skills using a variety of software packages. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Apply data analytics to financial, managerial, and auditing contexts.
2. Execute a structured plan to collect and prepare for data analysis.
3. Apply advanced data and statistical analysis techniques.
4. Communicate recommendations in a professional manner.

ACC 6350

Management Control Systems

Credit hours: 3

Evaluates the design of management control systems through case studies to enable the successful implementation of accounting strategies in a variety of for-profit entities. Emphasizes the development of the students' analytical and decision-making skills. Canvas Course Mats \$134/Pearson applies

Course Learning Outcomes

1. Evaluate the principles and elements of simple and complex control systems and the internal and external factors that affect behavior in an organization.
2. Evaluate the structure of a management control system in a way that will enhance goal congruence within an organization.
3. Create effective planning processes, performance measurement systems, and incentive compensation plans that will influence managers to implement the strategy of the organization.
4. Design an effective management control system in a variety of for-profit entities including manufacturing, service, and multinational organizations.
5. Develop a mastery of professional cost management skills.
6. Evaluate solutions to a variety of accounting/business issues.
7. Communicate professionally to a variety of audiences using various contexts and formats.
8. Assess themselves and others to effectively accomplish organizational goals.

ACC 6400

Taxation of Business Entities

Credit hours: 3

Studies the federal taxation of corporations, partnerships/LLCs, estates and trusts, gifts, and exempt entities based on the laws, regulations, and associated tax decisions. Covers the professional rules, regulations, and ethical considerations imposed on tax professionals. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Perform core taxation responsibilities expected of newly licensed Certified Public Accountants.
2. Describe the various entity choices for operating a business and how the taxation of various entity forms impacts entity choice.
3. Apply tax laws related to C corporations, S corporations, partnerships, trusts, and exempt entities.
4. Describe the basic US GAAP principles related to the accounting for income taxes and their impact on entity financial statements.
5. Identify the tax principles applicable to businesses with multi-state and international business operations.
6. Prepare federal tax returns for the various types of business entities.
7. Explain the legal and ethical responsibilities of tax professionals, IRS practices and procedures, and duties to clients.

ACC 6510

Financial Auditing

Credit hours: 3

Examines current auditing standards for independent audits of financial statements. Explores proposed auditing standards, relevant legislation, and selected contemporary advanced topics in auditing.

Course Learning Outcomes

1. Perform auditing responsibilities expected of newly licensed Certified Public Accountants.
2. Collaborate with others to evaluate solutions to a variety of accounting/business issues.
3. Communicate professionally to a variety of audiences in various contexts using appropriate formats.
4. Respond properly to ethical dilemmas in the auditing profession.
5. Evaluate the appropriate audit opinions to be issued at the conclusion of an audit.
6. Research auditing standards to formulate the appropriate audit approach.

ACC 6540

Professional Ethics in Accounting and Auditing

Credit hours: 3

Covers professional ethics and ethical dilemmas faced by accountants and auditors. Uses case studies to present ethical dilemmas and violations of the AICPA's Code of Professional Conduct (Code), Generally Accepted Accounting Principles (GAAP), and Generally Accepted Auditing Standards (GAAS). Covers diagnosis of ethical dilemmas and violations of the Code, GAAP, and GAAS. Provides opportunity to work collaboratively to design, prescribe, and communicate effective safeguards and resolutions to ethical dilemmas and Code, GAAP, and GAAS violations.

Course Learning Outcomes

1. Perform accounting and auditing responsibilities expected of newly licensed Certified Public Accountants.
2. Diagnose ethical dilemmas facing professional accountants and auditors.
3. Diagnose violations of the AICPA's Code of Professional Conduct, Generally Accepted Accounting Principles (GAAP), and Generally Accepted Auditing Standards (GAAS).
4. Design effective safeguards and solutions to diagnosed ethical dilemmas and Code, GAAP, and GAAS violations.
5. Communicate diagnoses and solutions effectively in writing and through presentations.

ACC 6560

Financial Accounting Theory and Research I

Credit hours: 3

Introduces the theoretical underpinnings of financial accounting and reporting. Provides an applied research approach to reviewing and mastering intermediate-level financial accounting concepts and procedures. Integrates accounting theory and practical research methodology in the resolution of financial reporting problems.

Course Learning Outcomes

1. Perform accounting responsibilities expected of newly licensed Certified Public Accountants.
2. Evaluate research-based cases to arrive at solutions to a variety of accounting/business issues.
3. Relate common financial accounting concepts and procedures to the conceptual framework of accounting.
4. Perform basic professional financial accounting research using the FASB Codification and other professional guidance.
5. Communicate professionally to a variety of audiences using various contexts and formats.
6. Perform basic financial accounting procedures for not-for-profit entities and state and local governments.

AET 1050

Electrical Math I

Credit hours: 3

Utilizes algebraic formulas and methods to solve electrical problems related to DC electrical systems. Covers the calculation of voltage, current, resistance, power, and efficiency for DC circuits. Teaches circuit analysis techniques such as superposition, source transformations, Thevenin's theorem, mesh and nodal analysis. Introduces wire sizing and resistance calculations pertaining to the National Electrical Code. Introduces AC electrical system fundamentals. Software fee of \$20 applies.

Course Learning Outcomes

1. Solve algebraic problems related to the electrical industry.
2. Calculate resistance, voltage, current, power, efficiency, and line drop for DC systems.
3. Solve series, parallel, and combination circuits using various circuit analysis techniques for DC systems.
4. Prove electrical theorems using algebraic equations.
5. Use algebraic methods to solve electrical problems involving exponential, logarithmic, polynomial and rational functions, and systems of equations related to electrical systems.
6. Graph linear and nonlinear electrical functions.

AET 1060

Electrical Math II

Credit hours: 3

Utilizes algebraic formulas and methods to solve electrical problems related to AC electrical systems. Covers the calculation of voltage, current, resistance, reactance, impedance, power, VARs, volt-amperes and efficiency for single phase and three phase AC systems. Applies trigonometry, trigonometric functions, complex numbers, and phasors to circuit analysis techniques. Analyzes sine waves, transformers, transformer connections and power factor for single phase and three phase electrical systems. Introduces three phase balanced systems and faults.

Course Learning Outcomes

1. Solve algebraic problems related to the electrical industry.
2. Analyze AC circuits using trigonometry, trigonometric identities, vectors, complex numbers, and phasors.
3. Solve series, parallel, and combination circuits using standard circuit analysis techniques.
4. Calculate true, reactive, and apparent power, and power factor for inductive and capacitive electrical systems.
5. Use algebraic methods to solve electrical problems involving exponential, logarithmic, polynomial and rational functions, and systems of equations related to AC electrical systems.
6. Analyze single phase and three phase power systems and transformers.
7. Graph linear and nonlinear electrical functions.

AET 1130

Introduction to Automation

Credit hours: 2

Introduces the difference between Engineering and Engineering Technology. Explores career paths in the Electrical Automation Industry. Incorporates engaged learning. Reviews basic DC theory involving voltage, current, resistance, batteries, magnetism, power and the use of digital meters. Covers troubleshooting techniques and applications of DC circuits. Software fee of \$20 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Calculate voltages, currents, resistance, and power in DC electrical circuits.
2. Describe applications of DC electrical circuits.
3. Describe electrical safety fundamentals.
4. Describe use of multi-meter in troubleshooting DC circuits.
5. Discuss career paths in Engineering Technology and Automation.

AET 1135

Introduction to Automation Lab

Credit hours: 1

Reviews basic DC theory involving voltage, current, resistance, batteries, magnetism, power and the use of digital meters. Engages in troubleshooting techniques and applications of DC circuits in a lab-environment.

Course Learning Outcomes

1. Verify calculated voltages, currents, resistance, and power in DC electrical circuits on electrical circuits.
2. Build DC electrical circuits.
3. Apply electrical safety fundamentals.
4. Troubleshoot electrical circuits utilizing a multi-meter.

AET 1140

Applied AC Theory

Credit hours: 1

Reviews basic AC theory involving voltage, current, resistance, reactance, impedance, magnetism, power and the use of digital meters. Discusses operation of inductors, capacitors, diodes, and transformers. Discusses troubleshooting techniques and applications of AC circuits.

Course Learning Outcomes

1. Calculate voltages, currents, reactance, impedance, and power in AC electrical circuits.
2. Describe applications of AC electrical circuits.
3. Describe electrical safety fundamentals.
4. Describe operation of single phase transformers.
5. Apply resistors, capacitors, inductors, and diodes to industrial circuits.
6. Calculate transformer current and voltage on primary and secondary sides of transformer.

AET 1145

Applied AC Lab

Credit hours: 2

Reviews basic AC theory involving voltage, current, resistance, reactance, impedance, magnetism, power and the use of digital meters. Discusses operation of inductors, capacitors, diodes, and transformers. Engages in troubleshooting techniques and applications of AC circuits in a lab environment.

Course Learning Outcomes

1. Calculate voltages, currents, reactance, impedance, and power in AC electrical circuits.
2. Apply applications of AC electrical circuits.
3. Apply electrical safety fundamentals.
4. Connect single phase transformers in a circuit.
5. Build circuits utilizing resistors, capacitors, inductors, and diodes.

AET 1150

Industrial Logic

Credit hours: 1

Introduces digital logic and relay logic theory and industrial applications of logic circuits. Discusses numbering systems, boolean algebra, circuit simplification techniques, and logic devices such as latches, one-shots, timers, counters, flip flops, and shift registers. Emphasizes the relationship between ladder logic and digital logic and focuses on conversion between both formats. Discusses application and troubleshooting of logic circuits and introduces basic concepts of state machines.

Course Learning Outcomes

1. Discuss safe work and design practices.
2. Solve problems utilizing Boolean algebra.
3. Convert conventional relay logic to digital logic and vice versa.
4. Design logic circuits to complete a process.
5. Describe the operation of basic logic devices and gates.
6. Describe troubleshooting techniques on industrial logic circuits.

AET 1155

Industrial Logic Lab

Credit hours: 1

Applies digital logic and relay logic theory to industrial circuits in a hands-on setting. Utilizes boolean algebra and circuit simplification techniques when building logic circuits. Implements control circuits with relays, logic gates, and other applicable digital devices. Applies troubleshooting techniques to industrial control circuits.

Course Learning Outcomes

1. Implement safe work and design practices.
2. Build circuits utilizing Boolean algebra and design schematics.
3. Utilize conventional relay logic and digital logic control circuits.
4. Troubleshoot control circuits.
5. Implement a variety of digital devices on controls circuits.

AET 1250

Industrial Electrical Code

Credit hours: 2

Covers pertinent topics within the National Electrical Code related to commercial and industrial environments. Covers code related to electrical plans, specifications, wiring and installation methods, feeder load calculations, motor installation, motor controllers, panelboards, hazardous locations, protective devices, and grounding for commercial and industrial applications. Software fee of \$18 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Interpret electrical plans and symbols.
2. Analyze engineering electrical specifications.
3. Calculate appropriate sizing of electrical equipment.
4. Identify proper grounding techniques.
5. Identify NEC commercial code requirements.
6. Identify NEC industrial code requirements.

AET 1280

Electric Motor Control

Credit hours: 4

Covers installation, troubleshooting, preventive maintenance, and theory on DC/AC motors, generators, and associated industrial control circuitry. Expands on ladder logic, controls, sensors, motor starters, overloads, and electronic devices used to control and protect DC/AC Machines. Describes three phase systems, transformers, and delta-wye connections. Introduces AC variable speed drives. Supports hands-on labs and projects in AET 1285. Software fee of \$20 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Analyze the operation of DC and AC motors.
2. Describe DC and AC Motors and their associated control circuitry.
3. Create operationally correct logic and ladder diagrams.
4. Use sensing devices, timers, relays, solenoids, and starters to design industrial control circuitry.
5. Troubleshoot electrical motor control circuitry.
6. Analyze three phase electrical and transformer connections.

AET 1285

Electric Motor Control Lab

Credit hours: 4

Covers the proper use of tools and test equipment needed to maintain motors and their controllers. Emphasizes the use of schematics, line diagrams, ladder logic, and wiring diagrams. Covers DC/AC, single phase, and three phase motors. Integrates logic design, motor protection, and wiring of motor control centers. Includes the workings of single phase and three phase transformers including delta and wye configurations. Course Lab fee of \$14 for supplies/materials applies. Lab access fee of \$45 for computers applies. Software fee of \$20 applies.

Course Learning Outcomes

1. Connect internal DC and AC motor windings appropriately.
2. Wire DC and AC motors and their controls to go forward and reverse.
3. Design operationally correct schematic, logic, and ladder control diagrams.
4. Utilize sensing devices, timers, relays, solenoids, and starters to create an operational electrical system.
5. Troubleshoot electrical control devices, motors, and industrial control circuitry.
6. Wire single phase and three phase transformers in wye and delta configurations.
7. Integrate a motor control center including power, controls, and protective devices.

AET 2110

Industrial Electronics I

Credit hours: 4

Introduces semiconductor theory. Covers the concepts of PN junctions, transistors, voltage amplifiers, operational amplifiers, diodes, power electronics including the theory and operation of industrial solid state thyristor devices, power circuits, integrated circuits and other special semiconductor and industrial electronics. Includes lecture and demonstrations. Course lab fee of \$29 for materials applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe operation of oscilloscopes to test electrical and electronic circuits.
2. Review n-type and p-type semiconductors and diodes.
3. Calculate voltages and currents in transistor circuits.
4. Analyze operational amplifiers and their associated circuits.
5. Analyze power electronics and circuits including thyristor devices.

AET 2115

Industrial Electronics I Lab

Credit hours: 2

Introduces semiconductor theory. Covers the concepts of PN junctions, transistors, voltage amplifiers, operational amplifiers, diodes, power electronics including the theory and operation of industrial solid state thyristor devices, power circuits, integrated circuits and other special semiconductor and industrial electronics. Includes practical hands-on labs. Software fee of \$20 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Utilize oscilloscopes to test electrical and electronic circuits.
2. Apply n-type and p-type semiconductors and diodes.
3. Build electronic circuits that include transistors, operational amplifiers, and thyristors.
4. Troubleshoot power electronics and circuits including thyristor devices.

AET 2160

Introduction to Industrial Internet of Things

Credit hours: 2

Introduces smart sensors, safety, and basic electronic components found in variable speed drives. Covers stepper and servo motor integration via Ethernet/IP. Introduces industrial networking principles related to unmanaged and managed switches. Includes lecture and demonstration. Course Lab fee of \$11 for materials applies. Lab access fee of \$45 computers applies.

Course Learning Outcomes

1. Describe the basic operation of stepper and servo motors.
2. Describe applications of sensors including safety in automation.
3. Define IIOT and industrial networking principles.
4. Describe electronic components of variable speed drives.

AET 2165

Introduction to Industrial Internet of Things Lab

Credit hours: 1

Introduces smart sensors, safety, and basic electronic components found in variable speed drives. Covers stepper and servo motor integration via Ethernet/IP. Introduces industrial networking principles related to unmanaged and managed switches. Includes practical hands-on labs. Software fee of \$20 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Control stepper and servo motors.
2. Apply sensors including safety to automated systems.
3. Integrate IIOT and industrial networking principles to automated systems.
4. Troubleshoot electronic components of variable speed drives.

AET 2250

Industrial Programmable Logic Controllers--PLCs

Credit hours: 4

Covers the theory, programming, and industrial control system applications of small and medium sized programmable logic controllers (PLCs). Studies basic maintenance, operation, troubleshooting, and programming instructions / techniques for industrial PLCs. Concentrates on interfacing analog and digital I/O to the PLC. Covers human machine interface (HMI) configuration, programming and PLC integration. Includes lecture, demonstration, print reading, and industry examples. Course lab fee of \$90 for equipment applies. Lab access fee of \$45 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Describe safe work practices.
2. Define how a PLC works.
3. Convert relay ladder logic to PLC ladder logic.
4. Describe operation of basic PLC ladder logic instructions.
5. Draw PLC I/O wiring diagrams.
6. Utilize binary numbering in industrial Ethernet.
7. Describe standard installation practices and techniques.
8. Calculate component sizes for analog systems.

AET 2255

Industrial Programmable Logic Controllers--PLCs Lab

Credit hours: 2

Covers the theory, programming, and industrial control system applications of small and medium-sized programmable logic controllers (PLCs). Examines basic maintenance, programming, and troubleshooting techniques for industrial PLCs. Covers human-machine interface (HMI) configuration, programming, and PLC integration. Includes PLC communications via serial and industrial Ethernet. Includes hands-on labs and projects. Software fee of \$20 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Implement PLC programming using ladder logic.
2. Wire digital and analog input and output devices to a PLC.
3. Apply PLC hardware and software to troubleshooting industrial systems.
4. Integrate HMIs with PLCs.
5. Implement safe installation and wiring practices.
6. Communicate to PLCs via serial and Ethernet protocols.

AET 2270

Industrial Programmable Automation Controllers--PACs

Credit hours: 2

Introduces the theory and application of advanced industrial programmable automation controller (PAC) instructions, user-defined data types, add-on instructions, and advanced programming techniques. Studies PAC programming languages including ladder logic and function block pertaining to industrial control applications. Covers theory related to PAC integration of devices to variable speed drives, analog / digital sensors, and encoders. Includes advanced Human Machine Interface (HMI) programming concepts and introduces basic concepts of programmable safety relays. Includes lecture and demonstration. Course lab fee of \$90 for equipment applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Evaluate the requirements and specifications for industrial PAC applications.
2. Describe operation of advanced PAC programming instructions.
3. Draw PLC I/O wiring diagrams.
4. Convert logic into add-on instructions and user defined data types.
5. Describe advanced HMI programming techniques.
6. Describe operation of programmable safety relays and PLCs.
7. Organize PLC programs to operate industrial systems and machines.

AET 2275

Industrial Programmable Automation Controllers--PACs Lab

Credit hours: 1

Covers the implementation and application of advanced industrial programmable automation controller (PAC) instructions, user-defined data types, add-on instructions, and advanced programming techniques. Develops PAC programs using ladder logic and function blocks to control systems and machines. Covers PAC integration of devices to variable speed drives, sensors, and encoders. Implements advanced human-machine interface (HMI) programming. Integrates programmable safety relays into class projects. Includes hands-on labs and projects. Software fee of \$20 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Write advanced PLC programs to operate systems and machines.
2. Wire input and output devices on class projects using wiring diagrams.
3. Troubleshoot advanced PAC programs.
4. Develop PAC add-on instructions and user defined data types.
5. Network devices to a PAC via industrial Ethernet/IP.
6. Implement advanced HMI programming techniques.
7. Apply basic safety systems and relays.

ANTH 101G

Social Cultural Anthropology SS GI

Credit hours: 3

Introduces students to the variability of human behavior cross-culturally and provides an understanding of the holistic approach to human behavior. Explores interrelationships, in a variety of cultural contexts, between beliefs, economic structures, sexuality, eating habits, ecology, politics, living arrangements, psychology, symbolism, and kinship. May be delivered hybrid.

Course Learning Outcomes

1. Demonstrate knowledge and recognition of complexities inherent in global and/or intercultural issues.
2. Interrelate knowledgeably, reflectively, responsibly, and respectfully with a society of increasing intercultural connections.
3. Apply an understanding of class and contemporary models in anthropology.
4. Exhibit knowledge of the application of theoretical perspectives to current real-life issues.
5. Show a familiarity with the methods and models currently used in anthropology.
6. Give evidence of a thorough understanding of cultural analysis and critique.
7. Analyze research and write and in-depth, thorough, anthropological analysis comprising a variety of theoretical perspectives.

ANTH 1020
Biological Anthropology SS

Credit hours: 3

For students with special interests in Anthropology or the Life Sciences. Studies fossils and living primates, primate biology and behavior. Surveys humanoid fossils. Investigates human evolution and variations of basic biology as it pertains to human development. Stresses the importance of the distribution and diversity of humankind.

Course Learning Outcomes

Please see the department for information.

ANTH 103G

World Prehistory SS GI

Credit hours: 3

Introduces the archaeological record of human prehistory. Explores the earliest fossil remains, and follows the development of humans throughout prehistory. Examines techniques used by archaeologists to find, recover, date, and analyze prehistoric artifacts.

Course Learning Outcomes

1. Identify all phases of human evolutionary development.
2. Identify the key factors in the rise of civilization.
3. Identify the variety of dating methods and techniques used by archaeologists and the application and use of each method.
4. Discuss the methods archaeologists use for finding, recovering, and analyzing artifacts.
5. Discuss the significance of prehistory on the world today.
6. Evaluate and analyze global or intercultural issues.
7. Define and discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Define and evaluate how one's own cultural rules and biases compare and contrast with those from different cultures.

ANTH 2880

Introduction to Theory and Ethnography WE

Credit hours: 3

Provides foundational skills for analytic reading and writing in anthropology. Explores how to apply theory to ethnographic data. Teaches how to write argumentative essays that engage with anthropological texts.

Course Learning Outcomes

1. Decompose ethnographic texts into their component parts
2. Evaluate monographs that combine ethnographic description and anthropological theorizing
3. Apply social and cultural theory to ethnographic data
4. Write arguments that engage with and synthesize anthropological literature

ANTH 3000
Language and Culture LH

Credit hours: 3

Introduces cultural linguistics. Analyzes features of human languages that make possible semantic universality. Examines distinction between phonetic and phonemic units. Explores relationship between language and culture. Studies how language shapes culture and how culture shapes language.

Course Learning Outcomes

Please see the department for information.

ANTH 3850

Ethnographic Methods WE

Credit hours: 3

Examines the utility of ethnographic research techniques for answering different research questions. Formulates research ethics protocols. Engages in participant observation research and teaches techniques for recording observations in field notes. Employs ethnographic writing genres to compose reports on original research. Develops skills in qualitative interview techniques and the analysis of qualitative data.

Course Learning Outcomes

1. Identify the strengths and weaknesses of qualitative ethnographic research and its application to different research questions
2. Develop ethnographic interviewing skills
3. Conduct participant-observation research and record observations in quality fieldnotes
4. Compose written accounts of original research that reflect competence in ethnographic writing genres

ANTH 4120

History of Anthropological Thought

Credit hours: 3

Surveys anthropological thought, theory and its philosophical roots from the nineteenth to the twentieth centuries. Focuses on the concepts and theoretical paradigms deployed in different social and intellectual conjunctures, as well as on the major debates that have formed the field and separated it from other social science disciplines.

Course Learning Outcomes

1. Define the critical social issues of colonialism and social change in Europe that provided an impetus to the formation of a discipline.
2. Describe the changing set of issues that have guided the formation of debates and research in the field in different historical junctures.
3. articulate the formation of American anthropology and how it differs from European and Latin America anthropologies.
4. Assess the crisis of theory, ethnics, and research that consumed anthropology in the sixties and seventies and the various paradigmatic responses to it that developed in the eighties.
5. Identify the origins of anthropological thought in philosophy and in other historic disciplines.

ANTH 4130

Contemporary Theory and Debates

Credit hours: 3

Explores social theory and other disciplines. Surveys current debate through exploration of the conceptual apparatuses that are deployed and the issues that motivate current research. Analyzes contemporary anthropological writings.

Course Learning Outcomes

1. Summarize the role of structuralism and post-structuralist thought within the field.
2. Assess the development of anthropological postmodernism and its relationship to other concerns in the field, including the loss of the classic anthropological object.
3. articulate the intellectual and social concerns that lead to the contemporary structure of the field.
4. Examine the theoretical and empirical issues in current, professional writings and debates.
5. articulate the fundamental structure and concerns of the development of anthropological theory over the last thirty to forty years.

ARC 1010

Classical Architecture Workshop

Credit hours: 3

Provides an understanding of the fundamental principles and language of architecture. Instructs in the design principles that inform classical architecture which are found in the order, proportion, archetypal geometry, and patterns found in nature and the cosmos. Creates a solid foundation for learning and applying architecture's vocabulary and syntax to compose poetic and meaningful buildings. Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Apply ordering systems, such as archetypal geometry, proportion, and patterns, to design problems.
2. Develop literacy with the classical language of architecture through examination of the parts of the classical orders and the tectonic design elements of architectural composition.
3. Demonstrate how to incorporate historic architectural precedents, measured drawings, and design principles in new design projects within a wide spectrum of scales.
4. Explain concepts of architectural design verbally and visually.

ARC 2110

Architecture Studio I

Credit hours: 4

Introduces the classical theories of architectural language, design, and craftsmanship in a hands on studio setting. Focuses on the classical vocabulary of the built environment. Investigates the forms, spaces, and ordering systems of design. Produces hand drawings in orthographic, perspective, and axonometric views. Illustrates light through shade and shadows. Applies understanding of classical building forms in the design of increasingly complex projects, Develops skills in traditional rendering and presentation techniques. Course fee of \$74 for equipment applies. Course lab fee of \$160 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Describe architecture as done in the classical language, a foundation to western building design and construction.
2. Utilize basic formal, organizational, and environmental principles in two and three dimensional design.
3. Explain with others effectively about concepts of architectural design, both verbally and with visuals.
4. Comprehend the fundamental principles present in relevant examples to make informed choices about the incorporation of such principles into architecture and design projects.
5. Develop ability to represent architectural ideas in various forms of media, including pencil, ink, freehand drawing, physical models, and hand rendering.

ARC 2210

Architecture Studio II

Credit hours: 4

Exposes students to architectural site analysis and the process of evaluating a particular locations physical, historical, and cultural characteristics to inform design. Develops a building project of significant merit by measuring and documenting a selected site. Analyzes the complex elements of a site such as varying topography, watercourses, vegetation, habitats, weather patterns, and historical data to guide design decisions. Researches elements to determine the building placement, orientation, form and material selection. Course fee of \$89 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Analyze site conditions using appropriate design principles
2. Research historical and local precedent of architectural works
3. Illustrate the role and effects of scale on humans, the building, the site, and the neighborhood
4. Evaluate the effects of material choice and quality craftsmanship on the built environment
5. Represent architectural ideas in various forms of media, including pencil, ink, freehand drawing, physical models, and hand rendering.

ARC 2220

Construction Documents and Specifications

Credit hours: 3

Prepares for the Construction Documents Technician (CDT) industry certification using standard software to complete working drawings for the architectural, civil, MEP, and structural industries. Develops a project manual and outline specifications, which coordinate with the working drawings of a commercial design. Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Create professional construction documents using industry standard techniques used in architecture, civil, mechanical, and electrical building projects.
2. Integrate outline specifications with the construction drawings composed in current industry standard software.
3. Produce a project manual for a commercial building project.
4. Apply applicable CSI Masterformat specifications used to organize building elements in the correct divisions.

ARC 3110

Architecture Studio III

Credit hours: 6

Immerses students into the architecture studio culture and a design thinking environment. Emphasizes the fundamental design skills with attention on site and precedent. Requires research of a site and program necessary to develop cultural, theoretical, environmental, and historical contexts. Follows a Project based approach with a final presentation to a professional jury. Course fee of \$100 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Recognize unique site characteristics such as soil, topography, vegetation, urban environment, watershed, and solar activity.
2. Justify the integration of a building design, and associated environmental systems, into a specific project site location.
3. Interpret various cultural, theoretical, and historical context of the site and apply them to the architectural design.
4. Produce architectural documents demonstrating the capacity to make informed design decisions.

ARC 3120

Architectural Graphic Communication

Credit hours: 3

Enables the student to confidently communicate design ideas to others. Includes involvement in producing complex 3D models and renderings of various project types. Combines traditional drawing techniques and contemporary software to complete assignments and projects. Course fee of \$19 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Create effective representations of building designs using professional architectural practices.
2. Produce a series of hand sketches, hybrid illustrations, and photorealistic renderings of the built environment.
3. Use both traditional and contemporary tools for creating architectural illustrations.
4. Build both physical and digital models to communicate design ideas.

5.

Distinguish which techniques are most appropriate for a given financial budget, time constraint, and deadline.

ARC 3130

Codes and Construction Law

Credit hours: 3

Explores the modern building codes and how they affect building design and construction. Examines written specifications and the various jurisdictional requirements for architectural works. Provides in-depth information about the preparation and content necessary for a set of construction documents. Defines and explains the several types of construction contracts, bidding requirements, methods of specifying, substitutions, instructions, and warranties. Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Analyze the 3 phases of design to determine how building codes, accessibility and local ordinances affect the outcome of a building.
2. Explain the Construction Specification Institute (CSI) Masterformat specification divisions and how they are organized in a set of construction documents.
3. Apply the International Building Code to an architectural project.
4. Compare both codes and specifications to a build ready set of construction drawings using industry recognized software.

ARC 3210

Architecture Studio IV

Credit hours: 6

Engages in the essential pre-design processes of a project type. Includes the assessment of client and user needs, space analysis, and examination of project site. Follows a project based approach with a final presentation to a professional jury. Course fee of \$100 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Engage in context analysis, developing an architectural program, space analysis and other pre-design activities as generators affecting the design process.
2. Collaborate with a client to refine early schematic design ideas and integrate them into a building program.
3. Translate philosophical and conceptual ideas into architecture through sketching, technical drawing, and digital model making.
4. Compare pre-conceived architectural ideas and thinking with broader historical precedents, cultural developments, and context as the fundamental design skills.

ARC 3220

Passive Environmental Systems

Credit hours: 3

Examines the principles of environmental systems design and the building envelope's affect on occupant comfort. Investigates passive heating and cooling strategies, natural ventilation, solar geometry, daylighting, climate considerations, thermal comfort, and mechanical systems. Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Identify the impact of site orientation and daylighting on architectural design and energy usage.
2. Describe the various strategies of passive heating and cooling systems in a variety of climates.
3. Apply techniques to facilitate natural ventilation and promote healthy indoor air quality.
4. Analyze the various building components in the design process to reduce thermal transfer.

ARC 3230

Global History of Architecture to 1700 WE

Credit hours: 3

Explores the history of architecture and urbanism from a global perspective, beginning with the first settlements to roughly 1700 AD. Analyzes buildings and their surroundings through different methods of interpreting history. Presents that architecture is the result of complex interrelationships dealing with aesthetic, cultural, contextual, symbolic, religious, social, economic, political, technological, behavioral, and ecological issues. Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Identify basic issues related to developments in architecture over the centuries (i.e., political, social, philosophical, religious, cultural developments).
2. Differentiate between the various periods and styles within the history of architecture.
3. Analyze different scholarly arguments related to the history of architecture over the centuries.
4. Identify basic issues related to topics from readings and class discussions.
5. Compose a variety of disciplinary-appropriate texts within multiple situations and for multiple audiences.

ARC 4110

Architecture Studio V

Credit hours: 6

Produces an architectural design as part of an interdisciplinary team. Integrates a complex architectural program and associated needs of a user. Utilizes collaboration between disciplines such as mechanical, civil, and electrical engineering. Follows a project-based approach with a final presentation to a professional jury. Course fee of \$100 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Develop collaborative design skills among teammates from diverse disciplines and educational backgrounds.
2. Evaluate project team member contributions and consequences to the architectural design project.
3. Investigate considerations of aesthetics, spatial quality, natural and artificial light, views, privacy, climate control, building structure, accessibility, and site design.
4. Summarize how unexpected design changes impact related building design disciplines.

ARC 4120

Active Environmental Systems

Credit hours: 3

Investigates the principles of environmental systems design and the building envelope's affect on occupant comfort and life safety. Investigates HVAC systems, indoor air quality, lighting, communication, security, fire protection, acoustics, vertical transportation, electrical, and plumbing systems. Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Evaluate how laws governing the use of electricity, fluids, and thermodynamics impact modern building design.
2. Analyze how the mechanical and electrical systems in a building relate to occupant comfort and overall building efficiency.
3. Research passive design strategies with respect to solar activity, wind, natural landscape, thermal mass, and shading techniques.
4. Define the function, characteristics and general operation of mechanical systems in a building.

ARC 4130

Global History of Architecture Since 1700 WE

Credit hours: 3

Explores the history of architecture and urbanism from a global perspective beginning with the first settlements since 1700 AD. Analyzes buildings and their surroundings through different methods of interpreting history. Explores architecture's complex interrelationships dealing with aesthetic, cultural, contextual, symbolic, religious, social, economic, political, technological, behavioral, and ecological issues. Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Identify basic issues related to developments in architecture over the centuries (i.e. political, social, philosophical, religious, cultural development).
2. Differentiate between the various periods and styles within the history of architecture.
3. Analyze different scholarly arguments related to the history of architecture over the centuries.
4. Identify basic issues related to topics from readings and class discussions.
5. Students will be able to compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

ARC 4210

Architecture Studio VI

Credit hours: 6

Immerses students in the design of an architectural work to fulfill a community need. Encourages networking with community leaders and citizens. Employs project components such as client interviews, research methods, and interdisciplinary study. Explores a complex architectural program and associated needs of the community. Course fee of \$85 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Propose appropriate solutions to a client with budget constraints that allows for a comprehensive design in the future.
2. Develop communication and networking skills with multiple stakeholders and community citizens.
3. Deliver professional drawings and documents displaying project research and architectural solutions.
4. Create relationships with non-profit groups, stakeholders, and the local business community.

ARC 4220

Building Envelope and Science

Credit hours: 3

Introduces modern architectural materials, methods of construction, and building enclosures including steel, concrete, curtain walls, high-performance materials, and thermal and moisture barriers. Evaluates the inclusion of sustainable systems to save energy and reduce the carbon footprint in building construction. Course fee of \$19 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Weigh the complex interrelationships between building mechanical systems and other systems such as structural, electrical, and building envelope.
2. Explain high-performance materials and how to evaluate new materials to ensure a practical design concept.
3. Illustrate the effective design and detailing for thermal and moisture resistant walls and ceilings.
4. Explain the function, characteristics, and operation of mechanical systems in buildings including heating, ventilation, cooling systems, plumbing systems, fire protection systems, computer networking, and emergency response systems.

ARC 4230

Capstone Project Research

Credit hours: 3

Applies investigative, pre-design, and research skills towards an independent capstone project. Integrates critical thinking while developing an architectural building program, assessing client-user needs, selecting a project site, analyzing environmental and climatic concerns, understanding building code requirements, analyzing the immediate site context and historic fabric, and planning for site specific zoning regulations. Lab access fee of \$45 for equipment applies. Software fee of \$110 applies.

Course Learning Outcomes

1. Prepare a comprehensive program for an architectural project that includes an assessment of client and user needs as well as an inventory of spaces and their requirements.
2. Analyze site conditions together with their climatic and environmental conditions.
3. Explain relevant building codes, zoning regulations, sustainability requirements needed to assess their implications on a project.
4. Demonstrate applied research methodologies to inform the architectural design process for the independent capstone project.

ARC 4510

Architecture Studio VII

Credit hours: 6

Applies design skills through an architectural work which integrates critical and abstract thinking. Researches building systems, life safety considerations, building envelope, financial, cultural & environmental balance, and construction documentation skills. Course fee of \$100 for materials applies. Lab access fee of \$45 applies. Software fee of \$45 applies.

Course Learning Outcomes

1. Plan a complete architectural project that demonstrates the capacity to make design decisions across a broad spectrum of requirements.
2. Synthesize relevant architectural information related to site, location, client, culture, history, program, structure, codes, and other related variables typical to building design and construction.
3. Produce technically clear drawings, outline specifications, and concept models all illustrating a proposed solution to an architectural project.
4. Author an informed ordering system to guide the project design in both a two- and three-dimensional representation.

ARC 4520

Architectural Theory

Credit hours: 3

Surveys contemporary architectural thought and theory. Focuses on key figures, movements, and texts. Provides an overview of the principal theories that have informed or undermined architecture of the past four decades. Considers the changing role of theory with respect to practice. Provides a set of questions, techniques, and tools for criticism and self-reflection. Course fee of \$19 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Identify the main concepts of the modern architectural movement and its chief proponents.
2. Explain the design criteria applicable to 20th century architecture in relation to major historical events.
3. Analyze how various new planning processes are related to innovation, new materials, construction methods, digital fabrication, and structural components.
4. Critique architectural styles in the terms of economic status, social hierarchies, cultural, and political frameworks.

ARC 4530

Culture and Behavior in Architecture

Credit hours: 3

Examines the relationship between architecture, culture, history, economics, and humanity. Explores varying cultures and human behaviors and how they represent and manifest themselves in the built environment. Course fee of \$19 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Investigate the backgrounds on some of the pivotal events that have shaped our understanding and approach to architectural design happening at the present time.
2. Explain the impacts of economics, cultural heritage, historic precedent, and vernacular construction in architectural design across cultures.
3. Analyze a notable building through drawings, text, bibliography, and a physical model for documentation and exhibition.
4. Develop individual design ideas within the canon of contemporary architecture.

ARC 4540

Architecture Professional Practice

Credit hours: 3

Examines the fundamentals of running and managing an architectural firm including project management, finances, working with consultants, stakeholder considerations, and ethical issues. Prepares for the Architectural Registration Exam (ARE). Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Assess the differing roles and relationships of stakeholders in the architecture and construction industry.
2. Manage teams including consultants and different project delivery methods.
3. Evaluate financial and business management principles for an architectural firm.
4. Examine the legal and ethical issues in architectural practice including NCARB and AIA ethics.

ARC 4610

Architecture Studio VIII

Credit hours: 7

Applies design skills through an architectural work which integrates critical and abstract thinking. Researches building systems, life safety considerations, building envelope, financial, cultural and environmental balance, and construction documentation skills. Course fee of \$100 for materials applies. Lab access fee of \$45 applies. Software fee of \$110 applies.

Course Learning Outcomes

1. Create a strong, resonate building on a project site including facilities and systems to provide independent and integrated use by members of the affected community.
2. Apply a meaningful process of investigation and analysis integrating modeling and testing of design ideas and theories.
3. Explain critical issues in the development of the project including unavoidable challenges and restrictions.
4. Demonstrate clarity and competence in communicating design ideas in fulfillment of the programmatic requirements.

ART 1020

Basic Drawing for Non-Majors FF

Credit hours: 3

For non-majors. Introduces basic drawing techniques and stresses fundamentals of observation-based homework. Includes practice and skill building. Investigates basic black and white media such as graphite and charcoal. Requires sketchbook, in-class and home work assignments.

Course Learning Outcomes

1. Demonstrate knowledge of various drawing media.
2. Demonstrate mastery of drawing principles and integrate those into a personal drawing style.
3. Evaluate technical and conceptual aspects of all work created in class.
4. Produce a series of works that correspond to the units taught.

ART 1110

Drawing I

Credit hours: 3

For Art and Design and Art Education majors. Introduces fundamental drawing concepts and media. Emphasizes mastery of basic drawing principles and integration of these principles into a personal drawing style through exposure to a variety of structured drawing experiences.

Course Learning Outcomes

1. Draw competently from life using a variety of media;
2. Use contour line, sighting perspective, modeling light and shade, gesture, and proportion with proficiency;
3. Apply basic drawing principles into a personal drawing style;
4. Critique one's own and other's drawings.

ART 1120

2D Design

Credit hours: 3

Introduces skills, techniques, and materials associated with two-dimensional design fundamentals. Researches a variety of media, techniques, and subjects, exploring perceptual and descriptive possibilities regarding design both as a developmental process as well as an artistic end. Provides experience in a range of traditional and non-traditional design media. Projects and critiques examine integration of both visual elements and principles of design according to contemporary standards. Canvas Course Mat \$44/Cengage applies.

Course Learning Outcomes

1. Create representational, abstract, and non-objective two-dimensional works of art that apply the elements and principles of design.
2. Execute digital and physical two-dimensional media to a high standard within the field.
3. Research the correlation between ideation and visual communication through experimentation, iteration, and variation.
4. Critique the visual impact that color schemes, Gestalt and visual principles have on two-dimensional designs.
5. Discuss the work of contemporary and historical visual artists and designers.
6. Build a physical and digital portfolio.

ART 1130

3D Design

Credit hours: 3

Presents a survey of the history and main lines of development and influential factors in three dimensional design. Examines important designers, firms, and decisive turning points in the history of three dimensional design. Emphasizes planning, purpose, and function through project oriented assignments. Teaches proper use of tools and materials. Course fee of \$45 for materials applies.

Course Learning Outcomes

1. Discuss aesthetic considerations of three dimensional forms.
2. Explain principles and elements of design for three dimensional applications.
3. Demonstrate skills in critical thinking and problem solving.
4. Produce three dimensional works from design processes.
5. Exhibit proper use of basic tools and safe practices in the studio.

ART 1210

Observational Drawing

Credit hours: 3

Provides students with essential drawing skills necessary for the correct representation of space. Introduces multiple linear perspective drawing methods, visualization, tonal drawing, and rendering skills. Studies perspective and spatial representation in a historical context.

Course Learning Outcomes

1. Use the language and tools of observational drawing
2. Define visual concepts in personal work
3. Apply advanced understanding of drawing processes
4. Evaluate effectiveness of processes and techniques through regular critiques
5. Relate key illustration readings to image making

ART 1220

Perspective Drawing

Credit hours: 3

Studies essential perspective drawing skills necessary for the representation of 3-dimensional forms in space. Introduces multiple linear perspective drawing methods, visualization, and rendering skills. Studies perspective and planar representation in a historical context.

Course Learning Outcomes

1. Use terminology and tools related to linear perspective.
2. Build simple and complex objects using 1 and 2 point perspective.
3. Build complex exterior and interior scenes in 1 and 2 point perspective.
4. Compose complex narrative scenes in 3 point perspective.

ART 1340

Sculpture I FF

Credit hours: 3

Presents a survey of the history and main lines of development and influential factors in three dimensional design. Examines important designers, firms, and decisive turning points in the history of three dimensional design. Emphasizes planning, purpose, and function through project oriented assignments. Teaches proper use of tools and materials..

Course fee of \$45 for materials applies.

Course Learning Outcomes

1. Discuss aesthetic considerations of three dimensional forms.
2. Explain principles and elements of design for three dimensional applications.
3. Demonstrate skills in critical thinking and problem solving.
4. Produce three dimensional works from design processes.
5. Exhibit proper use of basic tools and safe practices in the studio.

ART 1350

Ceramics I FF

Credit hours: 3

Studies clay as an expressive medium. Emphasizes techniques of working with clay, including hand building, wheel throwing, glazing, and firing. Course lab fee of \$50 for materials applies.

Course Learning Outcomes

1. Develop an understanding and appreciation of ceramic art.
2. Demonstrate an understanding of the basic formation of clay bodies.
3. Demonstrate skills in critical thinking and creative problem solving.
4. Produce works that reflect knowledge of glazes and glaze types.

ART 1400

Graphic Computer Applications

Credit hours: 3

Introduces concepts and software related to visual communication and the creation and reproduction of art. Teaches how to create and modify digital images using Adobe Photoshop. Also teaches basic design skills using Adobe Illustrator. Teaches basic page layout skills using InDesign. Covers basic software used in visual communications. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Apply basic working knowledge of Adobe Creative Suite to projects and designs
2. Use the computer as a tool to create or modify artwork
3. Work competently in the OS X operating system environment
4. Use the software appropriately based on the type of art being created, specifically: Adobe Illustrator: vector art; Adobe Photoshop: pixel-based art; Adobe InDesign: page layout
5. Apply basic concepts of art reproduction using the computer

ART 1410 **Typography I**

Credit hours: 3

Teaches the principles of typographic design and communication, type selection, and type terminology. Addresses typographic history and the use of typography in contemporary design including its relationship to layout and grid structure. Teaches skills to allow students to professionally set type using industry standard software. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Apply typographic historical context and typographic terms to discussions and project critiques.
2. Enhance the relationship between typographic form and communication in assigned projects.
3. Enhance the relationship between typographic syntax and communication in assigned projects.
4. Apply knowledge of grids and grid structure to their own projects.
5. Set type consistent with professional typesetting standards.

ART 1420

Graphic Design I

Credit hours: 3

Provides an understanding of basic principles needed for effective visual communication. Presents a survey of graphic design theory and practice. Introduces graphic design processes for creative problem solving, production and critique. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Discuss graphic design, what it is, its purpose, and how it is practiced;
2. Apply graphic design theory to visual communication;
3. Apply graphic design processes for creative problem solving and production;
4. Discuss the purposes and experience firsthand the benefits of critiques.

ART 1650

Watercolor FF

Credit hours: 3

Studies materials, techniques, and compositional methods of watercolor painting at a beginning level. Teaches the application of basic techniques for the use of transparent watercolor materials. Includes lecture/demonstration and studio time for application and evaluation. For majors and non-majors.

Course Learning Outcomes

1. Apply watercolor techniques including paper/support selection and preparation;
2. Create original work from the main watercolor techniques;
3. Integrate composition and design principles in watercolor paintings;
4. Demonstrate basic proficiency in color mixing and matching in traditional and interpretive applications of water media.

ART 1750

Intro to Digital Imaging

Credit hours: 3

Emphasizes the use of camera operation, including lens, aperture, and shutter speed adjustments to control exposure and depth of field. Teaches how to see photographically, using elements of composition and lighting to make stronger images. Uses digital captures as the primary focus. Also covers how to light and photograph 2D and 3D artworks as well as create reference photos. Required DSLR or SLR cameras. Lab access fee of \$35 applies.

Course Learning Outcomes

1. Identify basic camera fundamentals (f-stop, shutter speed, lenses, ISO).
2. Explain digital fundamentals and terminology and their application in photography.
3. Apply compositional principles in photographic capture.
4. Apply principles of data management systems.
5. Recognize, find, use, and manipulate light.
6. Integrate principles of creating 2D and 3D copy work.

ART 1790

Dark Room Techniques

Credit hours: 3

Introduces photography majors to traditional dark room processes, including development and printing methods. Teaches imagery through negative manipulation, diffusion, toning, and multiple exposure. Course fee of \$19 for equipment applies.

Course Learning Outcomes

1. Demonstrate mastery of camera fundamentals.
2. Expose, develop, and print in the traditional dark room environment.
3. Create imagery through negative manipulation, diffusion, toning, and multiple exposure.
4. Produce a final portfolio for review.

ART 200R

Art and Design Lecture Series

Credit hours: 1

Offers weekly lectures exploring art and design. Addresses art education, art history, ceramics, drawing, graphic design, illustration, painting, photography, and sculpture. May be repeated for a maximum of 4 credits toward graduation..

Course fee of \$50 for support applies.

Course Learning Outcomes

1. Identify various job opportunities in the field of visual arts; .
2. Explain different processes used to solve visual design problems; .
3. List several techniques used to prepare visual art; .
4. Identify trends in art and visual communication on a local, regional, and national scale.

ART 2110 **Drawing II**

Credit hours: 3

Emphasizes continued mastery of drawing principles and further integration of these principles into a personal drawing style. Provides exposure to a variety of structured drawing experiences. Introduces color drawing media into vocabulary and application in works created.

Course Learning Outcomes

1. Demonstrate an advanced ability to render spatial illusion with light and shade from direct observation and imagination;
2. Demonstrate increased ability to use the creative process as problem solving in one's own work;
3. Integrate a variety of drawing techniques and media;
4. Exhibit proficiency of compositional principles to communicate ideas;
5. Evaluate one's own work and the work of others in critiques.

ART 2220

Imagination and Visual Literacy

Credit hours: 3

Teaches visual problem solving skills that enable students to effectively find, interpret, evaluate, use, and create images that are original in concept. \$25 course fee for support applies.

Course Learning Outcomes

1. Explore drawing processes as a means of visual communication;
2. Clarify visual concepts through image making;
3. Assess the effectiveness of visual concepts;
4. Relate key textbook readings to image making.

ART 2230

Illustrative Media and Techniques I

Credit hours: 3

Introduces the practice, study, and application of a variety of oil painting techniques used in the production of illustration art. Explores the development of mixed media processes and techniques using oil paint in combination with other materials and media will be explored.

Course Learning Outcomes

1. Explore drawing and painting processes as a means of self expression
2. Define visual concepts in personal work
3. Apply advanced understanding of drawing processes
4. Evaluate effectiveness of processes and techniques through regular critiques
5. Relate key illustration readings to image making

ART 2240

Illustrative Media and Techniques II

Credit hours: 3

Introduces the study, practice and application of aqueous painting media used in the production of illustration art. Focuses on acrylic, gouache, casein or watercolor painting techniques. In addition, develops mixed media processes and techniques in combination with aqueous painting media.

Course Learning Outcomes

1. Utilize the characteristics and qualities of oil and watercolor paints;
2. Prepare supports suitable to the specific medium;
3. Effectively use local, arbitrary and optical color;
4. Create effective illusions of depth, volume, and space in paint;
5. Render the effects of light on forms;
6. Apply sound principles of design and composition to the picture making process;
7. Exhibit skills learned in completed portfolio pieces.

ART 2250

Gestural Drawing

Credit hours: 3

Introduces the drawing of basic shapes and forms used to create solidly-constructed, animated characters. Emphasizes understanding and communicating movement of the human form as shapes and drawing imaginatively. Course fee of \$100 applies for support.

Course Learning Outcomes

1. Define visual animation concepts in personal work;
2. Apply advanced understanding of drawing and movement;
3. Explore animation processes as a means of self expression;
4. Develop processes of solving animation problems;
5. Evaluate effectiveness of processes and techniques through regular critiques;
6. Relate key readings to making moving images.

ART 2260

Digital Painting I

Credit hours: 3

Introduces the digital illustrator/painter to the application of various animation software programs such as basic raster, vector, and 3D. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Relate key illustration readings to image making;
2. Develop skills in understanding and applying digital painting software;
3. Use software tools to convey ideas through shape, volume, texture and color;
4. Identify effective visual communication and conceptualization skills.

ART 2270

Figure Drawing I

Credit hours: 3

Studies the anatomy of the human figure; dynamics, posing and motion. Emphasizes figure-drawing skills such as extreme foreshortening, perspective and drawing the gestural motion of the human form. Uses live models (draped and/or undraped). Course Lab fee of \$120 for support applies.

Course Learning Outcomes

1. Define the fundamentals of human structural anatomy;
2. Apply knowledge of anatomy to drawings from memory;
3. Practice technical drawing methods;
4. Interpret realistic motion in imagined forms;
5. Create drawings from life and imagination;
6. Dramatize the figure through expressive movement.

ART 2280

3D Modeling

Credit hours: 3

Teaches basic techniques of computer software 3D modeling, focusing primarily on Polygon and Subdivision Surface workflows. Includes basic lighting, surfacing, and rendering techniques. Software fee of \$23 applies Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Navigate the 3D software interface;
2. Create hard-surface, architectural forms using Polygon meshes;
3. Create curvilinear forms using Subdivision Surface meshes;
4. Create soft-surface meshes using a combination of Polygon and Sub-D meshes;
5. Apply surface materials to meshes, and light and render a scene.

ART 2340 **Sculpture II**

Credit hours: 3

Teaches intermediate techniques of clay sculpture, including armature construction, base relief, figurative sculpture based on human and animal forms. Develops the skills to create a sculpture from clay model to finished piece. Course fee of \$40 for materials applies.

Course Learning Outcomes

1. Demonstrate knowledge of basic methods and techniques in the sculptural process.
2. Develop and demonstrate an understanding of problem-solving skills, concept development, and creation of ideas in sculpture.
3. Critique works of others.
4. Produce works that demonstrate understanding of topics covered in class.

ART 2350

Ceramics II

Credit hours: 3

Teaches intermediate and advanced techniques of wheel throwing, hand-building, and glazing. Emphasizes clay as an artistic medium. Includes decoration of clay shapes with engobes, slip, glaze, overglazes, etc. Develops the skills to create a quality finished ceramic piece. Requires students to provide all materials and equipments except wheels. Course fee of \$60 for materials applies.

Course Learning Outcomes

1. Demonstrate knowledge of basic formation of clay bodies.
2. Demonstrate basic clay skills in formation and decoration.
3. Critique the works of others.
4. Produce works during the semester that demonstrate creativity, craftsmanship, problem solving, and critical thinking as related to 3D art.

ART 2400

Production Design

Credit hours: 3

Introduces production techniques used in the graphic design industry. Includes the practical application of learned technical skills through design projects. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Apply basic knowledge of digital prepress processes to future projects;
2. Troubleshoot files and output files;
3. Create designs using proper print production methods and techniques;
4. Design artwork that can be produced using standard printing processes;
5. Properly create and execute designs for specialty printing techniques.

ART 2430

Branding I

Credit hours: 3

Addresses concepts relating to branding campaigns. Teaches research skills and the influence they have on the creation of brand identities. Teaches brainstorming, conceptual skills, and the use of industry-standard software for the design and production of an identity system. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Apply marketing and branding terminology, theory and principles;
2. Conduct research and understand the importance of research within the development of branding designs;
3. Develop meaningful, conceptually based, and communicative logos and designs for marketing materials;
4. Develop presentation skills and techniques for the critique of creative ideas and the explanation of creative concepts;

ART 2440

Motion Graphics I

Credit hours: 3

Teaches basic principles and techniques of 2D animation with an emphasis on typography. Includes discussion of creative problem solving in time-based media. Includes learning 2D industry software to render video and audio. Software fee of \$23 applies. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Communicate effectively using audio and animation;
2. Create animation using 2D artwork and typography;
3. Apply terminology and concepts of motion graphics;
4. Develop presentation skills and techniques for the critique of creative ideas and the explanation of creative concepts.

ART 2620

Color Theory

Credit hours: 3

Explores the principles of color theory as related to the visual arts. Introduces theories of color, color systems, and the psychology of color through a sequence of exercises and projects.

Course Learning Outcomes

1. Demonstrate skill with a wide variety of traditional art materials and methods of creating.
2. Utilize appropriate terminology from Color Theory in classroom discussions, critiques and writings.
3. Evaluate and create artistic works using knowledge of appropriate design and color elements.
4. Draw on individual experiences, creativity and imagination to develop a personalized creative expression.
5. Articulate reasons for emotional reactions to artistic work.

ART 2630

Painting I

Credit hours: 3

Investigates the character and techniques of oil painting at a beginning level. Emphasizes several approaches (both traditional and modern) on a variety of surfaces.

Course Learning Outcomes

1. Create expressive and personal paintings based upon direct observation from life or other reference material;
2. Apply basic color concepts in composition and paint mixing;
3. Use basic painting techniques such as impasto and glazing;
4. Choose and prepare suitable supports for painting;
5. Work from a variety of subjects (such as still life, figure, landscape, etc.);
6. Define a diversity of painting styles both historic and modern.

ART 2640

Painting II

Credit hours: 3

Presents advanced traditional and non-traditional oil painting techniques. Emphasizes the techniques for personal exploration. Encourages development of individual style and approach to the media.

Course Learning Outcomes

1. Use basic color concepts at an intermediate level;
2. Integrate a variety of basic painting techniques at an intermediate level;
3. Create expressive and personal paintings that incorporate principles covered in class;
4. Work with a variety of subjects such as still life, figural, landscape, etc at an intermediate level;
5. Discuss in peer critiques aesthetic merits of work using correct terminology.

ART 2680

Printmaking I

Credit hours: 3

Introduces fine art printmaking and focuses on beginning techniques, processes, and materials. Explores the role of traditional and contemporary printmaking as a fine art medium. Focuses on the development of personal and individual imagery, craftsmanship, the use of tools and materials, and printmaking terminology. Includes intaglio printing and relief printing. Course Lab fee of \$32 applies.

Course Learning Outcomes

1. Create at least five identical prints to form an edition.
2. Discuss and evaluate the technical and conceptual qualities of a fine art print.
3. Recognize the differences between a print produced by relief printing and one produced by intaglio printing.
4. Create sketches/drawings/designs as preparatory steps in developing a print.
5. Express personal imagery creatively through the fine art printmaking media of relief and intaglio printing.
6. Recognize and utilize the basic tools necessary to create prints: burnisher, scraper, brayer, gouges, and press.
7. Correctly sign, edition, and title a fine art print and proof according to accepted standards.

ART 2700

Photography II

Credit hours: 3

Extends skills and principles learned in Introduction to Photography. Continues the exploration of light and composition through personal expression to make stronger images. Emphasizes technical control of exposure, development, and aesthetic presentation in the context of the Zone System. Teaches processes of archival printing and presentation. Emphasizes use of large format cameras. Course fee of \$19 for equipment applies.

Course Learning Outcomes

1. Demonstrate the use of the large format camera;
2. Apply the use of expansion and contraction in the development of black and white film;
3. Demonstrate proper archival printing techniques;
4. Apply development techniques as a means of photographic expression;
5. Recognize the use and application of the Zone system;
6. Experiment with black and white photographic materials as a means of personal expression;
7. Demonstrate proper presentation methods;
8. Construct a personal series of photographs using the zone system;
9. Evaluate photographic techniques through group critiques.

ART 2710

Documentary Photography

Credit hours: 3

Teaches the art of telling stories through lens based media. Studies how to take a story from concept to publication. Explores methods of publication of imagery in magazines, newspapers, web sites, social media, annual reports, etc. Uses historical documentary references to inform contemporary ways of telling a story. Includes the use of still and moving imagery. Course Lab fee of \$19 for equipment applies.

Course Learning Outcomes

1. Experiment with the techniques of photographic materials;
2. Examine photographic process as a way of conceptual expression;
3. Experiment with the possibilities of photographic materials;
4. Synthesize the relationship of process and subject matter;
5. Explain processes and concepts in your own work;
6. Discuss the cultural significance of photography;
7. Create conceptual imagery using alternative photographic processes;
8. Construct and organize a series of photographs;
9. Evaluate photographic techniques through group critiques.

ART 2720

Color Photography

Credit hours: 3

Introduces color photography and color theory using digital photography and Adobe Photoshop as well as inkjet printing and scanning. Explores cross processing and other development manipulations. Discusses development of color photography and color perception as applied to specific themes. Encourages creativity and personal expression. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Create images using both E-6, C-41, and digital processes.
2. Employ proper color management in a digital workflow.
3. Identify the emotional and symbolic use of color.
4. Interpret color theory within your own work.
5. Experiment with the techniques of color photographic materials.
6. Examine photographic process as a way of conceptual expression.
7. Synthesize the relationship of process and subject matter.
8. Explain processes and concepts in own work.
9. Evaluate photographic techniques through group critiques.

ART 2730

Photographic Lighting I

Credit hours: 3

Teaches the basic skills needed to control and manipulate light as a tool for the photographer in communication of artistic vision. Explores different lighting sources and investigates the effects of direction, quality and quantity. Emphasizes flash photography, tungsten, and natural lighting. Studies photographic studio, location, and mixed lighting techniques. Covers processes and concepts through slide presentations, readings, critiques and class discussions. Course Lab fee of \$19 for equipment applies.

Course Learning Outcomes

1. Examine the use of light as a tool for the photographer;
2. Demonstrate the use of direction, quality and intensity of light;
3. Apply the use of natural, ambient, strobe, and mixed lighting situations;
4. Identify lighting skills as they relate to portrait, product, and location photography;
5. Arrange light to define objects and express emotion;
6. Compose photographs that define form, texture, and separation;
7. Create a portfolio of images;
8. Experiment with lighting techniques;
9. Evaluate photographic techniques through group critiques.

ART 3005

Ceramic History Trends and Practices WE

Credit hours: 3

Investigates important movements, approaches, cultures, and techniques in the history of ceramic production. Studies artists, trends, and issues in contemporary ceramics.

Course Learning Outcomes

1. Discuss the history of ceramics.
2. Explain ceramic techniques of past cultures and periods.
3. Identify contemporary artists and trends.
4. Communicate knowledge of ceramics to a non- specialist audience.
5. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

ART 3210

Narrative Illustration

Credit hours: 3

Provides experiences in creating mood through visual elements and controlling the pictorial space. Emphasizes composition, creativity and technical ability. Addresses narrative illustration and visual storytelling. Course fee of \$20 for support applies.

Course Learning Outcomes

1. Explore illustration processes as a means of self expression;
2. Define visual concepts in personal work;
3. Apply advanced understanding of drawing and painting processes;
4. Develop processes of visual narration;
5. Evaluate effectiveness of processes and techniques through regular critiques;
6. Relate key illustration readings to image making.

ART 3220

Conceptual Illustration

Credit hours: 3

Introduces conceptual illustration and problem solving through the use of visual symbols, metaphors and icons..

Course fee of \$20 for support applies.

Course Learning Outcomes

1. Relate key illustration readings to image making.
2. Develop processes of conceptual illustration problems.
3. Evaluate and assess effectiveness of processes and techniques through regular critiques.
4. Apply advanced understanding of drawing and painting processes.
5. Define visual concepts in personal work.
6. Explore illustration processes as a means of self expression.

ART 3240

Head Drawing

Credit hours: 3

Develops proficiency in rendering the human head in a variety of approaches and techniques. Addresses geometric and planar construction, proportion, lighting, features, and expression. Course Lab fee of \$93 for support applies.

Course Learning Outcomes

1. Explore head drawing processes as a means of self expression;
2. Relate key portrait drawing readings to image making;
3. Evaluate effectiveness of processes and techniques through regular critiques;
4. Define visual concepts in personal work;
5. Apply advanced understanding of drawing processes.

ART 3250

Environment Design

Credit hours: 3

Develops and improves skills in designing, rendering, and painting environments and landscapes for use in illustration, animation, video games, and film.

Course Learning Outcomes

1. Design creative environments and backgrounds for illustration and entertainment art through improving thumbnails, comps, and drawing skills;
2. Exhibit improved abilities in painting environments using traditional and/or digital media;
3. Demonstrate skills in harmonizing environment compositions by more effectively using color schemes and controlling lighting effects through color and value control;
4. Exhibit skill in enhancing mood through color and value control, heightening the effect of focal points by successfully representing atmospheric perspective.

ART 3260

Digital Painting II

Credit hours: 3

Focuses on creating quality digital paintings/illustrations in a studio setting. Studies the more subtle features of the software applications. Practices advanced conceptual and problem solving skills. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Describe the purpose and utility of various digital painting software platforms;
2. Practice digital painting techniques;
3. Display proficiency in projects and assignments;
4. Apply advanced understanding of digital painting software;
5. Exhibit advanced conceptual and visual problem-solving skills.

ART 3280

3D Texturing and Rendering

Credit hours: 3

Teaches techniques in texturing, lighting, and rendering of 3D models and scenes with a special emphasis upon aesthetics and composition. Includes texture painting, UV mapping, and HDRI lighting in addition to the standard techniques. Software fee of \$23 applies. Lab access fee of \$35 applies for computers.

Course Learning Outcomes

1. Utilize different rendering software;
2. Apply indirect illumination techniques;
3. Use HDR images to illuminate a scene;
4. Integrate UV mapping into renderings;
5. Integrate texture painting software into the material-creation workflow;
6. Use camera angles and techniques for effective compositions.

ART 328R

Painting the Human Head

Credit hours: 3

Continues the development of rendering skills acquired in art 3240 (Head Drawing). Emphasizes mixing flesh tones, managing values, and investigates a variety of approaches to painting the human head. May be repeated for a maximum of 6 credits toward graduation. Course Lab fee of \$93 for computers applies.

Course Learning Outcomes

1. Describe accurate shape information of the human head in paint.
2. Mix flesh tones relative to varying ethnic backgrounds.
3. Explore head painting as a means of self expression and communication.
4. Relate key portrait painting readings to image making assignments.
5. Evaluate the effectiveness of varying processes and techniques through regular classroom critiques.
6. Improve skills in painting, interpreting and seeing.

ART 334R

Sculpture III

Credit hours: 3

Investigates studio problems based on concepts applied to various three-dimensional materials. Places special emphasis on the development of individual expression in the students chosen medium. Encourages the development of individual style and exploration of alternative media. May be repeated for a maximum 6 credits toward graduation. Course fee of \$27 for materials applies.

Course Learning Outcomes

1. Exhibit control over design elements and an understanding of the three-dimensional elements and principles of design.
2. Analyze and solve problems as part of the process of developing a sculpture.
3. Explain sculpture materials and processes.
4. Discuss the historical background of sculpture.
5. Complete multiple sculptures and prepare them for exhibit.

ART 335R

Ceramics III

Credit hours: 3

Continuation of concepts developed in Ceramics I and II. Addresses advanced skills in hand building, wheel throwing, glaze formulation and kiln firing. May be repeated for a maximum of 6 credits toward graduation. Course lab fee of \$60 for materials applies

Course Learning Outcomes

1. Identify principles of Ceramic art.
2. Explain the basic formation of clay bodies.
3. Discuss the formation of glazes and glaze types.
4. Demonstrate advanced clay skills in formation and decoration.
5. Demonstrate craftsmanship in the ceramic process and procedures.
6. Apply advanced problem-solving abilities to the application of ceramic process.

ART 3420

Typography II

Credit hours: 3

Develops advanced skills in the use of typography and layout. Examines editorial practices and executes designs that are appropriate for the intended audience. Teaches industry-standard page layout software. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Describe the editorial philosophy of a publication and how it influences design;
2. Identify what a target audience is and how to design a publication that appeals to the audience;
3. Explore effective and unique solutions for multi-page layouts;
4. Address technical issues of publication design and how to use page layout software to assist in the production of the publication.

ART 3440

Motion Graphics II

Credit hours: 3

Teaches principles and techniques of 3D animation with an emphasis on typography. Includes discussion of creative problem solving in time-based media. Includes learning 2D and 3D industry software to render video with audio. Software fee of \$23 applies. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Communicate effectively using audio and animation;
2. Create animation using 3D artwork and typography;
3. Offer meaningful critique to other students;
4. Apply effective principles of rendering.

ART 3450 **Branding II**

Credit hours: 3

Teaches concept and theory behind brand identity and package design. Covers how to conduct research to ensure designs are conceptually appropriate and targeted. Includes creation of collateral that supports campaign criteria. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Generate successful concepts and packaging for the product;
2. Develop conceptual branding solutions appropriate for a specific audience;
3. Critique their own designs and others as they relate to the packaging of a product;
4. Utilize effective typographic skills as they apply to packaging;

ART 3480 **UI/UX Design II**

Credit hours: 3

Teaches advanced principles and techniques to develop interactive experiences. Includes discussion of usability and user-centered design to solve client needs. Includes learning user interface (UI) and user experience (UX) design principles. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Apply principles of UI/UX design to interactive projects;
2. Develop conceptual user interface and user experience solutions appropriate for a specific audience;
3. Apply the design process to the design of digital products;
4. Explain and critique their own designs and others as they relate to user interface.

ART 3500

Secondary Art Education Methods I WE

Credit hours: 3

Introduces students to the materials, methods, and resources related to teaching middle school and high school visual arts. Emphasizes the characteristics and components of a quality art program. Designed for the art education major pursuing teacher licensure for grades 7-12. Course Lab fee of \$16 for materials applies.

Course Learning Outcomes

1. articulate the issues and developments of art education.
2. Research sources for secondary art educators, including publications and internet sites.
3. Describe state and national standards for visual arts education.
4. Prepare art assignments and projects that can be integrated into the secondary curriculum.
5. Select appropriate materials and supplies for the art classroom.
6. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences within art education.

ART 3510

Secondary Art Education Methods II WE

Credit hours: 3

Investigates theories and models of curriculum development in the visual arts for middle school and high school students. Includes implementation of curriculum development, unit/lesson planning, and evaluation strategies in the visual arts. Prepares prospective art teachers to plan, organize, and promote quality art programs and curricula. Course Lab fee of \$22 for materials applies.

Course Learning Outcomes

1. Develop quality curricula for secondary art students, implementing state and national standards.
2. Create lesson plans/unit plans and curricula that reflect multicultural and interdisciplinary components.
3. Develop assessment strategies and tools using acceptable and appropriate criteria for the visual arts.
4. Select appropriate equipment, technology, and materials for the classroom.
5. Use research methods and resources that fit curricula goals.
6. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences within art education.

ART 361R

Figure Drawing II

Credit hours: 3

Presents skills and techniques related to drawing the human figure. Uses live models (draped and undraped). May be repeated for a maximum of 6 credits toward graduation. Course Lab fee of \$150 for support applies.

Course Learning Outcomes

1. Apply knowledge of rendering human figure in weekly assignments;
2. Practice technical drawing methods;
3. Critique personal work and work of peers (both written and verbal);
4. Create a portfolio of all work.

ART 364R

Figure Painting

Credit hours: 3

Explores fundamental methods and techniques of oil painting from the figure using live models (draped and undraped). Emphasizes mastery of representational depictions of the figure. Includes themes of abstraction, interpretation, and narrative uses of the figure. May be repeated for a maximum of 6 credits toward graduation. Course Lab fee of \$150 for support applies.

Course Learning Outcomes

1. Demonstrate development stages and techniques of figure painting;
2. Demonstrate a fundamental ability to manage the paint medium that is consistent with building a harmonious figure;
3. Identify aspects of figure painting that are most relevant to the student's immediate and personal interests;
4. Competence in their ability to paint the figure;
5. Knowledge of art historical trends and styles of figure painting.

ART 367R

Printmaking II

Credit hours: 3

Continues to develop, enhance, and create proficiency in printmaking skills through intermediate techniques, processes, and materials. Establishes the role of traditional and contemporary printmaking as a fine art medium. Includes challenging and complex projects with more advanced technical skills than Printmaking I. Strengthens the development of personal and individual imagery, including the importance of craftsmanship, the usage of additional tools/materials, and an expanding printmaking vocabulary. May be repeated for a maximum of 6 credits toward graduation. Course Lab fee of \$34 for materials applies.

Course Learning Outcomes

1. Create at least 5 identical prints to form an edition.
2. Evaluate the technical/conceptual qualities of a print at a higher level than in Printmaking I, including referencing the history of prints.
3. Create personal imagery expressively through the fine art printmaking media covered at a higher cognitive & conceptual level than in Printmaking I.
4. Use printmaking tools and materials at an intermediate level.
5. Identify the art of at least 5 notable historical/contemporary artist printmakers.

ART 371R

Historical Photographic Processes

Credit hours: 3

Program by portfolio review, or department approval.

Teaches alternative photographic processes with an emphasis on early photographic printing techniques. Includes preparation and exposure of paper using various alternative techniques through a variety of hands-on projects. May be repeated for a maximum of 6 credits toward graduation..

Course Lab fee of \$50 for equipment applies.

Course Learning Outcomes

1. Further understand the process of imagemaking with photographic materials.
2. Properly use liquid emulsion to create an image.
3. Demonstrate a knowledge of historic photographic processes.
4. Evaluate the photograph through deconstructive processes.
5. Discuss the relationship of process to photography in the context of materials, form, and content.
6. Explore using historic processes in conjunction with digital techniques.
7. Integrate alternative processes into their own personal vision.
8. Discuss their own relationship to photography and image making.
9. Discuss and define the role of mixed media and contemporary art.

ART 3730

Photographic Lighting II

Credit hours: 3

Focuses on product lighting and camera techniques. Develops artistic skill through the creation of images that can be used in commercial settings, specifically in advertising. Course Lab fee of \$19 for equipment applies.

Course Learning Outcomes

1. Create a finished product in camera, not relying on post production.
2. Work within a definitive set of parameters using clients' objectives to dictate lighting and compositional style.
3. Effectively use texture, form, shape, pattern, and focus in a composition.
4. Control exposure when working in the extremes of highlights and shadows
5. Work in a tethered-camera environment.

ART 3740

Fine Art Photography WE

Credit hours: 3

Integrates previously taught image-making skills, and encourages students to further develop their personal vision through a more developed project. Examines contemporary trends, styles, and critical issues through slide presentations, readings, critiques, critical writing and class discussions. Course Lab fee of \$19 for equipment applies.

Course Learning Outcomes

1. Use photographic process as a form of personal expression.
2. Apply photographic theories and concepts.
3. Explain process and concepts in own work.
4. Discuss the cultural significance of photographic and how own photography fits.
5. Debate theories of photographic communication methods.
6. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.
7. Write critical texts.

ART 3750

Advanced Digital Imaging

Credit hours: 3

Integrates Photoshop as a development and manipulation tool for image making. Investigates technical concerns of digital workflow, capture, and output for commercial and fine art applications. Strong emphasis on using Photoshop as a creative tool in personal artistic expression. Discusses more advanced uses of selection tools, color correction, layer and channel manipulations. Teaches processes and concepts through slide presentations, readings, critiques and class discussions. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Demonstrate proper digital capture and input as it relates to scanners and cameras
2. Apply digital workflow, camera capture, batch processing, archiving, and digital/analog delivery
3. Practice technical and aesthetic elements of image making through PhotoShop
4. Demonstrate proper file preparation for various output- web/print/ink jet/film recorders
5. Apply a personal artistic vision using digital imaging as an instrument for expression
6. Demonstrate advanced techniques through image assembly and creation
7. Experiment with concepts of digital art making
8. Evaluate photographic techniques through group critiques
9. Explain processes and concepts in your own work

ART 3800

Low-Fire Ceramics

Credit hours: 3

Explores low-temperature clay and glazing techniques, as well as the practical and aesthetic considerations of their use. Addresses the operation and maintenance of electric kilns. Course lab fee of \$60 for materials applies.

Course Learning Outcomes

1. Discuss the differences and traits of low-fired, mid-range, and high-fire ceramics.
2. Choose proper clays for low-fire applications.
3. Formulate low-fire glazes.
4. Operate and maintain electric kilns.
5. Explain oxidation and reduction atmosphere.

ART 3810

Ceramic Technologies

Credit hours: 3

Teaches proper practices in the ceramic studio. Includes kiln operation, maintenance and design, basic clay and glaze formulation, understanding ceramic materials, ceramic tool making, and studio practices and safety. Course Lab fee of \$60 applies.

Course Learning Outcomes

1. Operate and repair electric and gas kilns.
2. Distinguish between a variety of ceramic materials.
3. Alter and fix ceramic glazes.
4. Produce equipment and tools for ceramic production.
5. Exhibit safe studio practices.

ART 421R

Advanced Illustration

Credit hours: 3

Provides advanced studies in producing a senior level portfolio. Encourages students to find a personal style and voice in communicating images. Requires advanced problem solving skills and advanced abilities in the creation of images. May be repeated for a maximum of 6 credits toward graduation. Course fee of \$50 for support applies.

Course Learning Outcomes

1. Create masterfully executed images.
2. Develop significant personal work.
3. Learn self assessment in the picture making process.
4. Identify improvement in drawing, painting and technical expertise.
5. Successfully concieve concepts appropriate to text material.
6. Become proficient in visual journalism.
7. Develop a body of work that could be used to attract potential clients.

ART 4250

Character Design

Credit hours: 3

Teaches how to create original and compelling character designs for use in film, video games, graphic novels, and children's books. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Generate characters and imaginative concept art;
2. Integrate characters and environments;
3. Describe context vs. perception;
4. Combine character and environment designs into a complete scene;
5. Offer meaningful critique to other students.

ART 4260

Concept Design

Credit hours: 3

Teaches how to create original and compelling concept designs and environments for use in film, video games, graphic novels, and children's books.

Course Learning Outcomes

1. Generate ideas and imaginative concept art;
2. Integrate objects and environments;
3. Describe context vs. perception;
4. Combine object, environment, and character designs into a complete scene;
5. Explore surface characteristics of individual objects;
6. Offer meaningful critique to other students.

ART 4270

Sequential Illustration

Credit hours: 3

Studies the practice and execution of drawings and lettering in pencil, ink or digital mediums to create visual narratives in sequence, commonly referred to in popular culture as comics or graphic novels. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Create sequential illustration and narrative storytelling by making samples of comic pages and cover art that are portfolio worthy;
2. Draw with form, perspective and figurative gesture by illustrating art done in sequence;
3. Draw with traditional (pencil, pen, brush) and/or digital mediums at an advanced level;
4. Letter comics using word balloons and typography that is unique to sequential art, using both traditional and digital techniques;
5. Employ effectively digital painting/editing software to digitize and color comic art for student practice models engaging basic color theory/color psychology in sequential art;
6. Discuss on interactive forums the professional practices, responsibilities and vocabulary used in the sequential illustration industry.

ART 4280

3D Rigging and Animation

Credit hours: 3

Teaches the process of rigging for 3D motion and posing of characters and objects for animated films and games. Studies principles of character animation and motion capture. Software fee of \$23 applies.

Course Learning Outcomes

1. Build a Character Rig for use in the 3D software workflow;
2. Apply animation principles to a rigged character;
3. Modify the motion of an animated character;
4. Offer meaningful critique to other students.

ART 4290 **3D Sculpting**

Credit hours: 3

Teaches 3D digital sculpting techniques needed to create finished 3D illustrations and/or 3D assets to be used as reference for 2D illustration. Studies model detailing, texture mapping, lighting, and rendering of 3D computer reference or as standalone 3D illustration. Software fee of \$23 applies. Lab access fee of \$35 applies for computers.

Course Learning Outcomes

1. Describe various digital sculpting programs, their differences, and strengths and weaknesses;
2. Effectively use digital sculpting techniques to create artwork;
3. Apply advanced principles of rendering;
4. Exhibit advanced visual problem solving and conceptual thinking in projects and assignments;
5. Offer meaningful critique to other students.

ART 4360

Mold Making and Casting

Credit hours: 3

Covers the basic process of casting and the construction of molds. Emphasizes the use of molds in the development of sculptural ideas. Course lab fee of \$70 for materials applies.

Course Learning Outcomes

1. Explain the basic process of casting and the construction of molds.
2. Identify the use of molds in the development of sculptural ideas.
3. Develop a sense of craftsmanship in the creative process.
4. Critique the works of others.
5. Produce a body of work that incorporates topics covered in class.

ART 4370

Hand Building Ceramics

Credit hours: 3

Designed for students interested in three-dimensional art forms. Emphasizes hand building design and techniques in creating both sculptural and vessel projects in water-based clay. Teaches advanced methods of coil, slab, and pinch construction. Utilizes slump molding, rolled slab, cylinders, and molds in creation of finished clay products. Course lab fee of \$50 for materials applies.

Course Learning Outcomes

1. Explain the basic formation of clay bodies.
2. Develop clay skills in formation and decoration.
3. Incorporate techniques of kiln firing, glazing and slab formation.
4. Critique works of others.
5. Produce works that demonstrate abilities in topics covered in class.

ART 443R

Design Studio

Credit hours: 3

Addresses emerging topics, issues, and technology relevant to graphic design. Addresses these issues through research and collaborative project development. May be repeated for a maximum of 6 credits toward graduation. Lab access fee of \$35 applies for computers.

Course Learning Outcomes

1. Apply creative problem solving on a collaborative project in graphic design;
2. Develop a project that demonstrates in-depth knowledge of an issue, topic, or technology;
3. Explain and critique processes and concepts in your own work;
4. Use research in creative problem solving.

ART 4440

Entertainment Design Studio

Credit hours: 3

Addresses emerging topics, issues, and technology relevant to entertainment design. Addresses these issues through research and collaborative project development. Software fee of \$23 applies. Lab access fee of \$35 for computers applies.

Course Learning Outcomes

1. Communicate effectively using audio and animation;
2. Create animation using 2D/3D artwork and typography;
3. Offer meaningful critique to other students;
4. Apply creative problem solving to a collaborative project in entertainment design;
5. Develop a project that demonstrates in-depth knowledge of an issue, topic or technology.

ART 470R

Figure Drawing III

Credit hours: 3

Offers a senior-level drawing experience, emphasizing drawing from imagination. Continues skill development in proper character structure and scene layout. May be repeated for a maximum of 6 credits toward graduation..

Course Lab fee of \$125 for support applies.

Course Learning Outcomes

1. Explore drawing process as a way of personal expression.
2. Apply advanced drawing theories and concepts.
3. Explain processes and concepts in your own work.
4. Relate key readings to image making.
5. Criticize the cultural significance of art making.
6. Create conceptual imagery using drawing and painting processes.
7. Evaluate art making techniques through group critiques.
8. Debate theory and application of artistic communication methods.

ART 471R

Photographic Illustration

Credit hours: 3

Develops skills in illustrating concepts through photographic processes. Encourages students to work through assignments from their own personal emphasis of commercial or fine art image making styles. Explores contemporary trends, styles, and critical issues through slide presentations, readings, critiques and class discussions. Focuses on the development of interpretation and conceptual image making. May be repeated for a maximum of 6 credits toward graduation. Course Lab fee of \$19 for equipment applies.

Course Learning Outcomes

1. Develop conceptual images for use in editorial, advertising, and fine art applications
2. Employ the use of art history and other references for inspiration
3. Explore photographic process as a ways of conceptual expression
4. Demonstrate the use of photographic language to illustrate ideas and concepts
5. Use brainstorming, sketches, and production diagrams in image conceptualization
6. Create conceptual imagery using photographic processes
7. Evaluate photographic techniques through group critiques
8. Explain processes and concepts in your own work

ART 474R

Advanced Photo Studies

Credit hours: 3

Integrates all previous image making skills acquired into the students' visual vocabulary. Encourages students to further develop their own personal vision through more developed projects. Examines contemporary trends, styles, and critical issues through slide presentations, readings, critiques and class discussions. Investigates needed skills in running a business as a commercial and Fine art photographer. Emphasizes conceptual image making. May be repeated for a maximum of 6 credits toward graduation. Course Lab fee of \$19 for equipment applies.

Course Learning Outcomes

1. Explore photographic process as a way of personal expression
2. Apply advanced photographic theories and concepts
3. Explain processes and concepts in your own work
4. Relate key photographic readings to image making
5. Criticize the cultural significance of photography
6. Create conceptual imagery using photographic processes
7. Evaluate photographic techniques through group critiques
8. Debate theories of photographic communication methods

ART 4750

Exploratory Photographic Processes

Credit hours: 3

Explores deconstruction of the image in both a formal and conceptual process. Analyzes liquid emulsions, mixed media, encaustic, and alternative surfaces and materials. Examines the possibilities of the image beyond two-dimensional traditional photography. Course Lab fee of \$19 for equipment applies.

Course Learning Outcomes

1. Apply different working methods to enhance the creative process.
2. Solve problems with materials and imagery.
3. Discuss photography's theoretical and practical boundaries.
4. Produce a series of non-traditional images as a portfolio.

ART 481R

Art and Design Internship

Credit hours: 1 to 6

Combines classroom theory with related, practical job experience. Students works as employees of a business, agency, or institution while enrolled in classes related to their career/major. Course content is individualized with students setting objectives in concert with their internship advisor and their workplace supervisor. Internship enrollment must be pre-approved by the area coordinator and department internship advisor. Number of hours worked per week will determine number of credits granted. May apply a maximum of 6 credits toward graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Apply academic skills to a practical professional setting
2. Reflect on how classroom experience applies to a professional setting
3. Develop and maintain professional relationships with coworkers, supervisors, and clients
4. Recognize and refine personal career interests relative to their intership experiences
5. Futher explore career opportunities in the art and Visual Communications field.
6. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Professional demeanor. 2 - Awareness of whether to seek further experience in this area or in other areas.

ART 4840

Professional Presentation for the Visual Arts WE

Credit hours: 1

For Art and Design majors. Covers topics related to preparing work for presentation and marketing work within visual arts professions, including building a professional website, preparing a professional portfolio, getting work ready for exhibition, and advertising/marketing work.

Course Learning Outcomes

1. Prepare work for presentation in a professional setting
2. Describe ways of marketing work within visual arts professions
3. Prepare a professional portfolio
4. Develop a plan to build a professional website
5. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences

ART 499R

BFA Project WE

Credit hours: 3

Focuses on the development and execution of a gallery exhibition or professional portfolio. Includes collaborative work with a gallery/museum professional in preparation of the exhibition's public viewing. May be repeated for a maximum of 6 credits toward graduation. Lab access fee of \$26 for computers applies.

Course Learning Outcomes

1. Develop and display a representational portfolio of personal work.
2. Prepare a project for exhibition demonstrating an artistic focus and emphasis.
3. Complete a complex, multi-faceted project from concept to finished product.
4. Explain processes and concepts in your own work.
5. Implement processes needed to display art in a gallery setting.
6. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

ARTH 2710

Prehistoric Through Gothic Art History FF

Credit hours: 3

Covers major trends in Western art from the Paleolithic period to the Gothic era, including elements of political, religious, cultural, literary, and philosophical elements as they impacted the development of art.

Course Learning Outcomes

1. Analyze art from the Paleolithic to the Gothic era.
2. Define the function and impact of art in past cultures, considering political, religious, literary, and philosophical elements.
3. Summarize knowledge of past styles, movements, and key artworks both orally and in writing.
4. Interpret scholarly opinions about art from the Paleolithic period to the Gothic era.

ARTH 2720

Renaissance Through Contemporary Art History FF

Credit hours: 3

Covers major trends in Western art, from the Renaissance through the Modern era, including elements of political, religious, cultural, literary, and philosophical elements as they impacted the creation of art.

Course Learning Outcomes

1. Analyze art from the Renaissance to the contemporary era.
2. Define the function and impact of art in past and present cultures, considering aesthetic, political, religious, literary, and philosophical elements.
3. Summarize knowledge of past styles, movements, and key artworks both orally and in writing.
4. Interpret scholarly opinions about art from the Renaissance to the contemporary era.

ARTH 2800

Introduction to Art History Research and Methodology WE

Credit hours: 3

Develops needed skills to research in various fields related to the visual arts. Teaches how to prepare and organize a research paper. Focuses on historical methodologies. Studies critical reading, thinking, and writing. It is strongly recommended that students take this class by their second year or before taking upper-division art History courses.

Course Learning Outcomes

1. Apply common art historical methodologies to study and interpret works of art
2. Describe the historical contexts related to the art historical methodologies studied
3. Apply critical reading skills in order to determine the strengths and weakness of art historical texts
4. Practice effective research skills
5. Employ effective writing skills
6. Compose a variety of disciplinarily- appropriate texts within multiple situations and for multiple audiences

ARTH 3010

History of Design and Visual Arts

Credit hours: 3

Presents a history of graphic design, illustration, and photography apart from the study of traditional art history. Explores the impact of major movements, technologies, and innovations on present-day graphic design. Includes lectures, group projects, and field trips.

Course Learning Outcomes

1. Demonstrate understanding of the role graphic design has played in the evolution of visual communication;
2. Identify different movements within graphic design from 1500s to present day;
3. Analyze the effects of technological advancements on visual communication;
4. Conduct research about topics related to visual communication including typography, technology and graphic design.

ARTH 3070

Modern Art and Architecture History WE

Credit hours: 3

Studies leading artists, artworks, and movements. Explores the broad cultural, historical, and philosophical influences on modern art and architecture. Includes lectures and class discussions on modern art and architecture.

Course Learning Outcomes

1. Identify basic issues related to the formation of modern art and architectural practices.
2. Differentiate between the various styles and movements within the modern period.
3. Analyze different scholarly arguments related to modern art and architecture.
4. Conduct scholarly research on a specific topic related to modern art and/or architecture.
5. Produce a modern art project that demonstrates strong writing and communication skills for a range of audiences.
6. Summarize in writing the interpretation of key concepts and works of art.

ARTH 3110

The History of Illustration WE

Credit hours: 3

Surveys the history of illustration as visual communication. Discusses major movements and the influence of technological advancements in printing and broadcast media on the field of illustration. Focuses primarily on the period from 1860 to the present.

Course Learning Outcomes

1. Describe the basic details of the history of illustration
2. Discuss the social and cultural influences on and from illustration
3. Integrate the rich history of illustration in ones own work
4. Explain in writing the role of illustration in and from the industrial revolution and technological advances in print and broadcast media
5. Incorporate illustration as a distinct language of signs, symbols, and metaphors
6. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences

ARTH 3120

History of Contemporary Art

Credit hours: 3

Studies themes and trends related to contemporary art. Explores the diverse influences that impacted art from late modernism to the twenty-first century. Emphasis will be given to understanding the pluralism of international contemporary art from the last three decades. Includes lecture and class discussions.

Course Learning Outcomes

1. Identify basic issues related to art from the 1960s to the present day;
2. Differentiate between various themes, movements, and styles related to contemporary art from an international or global perspective;
3. Analyze different scholarly arguments and theories related to contemporary art from readings;
4. Conduct research related to contemporary art and write a paper about the findings.

ARTH 3200

The History of Photography

Credit hours: 3

Traces the different directions photography has taken since its inception, using the social and cultural environment as a context. Investigates the ever-increasing use of photography by artists in the creative process from the first uses of the camera obscura to the present. Discusses the developments that set the stage for the "invention" of photography and how photography changed the role of artists in the 19th and 20th centuries. Covers documentary photography and the rise of fine art photography as separate art forms.

Course Learning Outcomes

1. Know the basic details of the history of photography.
2. Understand the role of photography in the industrial revolution.
3. Analyze the different arguments for straight and manipulated photography.
4. Build upon other art history knowledge.
5. Understand photography's role in contemporary art.
6. Understand and be able to discuss the issues of art and photography.
7. Understand the social and cultural influence on and from photography.
8. Incorporate photography as a discreet language of signs, symbols, and metaphors.
9. Integrate the history of photography into their own work.

ARTH 400R

Art History Seminar WE

Credit hours: 3

Explores topics within art and Architectural History. Topics will change each semester to reflect the research activities and interests of the instructor (e.g., "The Life and art of Michelangelo," "The Current State of Gender Studies in Art History"). May be repeated for a maximum of 12 credits toward graduation.

Course Learning Outcomes

1. Identify current research resources.
2. Analyze current trends in the field as related to the topic.
3. Identify shortcomings and strengths in current scholarship.
4. Produce an academically sound, and well-written, research paper.
5. Present academically sound research orally.

ASL 1020

Beginning American Sign Language II LH

Credit hours: 4

Builds on the experiences in ASL 1010. Emphasizes basic expressive and receptive conversational skills through active student participation. Continues introduction to American Deaf culture. Employs an immersion approach to language learning. Requires a weekly lab. Canvas Course Mats of \$72/True Way applies. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Demonstrate elementary fluency (both production and comprehension) in American Sign Language in a variety of culturally-based situations.
2. Demonstrate understanding of specific grammatical concepts.
3. Demonstrate knowledge and recognition of some of the complexities present in Deaf community, Deaf culture and the Deaf-World.
4. Demonstrate the ability to interrelate knowledgeably and respectfully within the context of Deaf community, Deaf culture and the Deaf-World.
5. Show knowledge of the Deaf-World as a linguistic and cultural minority, including its history and some of the current issues Deaf people face.
6. Show insight into the nature of languages in any medium of transmission.

ASL 2010

Intermediate American Sign Language I LH

Credit hours: 4

Reviews and builds upon the grammar and conversation skills learned in the first year courses. Concentrates on understanding and acquiring more advanced conversational proficiency in ASL. Emphasizes the use of various kinds of ASL classifiers in the function of describing objects and in providing locative information. Analyzes Deaf culture with an emphasis on the struggles of this linguistic minority with a majority controlled educational establishment with particular attention to the effects on individual Deaf lives. Canvas Course Mats of \$72/True Way applies. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Demonstrate an advanced conversational use of ASL, specifically in the use of classifiers to describe objects and locative information.
2. Demonstrate increased awareness of Deaf culture and Deaf-world's struggle with oppression and their battle for the right to participate in decision making affairs impacting their community and culture.
3. Describe the effects of current and past educational practices on individual lives within Deaf culture and the Deaf-World.
4. Demonstrate knowledge and recognition of some of the complexities present in Deaf community, Deaf culture and the Deaf-World.
5. Demonstrate the ability to interrelate knowledgeable, responsibly, and respectfully within the context of Deaf society: community, culture and the Deaf-World.
6. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - An appreciation for the complexity of the four dimensions of the signing medium. 2 - A respect for cultures and interpretive frameworks that differ from the students' own. 3 - A desire to better understand the languages and cultures of the world.

ASL 202G

Intermediate American Sign Language II HH GI

Credit hours: 4

Continues applied conversation use of ASL through literature, narratives, poetry, and creative sign play. Analyzes ASL grammatical principles and Deaf cultural experiences to explore and understand various underlying metaphors found in ASL literature. Requires Deaf community exposure and involvement. Canvas Course Mats of \$72/True Way applies. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Demonstrate applied conversational use of ASL through narratives, poetry, and creative sign play.
2. Show understanding of and duplicate the morphology and phonology intrinsic to ASL literature.
3. Identify the the duplicate metaphors underlying ASL literature. 4 - Apply linguistic concepts learned in previous courses in an interactive and creative format.
4. Demonstrate knowledge and recognition of many of the complexities present in Deaf culture.
5. Demonstrate the ability to interrelate knowledgeably, reflectively, and respectfully within the context of Deaf culture.
6. Demonstrate increased awareness of Deaf culture and Deaf-world's struggle with oppression and their battle for the right to participate in decision making affairs impacting their community and culture.
7. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - A more thorough appreciation for the complexity of the four dimensions of the signing medium. 2 - A heightened respect for cultures and interpretive frameworks that differ from the students' own. 3 - An increased desire to understand the languages and cultures of the world, particularly as represented through language art forms.

ASL 2030

Fingerspelling in American Sign Language

Credit hours: 1

Focuses on the patterns of ASL fingerspelling, one of the hardest ASL skills to master. Increases ability to accurately produce and comprehend ASL fingerspelling. Gives attention to the nature and application of fingerspelling within the sociocultural context of the Deaf-World. Taught in ASL.

Course Learning Outcomes

1. Use linguistic context and the context of the topic to predict and comprehend fingerspelled terms.
2. Recognize naturally occurring variants forms of fingerspelled letters.
3. Recognize the configuration of commonly fingerspelled words as whole units.
4. Improve reception of fingerspelling from various angles.
5. Improve expressive fingerspelling skills.

ASL 2040

Numbers in American Sign Language

Credit hours: 1

Focuses on the complex rule systems governing ASL numbers as used in a wide range of settings. Increases ability to accurately produce and comprehend contextually situated ASL numbers. Taught in ASL.

Course Learning Outcomes

1. Comprehend ASL numbers from various angles;
2. Recognize variants of number use in ASL;
3. Produce ASL numbers correctly;
4. Utilize numbers in ASL based on linguistic rules for each numerical category.

ASL 3000

Technology for Deaf Studies

Credit hours: 3

Examines various forms of media that will help Deaf Studies students succeed in both the pursuit of their academic degrees and in real-world work environments. Draws on the theoretical approaches of the Visual Culture field to explore visual theory, museums, memorials, film and video. Gives in-depth instruction in the use of multiple digital technologies used in higher-level Deaf Studies classes and in work environments associated with Deaf people. Taught in ASL. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Use applicable media technologies specific to ASL;
2. Describe the roles media plays in various constructions of Deaf identities.
3. Use digital technologies available on campus to complete coursework in higher-level courses.
4. Describe the potential for the application of the media for the benefit of the Deaf community.

ASL 3050

Advanced American Sign Language

Credit hours: 3

Focuses on grammatical and linguistic aspects of ASL, including the following: sign formation, morphological structures, syntactic structures, pronominalization, identification and analysis of subjects and objects, classifiers, depicting verbs, pluralization, time concepts, and social interaction of language and culture within Deaf communities. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Demonstrate basic grammatical and linguistic structures of American Sign Language;
2. Define key linguistic terminology unique to descriptions of signed languages;
3. Compare the nature of spoken and signed languages;
4. Identify the contributions of ASL to the field of linguistics;
5. Explain the social interaction of language and culture within Deaf communities.

ASL 3060

American Sign Language Proficiency

Credit hours: 1

Evaluates the standards of American Sign Language proficiency and cultural competency. Requires that students achieve minimally the Intermediate High level as per the American Council on the Teaching of Foreign Languages (ACTFL) guidelines to pass. Is required for Deaf Studies Interpreting Emphasis courses and admission to the ASL & Deaf Studies Secondary Education major. Requires a language proficiency interview. May be graded credit/no credit. Taught in American Sign Language. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Evaluate where they stand with language fluency per ACTFL guidelines.
2. Qualify for courses focusing on interpreting and second language teaching.
3. Explain the language fluency and cultural competency standards of American Sign Language.
4. Self-evaluate linguistic and cultural competencies according to the current standards.
5. Create linguistic and cultural improvement plans for further language and culture practice.

ASL 315R

ASL Conversation III

Credit hours: 1

Offers intermediate ASL users opportunities to enhance their proficiency in the target language by focusing on production. Centers on discussions from a selected reading list in 'book club' form. Teaches how to improve authentic pronunciation, reduce errors in authenticity of language structure, generate thought in the target language spontaneously as a substitute for translation, and sharpen comprehension for natural conversational flow. Contrasts with all other third-year courses which are more content based. Facilitates lowering the affective filter when conversing in the target language by increasing the frequency of conversational opportunities. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Demonstrate their ability to express themselves more proficiently using the target language;
2. Show reduced error frequency in the authenticity of their production of the target language;
3. Show reduced error production in the authenticity of language structure in the target language;
4. Demonstrate an increased mastery of lexical items;
5. Demonstrate awareness of the role of culture in language usage;
6. Demonstrate an understanding of the primary arguments set forth in the readings by summarizing them in ASL.

ASL 3310

Foundations of Interpreting

Credit hours: 3

Introduces bidirectional (ASL-to-English and English-to-ASL) interpreting between Deaf and hearing people. Studies the profession and skills necessary to be an interpreter. Includes history, models, and professional certification procedures of interpreting; cognitive processes, physical and psychological factors, intercultural communication, ethics, and situational interpreting. Deaf students are encouraged to enroll. This course may be taught as a hybrid.

Course Learning Outcomes

1. Describe the interpreting profession including its history and evolution.
2. articulate the role of interpreters including the knowledge and understanding of ethics.
3. Explain the basic models of interpreting used in the profession today.
4. Describe the basic skills required of interpreters.
5. Interpret simple texts from English to ASL and from ASL to English.

ASL 3320

Physiology of Interpreting

Credit hours: 3

Introduces students to skills and processes required to maintain health and wellbeing in the physically demanding and high stress field of interpreting. Develops cognitive, ergonomic, and dual tasking abilities required to interpret without stress or physical injury. Helps students better understand how a healthy lifestyle and developing good habits can improve their skills and prevent injury.

Course Learning Outcomes

1. Demonstrate a working knowledge of ergonomics and proper hand-positioning to reduce stress or repetitive motion related injuries.
2. Demonstrate a knowledge of the anatomy, bones, muscle groups, tendons, ligaments, and nerves of the hands neck and shoulders.
3. Demonstrate the impact of physical and psychological factors on the interpreter who maintains a healthy lifestyle.
4. Demonstrate an understanding of the impact physical preparation prior to engaging in interpreting.
5. Demonstrate an understanding of the impact physical limitations and pain on interpreters.
6. Demonstrate an understanding of ways to prevent or mitigate injury.
7. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - A better understanding of the complex physical process of interpreting 2 - A realization that interpretation is physically and mentally demanding 3 - An understanding of safe and healthy work practices

ASL 3330

Cross Cultural Communication and Interpreting

Credit hours: 3

Builds on ASL 3310. Focuses heavily on the practice of interpreting with special emphasis on the dimension of intercultural communication. Requires regular skill-building exercises in both consecutive and simultaneous interpretation, both English-to-ASL and ASL-to-English. Deaf students are encouraged to enroll. Taught in ASL.

Course Learning Outcomes

1. Demonstrate an awareness of intercultural communication issues related to interpreting.
2. Demonstrate an awareness of the role of interpreters including knowledge and understanding of ethics.
3. Demonstrate ability in simultaneous and consecutive interpreting.
4. Demonstrate improved ability in interpreting various texts/discourses both from English to ASL and from ASL to English.

ASL 3350

Consecutive Interpreting

Credit hours: 3

Introduces skills and processes required to produce consecutive interpretations. Focuses on developing basic cognitive, semantic, and dual tasking abilities required to interpret rehearsed and/or spontaneous texts. Teaches to incorporate semantic choice, register, and ethical behavioral decisions and understand how they impact interpretation. Develops sets of technical or field-specific signs and applies these to interpretative work. Includes one-hour per week lab. Taught in ASL. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Analyze and begin encoding source language in delayed time.
2. Express messages in the target language with correct pronunciation, conceptual accuracy, and using the culture of the source language as a driver.
3. Explain the impact of physical and psychological factors.
4. Explain the impact of the Code of Ethics on interpreting decisions.
5. Receive and comprehend basic signed/spoken messages accurately.
6. Display command of a modest lexicon of technical and field-specific terms.

ASL 3360

Simultaneous Interpreting

Credit hours: 3

Introduces skills and processes required to produce simultaneous interpretations. Focuses on transitioning from consecutive interpreting to time-limited simultaneous interpreting. Develops cognitive, semantic, and dual tasking abilities required to interpret spontaneous texts. Teaches and incorporates more advanced semantic choices and negotiation techniques. Works with a variety of audience sizes and types. Teaches how ethics impact behavioral decisions and interpretations. Gives more consideration to developing sets of technical or field-specific signs and applying these to interpretative work. Includes one-hour per week lab. Taught in ASL. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Analyze and begin encoding source language in real time for production in the target language.
2. Express messages in the target language with correct pronunciation, conceptual accuracy, and using the culture of the source language as a driver.
3. Explain the impact of physical and psychological factors on the interpreting interaction.
4. Explain the impact of the Code of Ethics on interpreting decisions.
5. Receive and comprehend more advanced signed/spoken messages.
6. Demonstrate command of a sizeable lexicon of technical and field-specific terms.

ASL 3370

Sign to Voice Interpreting

Credit hours: 3

Introduces skills and processes required to produce conceptually accurate and linguistically appropriate voice interpretations of ASL texts. Develops cognitive, semantic, and dual tasking abilities required to interpret spontaneous texts. Teaches and incorporates more advanced semantic choices and negotiation techniques. Works with a variety of audience sizes and types. Teaches how ethics impact behavioral decisions and interpretations. Gives more consideration to developing sets of technical or field-specific signs and applying these to interpretative work. Includes one-hour per week lab..
Lab access fee of \$10 applies.

Course Learning Outcomes

1. Analyze and begin encoding source language for production in the target language in real time.
2. Express messages in the target language in a smooth and comprehensible fashion, using correct production and conceptual accuracy.
3. Describe the impact of physical and psychological factors on the interpreting interaction.
4. Explain the impact of the Code of Ethics on interpreting decisions.
5. Demonstrate advanced ability to receive and comprehend signed messages.
6. Demonstrate command of a sizeable lexicon of technical and field-specific terms.

ASL 3375

Ethics for Interpreters

Credit hours: 3

Provides students advanced study and skills development in ethical decision making while interpreting between Deaf (including Deaf-blind) and hearing populations, including interpreting in Educational, Higher Ed. Legal, Mental Health and Medical situations. Helps students develop the ethical understanding needed to become truly professional interpreters. Provides extensive individual feedback to rapidly improve students' interpreting skills and understanding of the complex nature of interpreting ethics. This course may be taught as a hybrid.

Course Learning Outcomes

1. Define professional standards and practices in the field of interpreting.
2. Identify the ethical issues which may arise in any situation involving interpreters.
3. articulate the resolutions to ethical issues which may arise in any situation involving interpreters.
4. Define the ethical issues which may arise specific interpreting environments.

ASL 3380

Transliteration

Credit hours: 3

Introduces skills and processes required to produce conceptually accurate and linguistically appropriate messages using ASL signs in an English word order. Develops cognitive, semantic, and dual tasking abilities required to interpret spontaneous texts. Teaches and incorporates more advanced semantic choices and negotiation techniques. Works with a variety of audience sizes and types. Teaches how ethics impact behavioral decisions and interpretations. Gives more consideration to developing sets of technical or field-specific signs and applying these to interpretative work. Includes one-hour per week lab.

Course Learning Outcomes

1. Analyze and begin encoding source language in real time for production in the target language.
2. Express messages in a smooth and comprehensible fashion with correct production, conceptual accuracy, and using the culture of the source language as a driver.
3. Explain the impact of physical and psychological factors on the interpreting interaction.
4. Explain the impact of the Code of Ethics on interpreting decisions.
5. Receive and comprehend more advanced messages.
6. Demonstrate command of a sizeable lexicon of technical and field- specific terms.

ASL 3400

ASL Visual-Spatial Production

Credit hours: 3

Studies the use of visual space in ASL productions and how to visualize and describe spatial relationships using ASL. Emphasizes skills necessary to describe space from different angles and point of views, focusing on areas typically difficult for English speakers. Provides extensive instruction and opportunity for students to improve both comprehension and production. Taught in ASL. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Describe the complexity of space within various ASL registers.
2. Exhibit an increased mastery of advanced use of linguistic space.
3. Indicate an increased fluency in using visual- spatial language in video format.
4. Produce enhanced ASL fluency in conversational language, storytelling, and public speaking.

ASL 3410

American Sign Language Linguistics

Credit hours: 3

Introduces the linguistic study of ASL, including phonology, morphology, syntax, semantics, and discourse structure. Emphasizes grammatical structures of ASL, including sign formation, pronominalization, identification and analysis of subjects and objects, classifiers, depicting verbs, pluralization, time concepts, and social interaction of language and culture within Deaf communities. Taught in ASL.

Course Learning Outcomes

1. Describe the mechanisms by which American Sign Language utilizes the spatial medium in which it exists to express grammatical relationships;
2. Demonstrate a thorough knowledge of the various linguistic elements in American Sign Language and how those elements interact with one another in the formation of sentences;
3. Describe how mental space theory is applied to the study of American Sign Language;
4. articulate the various insights into how human minds work that can be gained through a study of the spatial nature of signed languages in general and of American Sign Language in particular.

ASL 3510

History of Deaf People to 1817

Credit hours: 3

Explores chronologically to 1817 the formation and treatment of the Deaf community and culture. Emphasizes the rise of deaf education in a European setting and on the links to American Deaf education. Examines perceptions of deaf people and language across this period. Taught in ASL.

Course Learning Outcomes

1. Outline the forces and events that led to the formation of Deaf communities and language standardization in Europe which eventually led to the American Sign Language and the American Deaf Community.
2. Examine the impact of various persons and institutions who played significant roles in the education of Deaf persons and the spread of important signed languages.
3. Describe the role of cultural and historical forces on the progress and impediment of deaf people, including prevalent philosophies and their impact on the formation of competing constructions of deaf people.
4. Explain the role of national politics, religious affiliations, and ideologies in the formation and maintenance of schools for Deaf people in Europe during the period.
5. Describe how Americans seeking to educate Deaf people in America came into contact with and were impacted by European efforts.
6. Trace the linguistic heritage of American Sign Language to its roots in European gestural and home sign systems through the formation of full-fledged languages and discuss the efforts of hearing people to make signing conform to spoken language structure.

ASL 3520

History of Deaf People after 1817

Credit hours: 3

Explores the evolution and treatment of the Deaf community and culture emphasizing activities in the United States chronologically from 1817 onward. Emphasizes the rise of oralism, the development of deaf residential schools, the emergence of American Deaf culture and the recognition of ASL as a true language. Taught in ASL.

Course Learning Outcomes

1. Outline the forces and events that lead to the formation and spread of American Sign Language and to the American Deaf Community.
2. articulate the impact of various persons and institutions who played significant roles in the education of Deaf persons, in the spread of American Sign Language and in the formation of the American Deaf Community.
3. Describe the role of cultural and historical forces on the progress and impediment of deaf people, including prevalent philosophies and the impact on the formation of competing constructions of Deaf people and resultant interactions between Deaf people and the rest of American society.
4. Explain the role of national politics and religious affiliations and ideologies in the formation and maintenance of schools for Deaf people in America during the period.
5. Describe how Americans seeking to educate Deaf people in America came into contact with and were impacted by European efforts.
6. Trace the linguistic heritage of American Sign Language to its roots in European sign languages, 'home signs' and other naturally-occurring signed languages such as Martha's Vineyard Sign Language and discuss the efforts of hearing people to make signing conform to spoken language structure.

ASL 3530

Modern Deaf Culture WE

Credit hours: 3

Explores the culture of the American Deaf people following the recognition of American Sign Language as a legitimate, naturally-occurring sign language. Examines constructions of Deaf people as a linguistic minority whose mores, beliefs, values and traditions emanate from a shared worldview that differs markedly from the view usually ascribed to them by others. Taught in ASL with a writing component.

Course Learning Outcomes

1. Discuss the nature of culture and how it applies to Deaf peoples.
2. Define Deaf Culture, the Deaf Community, and the Deaf-World.
3. articulate the basic values, beliefs, practices, mores, and ideologies of the modern American Deaf Culture.
4. Explain the complex relationships among spoken and written English, American Sign Language, and various other communicative codes used by the Deaf Community and the educational institutions seeking to serve them.
5. Explain the various social issues facing Deaf people in America today and the competing approaches enacted to address them.
6. Produce well-crafted position papers in both academic English and academic ASL.

ASL 3610

ASL Literature

Credit hours: 3

Explores the dynamics of ASL literature and its traditions by studying various genres and ASL storytellers. Uses the similarities and differences in the development of traditional oral literature in other cultures to ASL literature as a tool in discussions and critiques. Covers general narratives and the unique aspects and techniques of telling stories in sign language. Teaches how to critique and to produce ASL literature. Taught in ASL. May be delivered hybrid and/or online.

Course Learning Outcomes

1. Distinguish various ASL literature genres;
2. Identify literary stylistics and poetics of signed texts;
3. Define various ASL storytelling techniques;
4. articulate the cultural context in which works of literature are produced and received;
5. Analyze ASL literary works from various genres;
6. Produce and perform ASL literary works of various genres.

ASL 3710

Deaf Visual Arts

Credit hours: 3

Explores the role of visual arts in the Deaf-World with particular attention to Deaf/View Image art (De'VIA), whose subject matter and style represent a Deaf worldview and cinema (including popular culture). Examines the historical and current contributions of Deaf artists, actors, and filmmakers. Takes as a reference other art movements stemming from oppression. Studies aims, motivations, and challenges portrayed in various art pieces and cinematic works. Taught in ASL. May be delivered hybrid.

Course Learning Outcomes

1. Recognize the contributions of early Deaf artists in the development of Deaf View/Image art (De'VIA);
2. Describe various works (fine arts or cinematic) by Deaf artists and an understanding of the artists themselves (U.S. and International);
3. Identify major characteristics De'VIA;
4. Explain common themes and motifs in deaf visual arts;
5. Explore art movements and historical events in Deaf history and how they parallel changes within art by Deaf artists;
6. articulate how film, including those produced by Deaf filmmakers, plays a critical role in Deaf culture and in Deaf communities;
7. Analyze deaf-related themes and deaf and hard of hearing characters in film and TV shows from 1900 to present.

ASL 3750

Deaf Cinema

Credit hours: 3

Examines the critical role film plays in Deaf culture and the Deaf community. Uses film as a background to critically think about and address key issues that Deaf people encounter in society. Studies various lenses of Deaf themes and Deaf characters in movies, as well as how Deaf people have been involved with creating movies throughout history and contrasts this with the ways film has been a mold for the ideology and identity of Deaf people. Introduces concepts of film composition and critiquing tools. Taught in ASL. May be delivered hybrid.

Course Learning Outcomes

1. articulate how film plays a critical role in Deaf culture and the Deaf community;
2. Analyze Deaf themes and Deaf characters in movies/TV shows from 1900 to present with critiquing tools;
3. Describe the roles of Deaf actors in movies and TV shows throughout history;
4. Describe how Deaf filmmakers have found ways to create movies throughout history.

ASL 385G

Audism/Linguicism/Oppression GI

Credit hours: 3

Examines oppression in various forms through a comparative study spanning across cultures and communities. Examines the parallels between widely-understood forms of oppression and those specific to the Deaf-World. Fulfills Global/Intercultural graduation requirement.

Course Learning Outcomes

1. Describe how oppression is enacted against various cultures and communities in America.
2. Analyze students' own role in contributing to oppression.
3. Explain strategies to fight oppression and to become allies to oppressed groups.
4. Analyze and evaluate global or intercultural issues.
5. Discuss stereotypical cultural conceptions of Deafness and recognize the complexity and variety of Deafness within different cultural groups.
6. Evaluate how one's own cultural rules and biases compare and contrast with those from different cultures.

ASL 387G

Disability/Audism/Oppression GI

Credit hours: 3

Surveys disability, audism, and oppression in various forms through a comparative study spanning across philosophies, religions, cultures, and communities. Examines parallels between widely-understood forms of oppression and those specific to the Deaf-World. Introduces the field of disability studies and shows where Deaf people exist within this field. Explores historical, social, political, religious, philosophical, and cultural influences that construct categories of disability and deafness. Examines the complex relation between Deaf and disability rights as well as how Deaf persons and persons with disabilities construct their own meanings and identities. Course taught in ASL. Fulfills Global Intercultural graduation requirement. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Explain how society constructs disability and contrasts it with perspectives from disability studies and Deaf studies.
2. Describe the historical, social, political, religious, philosophical and cultural influences on both Deaf and disabled peoples.
3. Apply the principles taught in courses to conduct self-analysis toward understanding societal constructs of disability and of Deaf peoples.
4. Describe how audism and oppression is enacted against various cultures, communities, and peoples.
5. Analyze students' own role in contributing to audism and oppression, both interpersonally and in intercultural forms.
6. Evaluate how one's own cultural values compare with those from different backgrounds.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Analyze global or intercultural issues.

ASL 415R

ASL Conversation IV

Credit hours: 1

Offers intermediate/advanced ASL users opportunities to enhance their proficiency in the target language by focusing on production. Centers on discussions from a selected reading list in 'book club' form. Teaches how to improve authentic pronunciation, reduce errors in authenticity of language structure, generate thought in the target language spontaneously as a substitute for translation, and sharpen comprehension for natural conversational flow. Contrasts with all other upper division ASL courses which are more content based. Facilitates lowering the affective filter when conversing in the target language by increasing the frequency of conversational opportunities. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Demonstrate their ability to express themselves more proficiently using the target language;
2. Show reduced error frequency in the authenticity of their production of the target language;
3. Show reduced error production in the authenticity of language structure in the target language;
4. Demonstrate an increased mastery of lexical items;
5. Demonstrate awareness of the role of culture in language usage;
6. Demonstrate an understanding of the primary arguments set forth in the readings by summarizing them in ASL.

ASL 4330

Visual Linguistic Analysis for Interpreters

Credit hours: 3

Teaches necessary processing skills related to interpreting from Sign to spoken languages including ability to concentrate and analyze visual linguistic and non-manual markers. Analyzes discourse focusing on context, linguistics and culture. Lab required. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Demonstrate an awareness of visual communication issues and non-manual markers related to interpreting.
2. Explain the role of interpreters including knowledge and understanding of ethics.
3. Cognitively process signed communication for meaning in simultaneous and consecutive interpreting.
4. Demonstrate improved ability in interpreting various texts/discourses from ASL to English.

ASL 4375

American Sign Language to English Interpreting

Credit hours: 3

Introduces skills and processes required to produce conceptually accurate and linguistically appropriate voice interpretations of ASL texts. Develops cognitive, semantic, and dual tasking abilities required to interpret spontaneous texts. Teaches and incorporates more advanced semantic choices and negotiation techniques. Works with a variety of audience sizes and types. Teaches how ethics impact behavioral decisions and interpretations. Gives more consideration to developing sets of technical or field-specific signs and applying these to interpretative work. Includes one-hour per week lab.

Course Learning Outcomes

1. Analyze source language for real-time production in the target language.
2. Express messages in the target language using correct production and conceptual accuracy.
3. Describe the impact of physical and psychological factors on the interpreting interaction.
4. Explain the impact of the Code of Ethics on interpreting decisions.
5. Exhibit advanced ability to receive and comprehend signed messages.
6. Expand their lexicon of technical and field-specific terms.

ASL 4382

Applying Interpreting Skills to Coursework--Education

Credit hours: 3

Guides interpreters through skill sets applied to real life classroom lectures, specifically education and other courses offered online through accredited universities. Requires practical application of specific interpreting skills and techniques as well as course preparation and acquisition of course specific knowledge to develop balanced interpreting practices, including both specific applicable skills in interpretation and a broad based liberal arts knowledge to which the skills are applied.

Course Learning Outcomes

1. Use space and classifiers accurately and appropriately to convey meaning
2. Use fingerspelling for appropriate linguistic purposes
3. Apply semantic range appropriately and effectively
4. Deliver the interpretation in a cohesive manner
5. Show a sufficient degree of managing the interpretation process
6. Deliver an overall message equivalent to the source message
7. Deliver an overall message equivalent to the source message
8. Explain the connection between the course content and application of interpreting skill sets

ASL 4383

Applying Interpreting Skills to Coursework--Community

Credit hours: 3

Guides interpreters through skill sets applied to real life classroom lectures and instruction including business, manufacturing and organizational courses offered online through accredited universities. Requires practical application of specific interpreting skills and techniques as well as course preparation and acquisition of course specific knowledge to develop balanced interpreting practices, including both specific applicable skills in interpretation and a broad based liberal arts knowledge to which the skills are applied. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Use space and classifiers accurately and appropriately to convey meaning
2. Use fingerspelling for appropriate linguistic purposes
3. Apply semantic range appropriately and effectively
4. Deliver the interpretation in a cohesive manner
5. Show a sufficient degree of managing the interpretation process
6. Deliver an overall message equivalent to the source message
7. Gain a working, testable knowledge of the base course content
8. Explain the connection between the course content and application of interpreting skill sets

ASL 4384

Applying Interpreting Skills to Coursework/Deaf and Hearing Interpreter Teams

Credit hours: 1

Prepares students to work in Deaf-hearing interpreter teams. Provides practical application of specific interpreting skills and team interpreting techniques as well as interpersonal skills and develops tools for healthy collaborative interpreting teams. Increases 21st-century know-how in face-to-face and video remote interpreting modalities. Designed as last class for senior-level interpreting emphasis students. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Distinguish between the roles and skillsets of Deaf Interpreters and hearing sign language interpreters.
2. Apply varying teaming strategies for Deaf/hearing interpreting teams.
3. Use various technology platforms that support team interpreting.
4. Produce appropriate interpretation as part of a Deaf-hearing interpreting team.
5. Simulate both face to face and remote interpreting situations.

ASL 4390

Professional Issues in Interpreting

Credit hours: 3

Provides students advanced study and skills development in the business and profession of interpreting, decision making while interpreting between Deaf (including Deaf-blind) and hearing populations, and negotiation of the complex and growing field of interpreting. Develops the understanding of the day to day demands of the work needed become truly professional interpreters. Provides extensive individual feedback.

Course Learning Outcomes

1. Explain the professional standards and practices in the field of interpreting.
2. Identify specific information required to make professional and ethical decisions as interpreters.
3. articulate resolutions to issues of interpreting as a business.
4. Analyze issues which may arise specific interpreting environments or when undertaking specific jobs.

ASL 4410

ASL Linguistics

Credit hours: 3

Introduces the linguistic study of ASL, including phonology, morphology, syntax, semantics, and discourse structure. Emphasizes grammatical structures of ASL, including sign formation, pronominalization, identification and analysis of subjects and objects, classifiers, depicting verbs, pluralization, time concepts, and social interaction of language and culture within Deaf communities. Taught in ASL.

Course Learning Outcomes

1. Describe the mechanisms by which American Sign Language utilizes the spatial medium in which it exists to express grammatical relationships.
2. Demonstrate a thorough knowledge of the various linguistic elements in American Sign Language and how those elements interact with one another in the formation of sentences.
3. Describe how mental space theory is applied to the study of American Sign Language.
4. Articulate the various insights into how human minds work that can be gained through a study of the spatial nature of signed languages in general and of American Sign Language in particular.

ASL 4450

Deaf World Discourse

Credit hours: 3

Examines the discourse practices of the Deaf-World. Studies the ways that Deaf people use discursive forms to accomplish specific social aims. Explores the semiotic connections between discursive forms and various Deaf-World identities. Adopts an anthropological bias toward real-world discourse as primary data, and prepares students to do ethnographic fieldwork in the Deaf-World. Taught in ASL.

Course Learning Outcomes

1. Describe the relationships among linguistic forms and their social functions in the Deaf-World.
2. Describe the nature of semiotic relations between social acts and their cultural interpretations.
3. Demonstrate advanced Deaf-World communicative competence skills.
4. Demonstrate the ability to perform ethnographic fieldwork in the Deaf-World.

ASL 4520

Deaf People and Disability Studies

Credit hours: 3

Introduces the field of disability studies and shows where Deaf people fit within this field. Explores the historical, social, political, religious, philosophical, and cultural influences that construct and influence the categories of "disability" and "deafness." Examines the complex relation between Deaf and disability rights groups as well as how Deaf persons and persons with disabilities construct their own meanings and identities. Taught in ASL.

Course Learning Outcomes

1. Explain how American society constructs disability and contrast it with perspectives from disability studies and Deaf studies.
2. Describe the historical, social, political, religious, philosophical, and cultural influences on both Deaf and disabled people.
3. Apply the principles taught in the course to conduct self-analysis toward understanding societal constructs of disability and of Deaf people.
4. Articulate the ways that the study of Deaf people might inform Disability Studies theoretical underpinnings.

ASL 4530

Deaf Peoples of the World

Credit hours: 3

Explores the lives of Deaf people in various places around the world. Considers the extent to which the deaf experience is cross-cultural and to what extent it is unique to specific locations. Explores the lifestyles, educational opportunities, political climate and level of community development of deaf people across the globe. Seeks to illuminate areas of overlap and of difference among the worldviews of various communities.

Course Learning Outcomes

1. Describe the general situation of Deaf persons in a number of countries scattered across all continents;
2. Describe the variation in social constructions of deafness around the world;
3. Describe the educational and employment/subsistence opportunities available in various locales;
4. Discuss the questions that arise from both the variation and overlap among Deaf communities around the world and their implications for a variety of disciplines;
5. articulate the roles of religions and spiritual belief systems on the social constructions of deaf peoples;
6. Discuss the nature of signed languages and the ideologies that affect the promotion of forms that have gained or are gaining recognition of standardized forms.

ASL 4550

Multicultural Deaf Lives

Credit hours: 3

Focuses on cultural issues, values, behaviors, identities and language of Deaf people from diverse backgrounds. Examines autobiographies, documentaries, films, videos, and academic literature to help understand the contributions and historical development of the emerging majority of the Deaf community that is underrepresented in the United States and the world. Taught in ASL. May be delivered online.

Course Learning Outcomes

1. Recall specific facts and trends emphasized in the lectures, discussions, and assigned reading.
2. Interpret historical evidence by observing, inferring, classifying, comparing and contrasting a variety of primary and secondary sources.
3. Evaluate historical, political and socioeconomic evidence to form personal opinions about various social phenomena.
4. Discuss and write about the general topics and issues discussed in class, drawing upon specific facts from the readings to support their arguments.

ASL 4560

Deaf People and the Law

Credit hours: 3

Focuses on the impact of laws and the legal system in the lives of people who are Deaf and the role such laws and the legal system play in the general understanding of Deafness in the United States. Explores in detail the rights of persons who are Deaf in a hearing world. Taught in ASL.

Course Learning Outcomes

1. Define the social constructs of law and Deafness.
2. Demonstrate the skills needed to parse legislative language in order to understand the impact of various specific laws on the Deaf community.
3. articulate effectively the positive and negative legal implications of defining Deafness as a disability or as an ethnic minority.
4. Explain the current laws and policies impacting the Deaf community.
5. Create and articulate possible laws and policies and defend the positive social impact such laws and policies would have on the Deaf community.

ASL 4610

ASL Literature II

Credit hours: 3

Explores the dynamics of ASL literature and its traditions by studying various genres and ASL storytellers/poets. Covers stories with handshape constraints, poetry, and songs. Taught in ASL. May be delivered hybrid and/or online.

Course Learning Outcomes

1. Define various genres of ASL literature;
2. Explain literary stylistics and poetics of signed texts;
3. Define various ASL storytelling techniques;
4. Characterize the cultural context in which works of literature are produced and received;
5. Produce and perform different genres in ASL literature.

ASL 4620

American Sign Language Literature

Credit hours: 3

Explores the dynamics of ASL literature and its traditions by studying various genres and ASL storytellers and poets. Uses the similarities and differences in the development of traditional oral literature in other cultures to ASL literature as a tool in discussions and critiques. Covers general narratives and the unique aspects and techniques of telling stories in sign language. Teaches how to critique and to produce ASL literature. Taught in ASL. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Define various genres of ASL literature;
2. Explain literary stylistics and poetics of signed texts;
3. Define various ASL storytelling techniques;
4. Characterize the cultural context in which works of literature are produced and received;
5. Perform different genres in ASL literature;
6. Analyze ASL literary works from various genres.

ASL 4700

Issues in Deaf Culture Studies

Credit hours: 3

Explores advanced concepts relative to American Deaf culture, including cultural conflicts, tensions, and contradictions. Provides a comprehensive study of the Deaf-World through analysis of historical events, current issues, writing, and the expressions of Deaf people themselves. Taught in ASL. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Examine the role of culture in the most commonly-contested constructions of deafness and of Deaf people.
2. Differentiate how changing cultural forces in American history have affected Deaf people and the ways hearing people conceive of them.
3. Explain how various technologies related to "voice" have affected the lives of Deaf people.
4. Analyze the semiotic relationships among culture, language, and the balance of power both in the Deaf-World and between the hearing and Deaf-Worlds.
5. Compose carefully-crafted written critiques of academic articles related to the field.

ASL 4800

Recent Trends in Deaf Studies Theory WE

Credit hours: 3

Explores recent trends in American Deaf culture, including cultural conflicts, tensions, and solutions. Provides a comprehensive study of theories used, including Deaf Gain, in Deaf Studies through analysis of current issues, writings and other media publications, and the expressions of Deaf people themselves. Taught in ASL. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Identify the role of culture in the most commonly-contested constructions of deafness and of Deaf people.
2. Explain how emergent Deaf theories, including Deaf Gain, have affected the lives of Deaf and hearing people.
3. Interpret the semiotic relationships among culture, language, and the balance of power both in the Deaf-World and between the hearing and Deaf-Worlds.
4. Compose carefully-crafted written critiques of academic articles related to the field.
5. Produce digital media arguments supported by recent trends in Deaf Studies theories.

ASL 481R

Interpreting Practicum

Credit hours: 1 to 2

Provides students real-world, closely-supervised work experiences in positions directly related to their interpreting studies. Includes a theoretical component such as, but not limited to, papers, projects, completion of reading assignments, tests, journaling, field studies. Is designed to be taken just prior to graduation. May be repeated for a maximum of 2 credits toward graduation. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Observe a certified interpreter and/or ASL user advocacy professional using American Sign Language for the purposes of interpreting or advocating for Deaf/signing communities;
2. Distinguish between the roles of an ASL language user, language teacher, interpreter, and community/educational advocate;
3. Use interpersonal and cross-cultural communication skills to mediate interactions between Deaf and hearing non-ASL users;
4. Use ASL and English to interpret for and/or advocate for Deaf and Signing Communities in real life settings under the supervision of an approved professional.

ASL 4890

Deaf Studies Senior Capstone

Credit hours: 3

Engages students in a synthesis and critical review of what they have learned through coursework. Produces a project or thesis reflecting students' knowledge and passionate interests developed in the course of their study as a Deaf Studies major. Taught in ASL.

Course Learning Outcomes

1. Demonstrate comprehensive knowledge of how various elements of Deaf Studies interact.
2. articulate theoretical basis for their projects.
3. Demonstrate effective research practices appropriate to their chosen project.
4. articulate how their course of study as a Deaf Studies major has prepared them for further academic work and/or professional careers.
5. Produce a substantial research-based thesis or project related to Deaf studies, drawing on original research from multiple sources.

ASTR 1040

Elementary Astronomy PP

Credit hours: 3

Introduces astronomy and cosmology. Provides a physics-based overview of the solar system, the lives and deaths of stars, galaxies, and the evolution of the Universe. Explores the basic principles of physics and light, the tools of astronomy, and interesting concepts such as the Big Bang and black holes. Canvas Course Mats \$77/Pearson applies

Course Learning Outcomes

1. Describe the basic motion of the sky and celestial bodies.
2. State the general properties of the planets, moons, and minor solar system bodies.
3. Discuss the various stages of the birth, life, and death of stars.
4. Explain the theory for the origin of galaxies and our Universe.

AUT 1110

Brake Systems

Credit hours: 2

For automotive majors and other interested community members. Covers the principles of automotive braking including hydraulic theory, diagnosis, and service of brake systems. Studies drum, disc, and power units. Includes wheel bearing adjustments, packing, and troubleshooting. Discusses tire construction including both lateral and radial run out and wheel balancing techniques. Software fee of \$10 applies Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Describe component parts of vehicles hydraulic brake system. Define terms relating to brake system; kinetic friction, static friction, coefficient of friction. Define Pascal law on hydraulic fluid with characteristics of brake fluid. Describe design of single piston master cylinder and dual piston cylinder with diagnoses and service. Illustrate and describe operation of stop light switch, pressure differential safety valve, metering valve, proportional valve, quick take up valve.
2. Discuss hoses, lines with double flare, and IOS types. Illustrate and describe pressure bleed system and manual bleed. Define drum brake mechanisms with the types of parking brake controls and adjustments. Describe brake drum performance problems related to pedal pulsation, pull, grab, squeal, pedal travel, and feel.
3. Define removing of brake drums, inspection, and use of diameter gauge. Explain how to diagnose normal, abnormal brake wear, remove shoes, service wheel cylinder, grind brake shoe. Discuss asbestos dangers and control. Illustrate types of disc brake floating caliper arrangements. Show and explain brake lathe operation.
4. Understand performance problems related to vibration pull, squeal, noise, excessive pedal effort, pedal travel, and feel. Discuss caliper service, and how to torque wheels correctly. Define anti-skid brake systems. ABS systems with electronic diagnosis. Describe power brake assist types and operational stages. Diagnose power units both vacuum assist and power hydro boost.
5. Define bearing for front wheel roller, ball, and diagnose trouble failure. Illustrate lubricant types for best front wheel life. Illustrate torque specification of front hubs.
6. Discuss tire construction, tire and rim sizer, and load capacity rating. Discuss abnormal tire wear patterns on bias and radial tires.
7. Describe types of wheel balance radial and lateral run out. Illustrate and describe static and dynamic balance.
8. Discussions on brake asbestos safety.

AUT 111L

Brake Systems Lab

Credit hours: 1

Provides hands on brake systems instruction, including drum, disc, and power units. Includes wheel bearing adjustments, packing, and troubleshooting. Labs include tire construction, both lateral and radial run out and wheel balancing techniques. Tool room fee of \$19 for equipment applies. Course Lab fee of \$17 for computers applies.

Course Learning Outcomes

1. Diagnose and troubleshoot hydraulic systems used in braking systems
2. Diagnose and properly repair brake lines
3. Diagnose and properly turn brake drums and rotors as well as check for run-out according to manufacturers specifications
4. Diagnose and rebuild disc brake calipers, drum brake wheel cylinders and master cylinders
5. Pack and adjust wheel bearings, remove and install ABS system components
6. Check tire construction and and wear abnormalities according to manufacturers specifications
7. Balance wheel by applying road force

AUT 1120

Manual Power Trains

Credit hours: 2

For automotive majors and other interested community members. Designed to develop skills and knowledge in the area of manual transmission/transaxles and driveline components. Covers the function, construction, operation, inspection, troubleshooting and servicing of front, rear, and four-wheel drive power transmission devices used in passenger cars and light trucks. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Identify power train components and function.
2. Define clutch service with operation of the clutch, adjustment, repair and diagnosis of problems.
3. Perform drive shaft and axle service with operation repair and troubleshooting.
4. Perform differential operation and service including conventional differentials and limited slip differential repair.
5. Define basic gear theory, torque, and speed manipulation and horsepower.
6. Illustrate and discuss manual transmission service and operation, including 3 speed, 4 speed, and 5 speed. Emphasis on manual transmission troubleshooting.
7. Define overdrive operation and service also discuss four wheel drive service including transfer cases, front driving axles, and locking devices.

AUT 112L

Manual Power Trains Lab

Credit hours: 1

Define diagnosis and repair of manual transmissions including transaxles, differentials, drive shafts, and four wheel drive components. Operation of clutches with torque and gear application. Tool room fee of \$19 for equipment applies. Course Lab fee of \$16 for materials applies.

Course Learning Outcomes

1. Define power train components and function
2. Check clutch showing operation of the clutch, and adjustment
3. Be able to check drive shaft and axle operation
4. Be able to check differential showing backlash
5. Check limited slip differential repair with hands-on experience
6. Define basic gear theory, torque, including 3 speed, 4 speed, and 5 speed systems
7. Check overdrive transmissions also check four wheel drive units including axles

AUT 1130

Engine Repair

Credit hours: 2

Offers an in-depth study of design, operation, troubleshooting, and service procedures for modern gasoline and diesel engines. Presents procedures for disassembly and reassembly of engine units, service, and technical data. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Identify various types of engines and name their components.
2. Explain the basic principles of the internal combustion engine.
3. Demonstrate use of various measurements devices and their application.
4. Recognize bad or worn components of an engine.
5. Use basic math formulas to calculate such things as engine, CID, Liters, Horse Power, etc
6. Properly disassemble and reassemble an engine and maintain an organized area.
7. Use specification and procedure manual to assist in engine overhauling.

AUT 113L

Engine Repair Lab

Credit hours: 1

Provides a laboratory experience enhanced by following the Engine Repair ASE task list. Emphasizes demonstrations, observations and hands-on participation. Utilizes actual vehicle systems of major manufactures to supplement training. Tool room fee of \$19 for equipment applies. Course Lab fee of \$17 for materials applies.

Course Learning Outcomes

1. Identify various types of engines and name their components
2. Demonstrate use of various measurements devices and their application
3. Recognize bad or worn components of an engine. Machine work must be understood with honing and reaming of parts
4. Properly disassemble and reassemble an engine and maintain an organized area
5. Use specification and procedure manual to assist in engine overhauling
6. A second engine must be disassemble and reassemble
7. Identify cooling and lubricating system and testing of each

AUT 1160

Automotive Electrical Systems

Credit hours: 2

Studies electrical and electronic fundamentals found and used on current model automobiles and trucks. Topics of study are: electricity, Ohm's Law, magnetism, inductance, capacitance, electronic devices, schematic user's information, test procedures, test equipment, and batteries.

Course Learning Outcomes

Please see the department for information.

AUT 116L

Automotive Electrical Systems Lab

Credit hours: 1

Studies electrical and electronic fundamentals found and used on current model automobiles and trucks. Topics of study are: electricity, Ohm's Law, magnetism, inductance, capacitance, electronic devices, schematic user's information, test procedures, test equipment, and batteries. Lab exercises are correlated with the Automotive Service Excellence (ASE) P1 task list. Lab work will include activities on lab circuitry and live vehicles. Tool room fee of \$19 for equipment applies. Course Lab fee of \$17 for materials applies.

Course Learning Outcomes

1. Use electrical test equipment to measure Voltage, Amperage, Resistance, Inductance, and Capacitance as found in series circuits, parallel circuits, and series parallel circuits.
2. Properly build simple and complex series circuits using DC and AC power sources.
3. Properly build simple and complex parallel circuits using DC and AC power sources.
4. Properly build simple and complex series-parallel circuits using DC and AC power sources.
5. Properly build and use circuits using electromagnetism.
6. Properly build and use circuits using inductance.
7. Properly build and use circuits using capacitance.
8. Correctly read and interpret Electrical Wiring Diagrams used by the major automotive manufacturers and suppliers.
9. Discuss and implement service learning in the application of this with students.

AUT 1170

Engine Electrical Systems

Credit hours: 2

Studies the function, construction, operation, testing, diagnosis and servicing of automotive ignition systems, starting, charging/generator systems and battery testing using a variety of diagnostic test equipment.

Course Learning Outcomes

1. Identify the major components of the ignition system
2. Select the proper tool needed to test the battery in the automobile
3. Assemble a starter motor for an engine in most automobiles
4. Select the proper tool needed to diagnose an ignition system

AUT 117L

Engine Electrical Systems Lab

Credit hours: 1

Studies the function, construction, operation, testing, diagnosis and servicing of automotive ignition systems, starting, charging systems and battery testing using a variety of diagnostic test equipment. Proper use of diagnostic test equipment in the lab and on vehicle systems will be stressed. Tool room fee of \$19 for equipment applies. Course Lab fee of \$17 for materials applies.

Course Learning Outcomes

1. Describe, discuss, and diagnose vehicle ignition systems.
2. Describe, discuss, and diagnose vehicle starting systems.
3. Describe, discuss, and diagnose vehicle charging systems.
4. Describe, discuss, and diagnose vehicle batteries.
5. Define and discuss the operation, function, construction, testing, diagnosis and servicing of automotive electrical systems.
6. Demonstrate ethical methods of vehicle service and repair.
7. Discuss the future of vehicle starting, charging, and ignition systems while demonstrating service learning.
8. Demonstrate the proper use and operation of electrical diagnostic equipment.

AUT 1210

Suspension and Steering Systems

Credit hours: 2

Discusses nomenclature, theory of operation, and service procedures for passenger car and light-truck suspensions and computer controlled power steering systems. Includes instruction in two-wheel and four-wheel electronic systems. Presents methods of alignment including computerized alignment and service tools. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

Please see the department for information.

AUT 121L

Suspension and Steering Systems Lab

Credit hours: 1

Provides a laboratory experience enhanced by following the Suspension and Steering ASE task list. Emphasizes demonstrations, observations and hands-on participation. Utilizes actual vehicle systems of major manufactures to supplement training. Tool room fee of \$19 for equipment applies. Course Lab fee of \$17 for materials applies.

Course Learning Outcomes

Please see the department for information.

AUT 1220

Automatic Powertrain Systems

Credit hours: 2

Includes the operation, diagnosis, repair, and adjustment of automatic transmissions and transaxles. Covers planetary gearing, strategies for operation, and service procedures of passenger car, SUVs and light-trucks. Software fee of \$10 for applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Describe automatic transmission components and function
2. Describe various planetary gearset operations
3. Explain the function and operation of transmission devices
4. Analyze automatic transmission operation, service, and diagnosis of modern automatic transmissions and transaxles
5. Describe torque converter operation and diagnosis

AUT 122L

Automatic Transmissions and Transaxles Lab

Credit hours: 1

Provides a laboratory experience enhanced by following the Automatic Transmissions and Transaxles ASE task list. Emphasizes demonstrations, observations and hands-on participation. Utilizes actual vehicle systems of major manufactures to supplement training. Tool room fee of \$19 for equipment applies. Course Lab fee of \$19 for materials applies.

Course Learning Outcomes

1. Describe and show transmission hydraulic powerflow
2. Describe and show transmission mechanical powerflow
3. Describe and show transmission electrical control circuits
4. Describe and show transmission hydraulic control circuits
5. Describe and demonstrate proper diagnosis techniques for transmissions and transaxles
6. Properly operate a rebuilt automatic transmission on the transmission dynamometer
7. Demonstrate proper procedures to remove and reinstall an automatic transmission / transaxle
8. Describe and perform proper rebuild procedures of automatic transmission / transaxle

AUT 1230

Engine Performance

Credit hours: 2

Studies electrical and fuel systems fundamentals found on passenger cars, light-trucks, and marine applications of theory, operation, and construction. Includes solid state electronic ignition systems. Teaches tune-up including diagnosis and troubleshooting. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Identify various types of engines and name their components. Engine designs;
2. Explain the basic principles of the internal combustion engine;
3. Demonstrate use of various testing equipment and their applications. Diagnose bad or misadjusted components of an engine relation to engine performance;
4. Diagnose bad or misadjusted components of an engine relation to engine performance. Use basic math formulas to calculate such things as engine, CID, Liters, Horse Power, etc.. Properly disassemble and reassemble distributors and maintain an organized area;
5. Use specification and procedure manual to assist in ignition systems engine tune-up and diagnosis. Test and repair distributors, and other related components. Define electronic ignition systems both DI and EI. Importance of Intake and exhaust manifolds;
6. Examine fuel systems CCC and electronic fuel injection units. Computer controls with input sensors and outputs or activators;
7. Define OBDI and OBDII readiness systems and emission control systems to meet EPA standards.

AUT 123L

Engine Performance Lab

Credit hours: 1

Provides a laboratory experience enhanced by following the Engine Performance ASE task list. Emphasizes demonstrations, observations and hands-on participation. Utilizes actual vehicle systems of major manufactures to supplement training. Tool room fee of \$19 for equipment applies. Course Lab fee of \$17 for materials applies.

Course Learning Outcomes

1. Perform Secondary ignition System diagnosis and repair
2. Perform Ignition coils, plugs and wires testing
3. Correctly operate various engine analyzing equipment
4. Properly test the operation and function of computer control sensing and actuator devices
5. Correctly test a fuel injection system
6. Properly test vehicle emission control devices for operation
7. Properly use computer control test equipment for OBD-I and OBD-II systems

AUT 1260

Tech Math for Mechanics

Credit hours: 3

For students in Automotive, Collision Repair, and Diesel Mechanics technology majors. Covers principles of math as required by the industry. Studies pressures, measuring engine and horsepower output, hydraulics, torque, and electrical flow. Includes solving equations in percent, proportion, variation, formula rearrangement, function and graphs with right and oblique triangles. Successful completers should be able to solve problems on the job using technical and mathematical data.

Course Learning Outcomes

Please see the department for information.

AUT 2110

Advanced Steering Suspension and Alignment

Credit hours: 2

Discusses advanced theory of two-wheel and four-wheel alignment. Studies nomenclature, theory of operation and service procedures for mechanical, electronic, and electrical parts of automotive steering and suspension systems. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. describe the process to complete a two-wheel and a four-wheel alignment.
2. demonstrate an understanding of the nomenclature of steering and suspension systems.
3. demonstrate an understanding of the theory of operation for steering and suspension systems.
4. demonstrate an understanding of the theory of operation of steer-by-wire systems.
5. demonstrate an understanding of the theory of diagnosing and correcting steering and suspension concerns.
6. demonstrate an understanding of the theory of diagnosing and correcting electronic steering and suspension concerns.
7. identify current trends and future directions of steering and suspension systems.

AUT 211L

Automotive Service Practicum Steering/Suspension/Alignment Lab

Credit hours: 1

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Steering/Suspension.

Course Learning Outcomes

1. Operate diagnostic test equipment to resolve steering and suspension issues.
2. Repair steering and suspension issues.
3. Follow proper safety procedures while repairing vehicles.
4. Complete service work orders.
5. Gain experience repairing steering and suspension issues similar to a dealership/independent service facility.
6. Apply service learning concepts to their service experiences.
7. Demonstrate ethical behaviors in dealing with customers and fellow classmates.

AUT 2120

Advanced Engine Performance

Credit hours: 2

Includes advanced instruction in engine performance, indicator circuits and On-Board Diagnostics II (OBD-II). Discusses mechanical and electronic parts of the vehicle relative to quality engine tune-up and diagnostic instruction. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Identify components needed for tune-ups of modern automobiles
2. Use diagnostic oscilloscope patterns to access the proper operation of sensor inputs and outputs
3. Identify diagnostic scan tool techniques as they relate to quality tune-ups
4. Describe computer sensor and actuator operation in automotive engine performance systems
5. Use electronic wiring diagrams to diagnose and troubleshoot engine performance issues

AUT 212L

Automotive Service Practicum Engine Performance Lab

Credit hours: 1

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Covers tasks related to engine performance.

Course Learning Outcomes

1. Operate diagnostic test equipment to complete an automotive tuneup.
2. Complete an automotive tuneup.
3. Follow proper safety procedures while completing a tuneup.
4. Properly complete service work orders.
5. Gain experience similar to a dealership/independent service for completing automotive tuneups.
6. Apply service learning concepts to their service experiences.
7. Demonstrate ethical behaviors in dealing with customers and fellow classmates.

AUT 2130

Advanced Emission Control Systems

Credit hours: 2

Studies emissions control systems on vehicles. Reviews county emissions certification requirements. Emphasizes the pre and post testing of the different emission systems and the control of the systems as they apply to different types of fuel systems. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Discuss the codes retrieved using diagnostic computer scanning equipment.
2. Define the operation of emission control devices used by computerized engine control systems.
3. Understand the need for emission control systems.
4. Complete the training requirements to waive the Utah County Emissions testing license pretest.
5. Understand the process of completing an OBD-II drive cycle.
6. Define and discuss the OBD-II monitors.
7. Understand the exhaust emissions output by vehicles including the cause and remedy.
8. Discuss the future implications of emission controls on vehicles.

AUT 213L

Automotive Service Practicum Emission Controls Lab

Credit hours: 1

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Emission Control Systems.

Course Learning Outcomes

1. Operate diagnostic test equipment to diagnose emission control systems.
2. Complete emission control system testing.
3. Follow proper safety procedures while testing emission control systems.
4. Properly complete service work orders.
5. Gain experience similar to a dealership/independent service facility testing emission control systems.
6. Apply service learning concepts to their service experiences.
7. Demonstrate ethical behaviors in dealing with customers and fellow classmates.

AUT 2140

Chassis Electrical and Electronics Systems

Credit hours: 2

Studies theory, diagnosis, and repair of chassis electrical and electronic systems. Includes the study of lighting systems, electronic dash circuits, inflatable restraint systems, electronic cruise control systems and other accessories found on vehicles.

Course Learning Outcomes

1. Demonstrate proper use of electrical wiring diagrams (EWD)
2. Evaluate EWDs to trace electrical flow within system circuits
3. Compare various diagnosis tools in electrical diagnosis
4. Analyze tune-up data in circuit diagnosis
5. Trace electrical flow through circuit wiring diagrams

AUT 214L

Automotive Service Practicum Chassis Electrical and Electronics Lab

Credit hours: 1

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Chassis Electrical.

Course Learning Outcomes

1. Demonstrate proper use of electrical wiring diagrams (EWD).
2. Follow proper safety procedures while diagnosing electrical systems.
3. Trace electrical flow through circuits.
4. Gain experience similar to a dealership/independent service facility diagnosing electrical systems.
5. Apply service learning concepts to their service experiences.
6. Demonstrate ethical behaviors in dealing with customers and fellow classmates.

AUT 2210

Advanced Braking and Control Systems

Credit hours: 2

Covers diagnosis and repair of electronic controlled braking systems; including anti-lock brakes, traction control systems, stability control systems and other control systems found on modern vehicles. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Explain advances and innovations on braking technology
2. Describe computer controlled braking systems
3. Explain manufacturer differences in braking systems
4. Retrieve diagnostic information for use in assessing brake system condition
5. Use computer control sensor inputs and actuator outputs to verify proper brake system operation
6. Diagnose and repair advanced braking systems
7. Explore current manufacturer trends in advanced regenerative braking systems

AUT 221L

Automotive Service Practicum Brake Systems Lab

Credit hours: 1

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Brake, Anti-Lock and Traction Control Systems.

Course Learning Outcomes

1. Operate diagnostic test equipment to diagnose braking systems.
2. Repair braking systems.
3. Follow proper safety procedures while repairing braking systems.
4. Properly complete service work orders.
5. Gain experience similar to a dealership/independent service facility repairing braking systems.
6. Apply service learning concepts to their service experiences.
7. Demonstrate ethical behaviors in dealing with customers and fellow classmates.

AUT 2220

Automatic Transmissions and Electronic Controls

Credit hours: 2

Includes advanced instruction in rear-wheel drive and transaxle automatic transmissions for passenger cars and trucks (light-duty and medium-duty). Studies computerized transmission controls for shifting and torque converter operation. Stresses service, diagnosis and troubleshooting using electronic test equipment. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Describe the operation of electronic controls in transmissions
2. Define the operation of the electronic actuators and sensors found in electronic controlled transmissions
3. Explain the diagnosis process for electronic controlled transmissions
4. Use OBD-II trouble codes in diagnosing electronic controlled transmissions
5. Explain the operation of Continuously Variable Transmissions (CVT) in the automotive industry
6. Explore manufacturer trends regarding the future of transmission technology in the automotive industry

AUT 222L

Automotive Service Practicum Transmission Controls Lab

Credit hours: 1

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Transmission Controls.

Course Learning Outcomes

1. Operate diagnostic test equipment to diagnose transmission systems.
2. Repair transmission systems.
3. Follow proper safety procedures while repairing transmission systems.
4. Properly complete service work orders.
5. Gain experience similar to a dealership/independent service facility transmission systems.
6. Apply service learning concepts to their service experiences.
7. Demonstrate ethical behaviors in dealing with customers and fellow classmates.

AUT 2240

Heating Ventilation Air Conditioning and Refrigeration Theory

Credit hours: 2

Offers an In-depth study of automotive heating, ventilation, air conditioning (A/C), and refrigeration systems. Includes theory of operation, diagnosis and repair of HVACR systems. Environmental safety issues are stressed including laws and regulations, CFC recovery and recycling, ozone depletion, and new, environmentally friendly, systems. Computerized automatic temperature controlled systems are also covered. Stresses service, diagnosis and troubleshooting using electronic test equipment. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Define the heating systems.
2. Define the ventilation systems.
3. Define the air conditioning systems.
4. Define refrigeration systems.
5. Discuss the implications of CFCs, HFCs and HCFCs related to the atmosphere.
6. Define the implications of section 609 of the Clean Air Act relative to recovery and recycling of refrigerants.
7. Define the automatic temperature control (ATC) systems.
8. Discuss the implications of service learning and ethics in servicing mobile A/C systems.
9. Discuss the future of mobile air conditioning systems.

AUT 224L

Automotive HVAC Lab

Credit hours: 1

This course provides a laboratory experience for Heating, Ventilation, and Air Conditioning lecture (AUT 2240). Studies and provides experience with R12 and 134a refrigerants, environmental issues, retrofit assemblies, evacuation and charging AC systems, and problem solving of AC systems. Course Lab fee of \$17 for materials applies.

Course Learning Outcomes

1. Identify different types of refrigerants
2. Install a retrofit Kit
3. Evacuate and charge an Air Conditioning system as it relates to automotive application
4. Read automotive flow charts and schematics
5. Understand and repair ventilation systems
6. Analyze, diagnose, and repair a variety of HVAC system failures as it applies to automotive applications
7. Understand and display safe working habits with HVAC tools and equipment, and environment issues

AUT 225L

Automotive Service Practicum Fuel Management Systems Lab

Credit hours: 1

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Advanced Engine Performance and Fuel Management Systems.

Course Learning Outcomes

1. Operate diagnostic test equipment to diagnose fuel management systems.
2. Repair fuel management systems.
3. Follow proper safety procedures while repairing fuel management systems.
4. Properly complete service work orders.
5. Gain experience similar to a dealership/independent service facility repairing fuel management systems.
6. Apply service learning concepts to their service experiences.
7. Demonstrate ethical behaviors in dealing with customers and fellow classmates.

AUT 285R

Cooperative Correlated Class

Credit hours: 1

Designed for Automotive Technology majors. Identifies on-the-job problems and provides remediation of those problems through in-class discussion and study. Includes the study of identifying and maximizing service opportunities. Students register for this class with approval of the Coop coordinator. Included lecture, guest speakers, video tapes, role playing, case analysis, oral presentations, and written assignments. Completers should be better able to perform in their field of work or study. May be repeated as desired for interest.

Course Learning Outcomes

Please see the department for information.

AUTS 250G

Understanding the Autism Spectrum GI

Credit hours: 3

Discusses autism beginning with the history of the diagnostic category and moving through contemporary issues of etiology, neurobiology, prevalence, assessment, treatment, education, policy, and community impact and inclusion. Emphasizes principles of interdisciplinary care, cultural competence, family centered approaches, and life course perspective.

Course Learning Outcomes

1. Identify historical and contemporary theories of the etiology, neurobiology, and prevalence of Autism Spectrum Disorders
2. Identify current best practices in assessment, treatment, and education of individuals with Autism Spectrum Disorders
3. articulate how autism impacts individuals, families, and communities
4. Analyze global or intercultural issues
5. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups
6. Evaluate how one's own cultural values compare with those from different backgrounds
7. Interrelate respectfully with individuals representing cultures and perspectives other than one's own

AUTS 3810

Autism Across the Lifespan I Infants and Children

Credit hours: 3

Examines key issues related to infants and children who are diagnosed with an autism spectrum disorder and the impact on family and communities. Emphasizes principles of interdisciplinary care, cultural competence, family-centered approaches, and life course perspective.

Course Learning Outcomes

1. Identify early warning signs of autism and best practice screening recommendations.
2. articulate the three core areas of challenges for infants and children with autism spectrum disorders.
3. Identify appropriate assessments for developing treatment plans for young children.
4. Identify successful educational strategies for toddlers and children with autism spectrum disorders.
5. Analyze global or intercultural issues.
6. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
7. Evaluate how one's own cultural values compare with those from different backgrounds.
8. Interrelate respectfully with individuals representing cultures and perspectives other than one's own.

AUTS 382G

Autism across the Lifespan II Teens and Adults GI

Credit hours: 3

Examines key issues related to teens and adults diagnosed with an Autism Spectrum Disorder and the impact on family and communities. Emphasizes principles of interdisciplinary care, cultural competence, family-centered approaches, and life course perspective.

Course Learning Outcomes

1. articulate the three core areas of challenge for teens and adults with Autism Spectrum Disorder.
2. Identify appropriate behavioral assessment tools and intervention techniques for Secondary and Higher education.
3. articulate appropriate teaching strategies to support critical skills for transition to adulthood.
4. Analyze global or intercultural issues.
5. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
6. Evaluate how one's own cultural values compare with those from different backgrounds.

AUTS 3850

Autism Assessment and Treatment

Credit hours: 3

Examines best practices in the assessment and treatment of language, adaptive skills, and educational levels. Focuses on the current standards in diagnosing autism. Provides practice opportunities of evidence-based autism treatments.

Course Learning Outcomes

1. Identify best practices in assessment and treatment of challenging behavior Autism Spectrum Disorder
2. articulate ethical considerations in assessment and treatment planning for challenging behavior
3. Identify key components of a positive approach to building skills to support independence and quality of life
4. Demonstrate the process of linking assessment results with intervention plan components

AUTS 4650

Autism and Applied Behavior Analysis

Credit hours: 3

Describes the scientific principles of applied behavior analysis and how they relate to autism intervention. Discusses principles of single case designs, antecedents, reinforcement, consequences, and behavior modification.

Course Learning Outcomes

1. Identify key principles of learning and behavior
2. articulate the application of behavior principles in understanding learning and behavior in Autism Spectrum Disorder
3. Differentiate the implementation of behavioral principles across settings
4. Evaluate individual case study procedures, manipulation of variables, and single-subject research designs
5. Identify the steps in the evidence-based practice process

AUTS 481R

Field Placement

Credit hours: 1 to 3

Provides a generalist base for practice that involves an on-site, supervised field agency practicum. Makes connections between classroom learning and learning that takes place in the on-site field practicum. Supports supervised practice hours in a local agency setting. May be repeated for a maximum of 3 credits toward graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Demonstrate critical thinking and problem-solving skills.
2. Apply culturally-competent services to diverse learners within the values and ethics of the field.
3. Demonstrate professionalism during the internship.
4. Demonstrate the ability to communicate effectively with relevant team members to support learner success.

AUTS 482R

Group Autism Seminar

Credit hours: 1

Provides a generalist base for autism practice in a weekly seminar. Integrates classroom learning with learning that takes place in the on-site field practicum. May be repeated for a maximum of 3 credits toward graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Demonstrate competency in the Behavior Analyst Certification Board (BACB) Fifth Edition Task List.
2. Identify gaps in service delivery systems and the ability to advocate for programs and policies to meet unmet needs.
3. Identify evidence-based strategies for training and performance management.
4. Use research findings to guide intervention and treatment strategies that conform with regulatory and licensing requirements.

AVSC 1010

Survey of Aviation Science

Credit hours: 3

Designed for all students interested in aviation careers. Includes a general knowledge of aviation, historical events, and aerospace studies/ development opportunities. Covers aviation and aerospace terminology, how aircraft and spacecraft fly, research and development of future systems, government and industry roles in the growth of aviation. Provides entering students with a first year experience covering critical thinking, time and financial management and collaboration as well as aviation career prospects.

Course Learning Outcomes

1. Discuss significant historical aviation events in chronological order regarding the progress of aviation.
2. Identify aviation applications including aerospace technology and terminology.
3. Identify the structures of aircraft and spacecraft.
4. Explain the physics/ principles of flight, including how Bernoulli's principle of pressure/ fluid motion and Newton's third law of motion are used to develop lift.
5. Explain aircraft and spacecraft stability and flight control operations.
6. Demonstrate how aviation regulations and laws are developed and administered.
7. Identify basic weather patterns, use Boyle's law of temperature and pressure to determine weather conditions and their effect on flight operations.
8. Identify physiological conditions that effect human the human body in flight and know the recommended procedures for dealing with these conditions.
9. Investigate aviation/aerospace career opportunities and associated skills required in preparation for aviation employment.

AVSC 1100

Ground I - Private

Credit hours: 3

Introduces the entry-level student to the airplane as they prepare for flight training. Stresses airport systems, air traffic control procedures, aviation weather, air navigation, radio communication procedures, and Federal Aviation Regulations. Prepares students for the required FAA Private Pilot Airplane Knowledge Test.

Course Learning Outcomes

1. Explain the aerodynamic principles of flight that affect aircraft operation.
2. Apply knowledge of airports, airspace, radio communication, air traffic control and radar services to private pilot level aircraft operations.
3. Analyze aircraft components and systems, performance and weight and balance.
4. Apply knowledge of meteorology, weather reports, forecasts, and charts to the planning and conduct of flight operations.
5. Explain Federal Aviation Regulations as they apply to private pilot operations.
6. Apply knowledge of pilotage, dead reckoning, and radio navigation in conjunction with the aeronautical charts, plotters, flight computers, and flight publications necessary for cross-country flight.
7. Describe the physiological factors which can affect both pilots and passengers during flight.
8. Evaluate all flight data during the pre-flight and in-flight decision-making process.

AVSC 1110

Flight I - Private

Credit hours: 3

Covers airplane ground and flight operations, take-off and landing, basic flight maneuvers, cross country methods and emergency procedures. Prepares students for the required FAA Private Pilot Airplane Practical Test. May be delivered online. Course fee of \$19,944 for flight applies.

Course Learning Outcomes

1. Explain the components, systems, and limitations of the training aircraft utilized.
2. Establish and maintain specific flight attitudes.
3. Demonstrate single pilot mastery of the aircraft including proficiency in takeoffs, landings, stalls, and other maneuvers in accordance with Airman Certification Standards.
4. Demonstrate understanding of the importance of proper preflight preparation, including analyzing weather information, performance, weight & balance, airworthiness and personal minimums.
5. Exhibit proficiency in planning and conducting safe cross-country flights using pilotage, dead reckoning, and radio navigation in the national airspace system.

AVSC 1240

Ground II - Instrument

Credit hours: 3

Examines FAA regulations, meteorology, navigation, radio procedures, instrument departures, en route and approach procedures, the instrument airway, and airspace systems as well as aircraft systems operation. Introduces glass cockpit instrumentation. Covers basic flight instrument construction and operation. Prepares pilots for the required FAA Instrument Pilot Airplane Knowledge Test.

Course Learning Outcomes

1. Explain the principles of instrument flight, including the operation, use and limitations of flight instruments and navigation using GPS, VOR, DME, and ADF.
2. Explain the instrument air traffic control system and its functions for controlling aircraft during instrument flight training and IMC flight operations.
3. Utilize instrument flight charts for IFR flight planning including becoming familiar with FAR's applicable to instrument flight operations.
4. Explain how to execute various IFR departure, and approach procedures including enroute, and arrival operations under IMC conditions.
5. Analyze weather information, conditions, and trends while on the ground and in flight, including producing accurate IFR flight plans.
6. Explain emergency procedures to gain insight into the psychological factors affecting the pilot decision making process.

AVSC 1250

Flight II - Instrument II

Credit hours: 3

Stresses attitude instrument flying techniques. Covers instrument departure and approach procedures and instrument en route and cross-country navigation techniques in actual or simulated weather conditions with reference solely to the flight instruments. Prepares students for the required FAA Instrument Airplane Practical Test. Course fee of \$19,053 for flight applies.

Course Learning Outcomes

1. Demonstrate precise aircraft control techniques by reference to instruments.
2. Execute safe and effective instrument flight rules (IFR) operations including departure and approach procedures, missed approaches and holding patterns.
3. Implement cross-country planning procedures.
4. Interpret instrument flight charts for IFR flight planning and operations.
5. Demonstrate knowledge, skill, and risk management techniques required by the Federal Aviation Administration's Airman Certification Standards.

AVSC 2070

Communications for Aviation Professionals WE

Credit hours: 3

Teaches the skills necessary to effectively communicate with a variety of aviation stakeholders and professionals. Examines principles of written and verbal communication. Covers the planning, organizing and delivery of positive and negative messages. Teaches effective interpersonal and listening skills as well as techniques for adapting the message to the audience. Includes the effective development and delivery of computer-aided presentations. Explores the hazards and impacts of miscommunication on aviation safety.

Course Learning Outcomes

1. Compose written communication to include reports, electronic media and presentations.
2. Develop plans for composition of written communication to include written reports, electronic media and presentations.
3. Incorporate principles of etiquette and professionalism into all interpersonal communication and listening skills including meetings, presentations and electronic conferencing.
4. Discuss the impact of modern communications and media on the aviation organization.
5. Apply essential principles of crisis management and crisis communications to aviation business entities.

AVSC 2110

Aviation Weather

Credit hours: 3

Enables the aviation administrator to understand and appreciate the operational and strategic impacts of weather on the aviation industry. Teaches atmospheric composition and structure, climate and synoptic weather, aviation weather reports, forecasts and weather data sources. Requires students to apply these principles in a decision making capacity through weather tracking, planning and decision making activities.

Course Learning Outcomes

1. Explain the operational challenges associated with atmospheric stability, moisture characteristics, precipitation, pressure, altitude and density.
2. Demonstrate knowledge of atmospheric composition and climate.
3. Interpret current and historical aviation weather reports, forecasts and observations affecting aviation operational decision making.
4. Describe how weather conditions affect airplane performance.
5. Explain the conditions likely to result in the formation of the most common aviation weather hazards and appropriate responses to in- flight weather hazards.

AVSC 2130

Aviation Safety

Credit hours: 3

Presents an introduction to aviation safety. Covers agencies overseeing safety at the commercial and general aviation levels as well as the applicable regulations they develop and enforce. Explores general aviation and commercial aviation accident statistics and accident causation models. Discusses airline, airport, aircraft, and air traffic control safety issues. Explores the role of the aviation administrator as a safety advocate and responsible party in a variety of settings.

Course Learning Outcomes

1. Differentiate between the roles of regulatory agencies involved in air safety.
2. Analyze aviation accident statistics.
3. Explain accident causation models.
4. Explain elements of air traffic control, aircraft, airline, and airport safety.

AVSC 2150

Air Transportation Management

Credit hours: 3

Presents the management skills necessary to be a fixed based operator and entry-level manager for scheduled airlines in the national aviation system. Teaches management functions, marketing, financing, organization and administration, flight operations, maintenance, safety, and liability. Provides hands-on experience of management styles through evaluations and critiques of local airlines and airport facilities.

Course Learning Outcomes

1. Define the air transportation industry including differences between certificated air carriers and general aviation.
2. Explain the contributions of air carriers and general aviation to the economy.
3. Describe how air transportation contributes to the efficient conduct of economic development.
4. Discuss primary role of the Transportation Security Administration (TSA), Department of Transportation (DOT), Department of Homeland Security (DHS), Federal Aviation Administration (FAA), National Transportation Safety Board (NTSB) and other applicable governmental agencies.
5. Distinguish between industry regulators and associations.
6. Describe the segments of general aviation in terms of their primary uses.

AVSC 2180

Managing Technology in Aviation

Credit hours: 3

Introduces airline computer applications. Teaches database language and calculation skills in aviation operations data query, analytics, and reporting. Uses off-the-shelf software to synthesize raw data into actionable knowledge. Examines the art of data visualization design and presentation through reports, dashboards, and stories.

Course Learning Outcomes

1. Perform database management queries of an aviation operations data table.
2. Use appropriate data calculation formulas in a spreadsheet.
3. Create concise data visualizations with tables and charts in a spreadsheet.
4. Synthesize raw data into reports and dashboards using acceptable data visualization design principles.

AVSC 2300

Ground IV - Commercial

Credit hours: 3

Covers privileges, responsibilities and the operational environment of a commercial pilot. Explores application of aeronautical knowledge and skills in simulated commercial operation situations. Develops judgment and decision-making skills. Studies aerodynamics, performance and limitations, weight and balance, aircraft systems, airworthiness, aeromedical factors, night and high altitude operations, weather hazards and reports, airport operations, flight planning, and decision making. Prepares students for the required FAA Commercial Pilot Airplane Knowledge Test.

Course Learning Outcomes

1. Explain commercial pilot privileges and responsibilities.
2. Describe aerodynamic issues related to principles of flight, stability, flight controls, aircraft design and stall/spin characteristics, awareness, recognition & recovery.
3. Perform both simple and complex performance/weight and balance computations.
4. Explain potential causes of abnormal and emergency powerplant and system problems.
5. Identify aeromedical issues affecting flight operations to include high altitude and night operations.
6. Describe weather hazards, weather forecasts and reports available to identify potential impact on weather related decision making: Including the ability to avoid, or reduce the risk of such hazards.
7. Perform complex navigation and flight planning scenarios.
8. Describe airworthiness requirements including airworthiness directives, service bulletins, Master Minimum Equipment List/Minimum Equipment List (MMEL/MEL), inspections and flight permits.
9. Demonstrate professional decision making and judgment during flight operations.

AVSC 2310

Flight IV - Commercial

Credit hours: 3

Includes maneuvers such as steep power turns, steep spirals, slow flight, lazy eights, pylon eights, and chandelles. Includes commercial cross-country, instrument flying skills, and emergency procedures. Prepares students for the required FAA Commercial Pilot Airplane Practical Test. Graded credit / no-credit. Course fee of \$19,053 for flight applies.

Course Learning Outcomes

1. Demonstrate flight maneuvers required for complex aircraft checkout and endorsement.
2. Fly complex aircraft solo.
3. Demonstrate skills in performing steep power turn, steep spirals, and flight at minimum controllable airspeed required for commercial pilots.
4. Demonstrate skills in performing the lazy eight, pylon eight and chandelle maneuvers with precise airplane control to the required tolerances of the FAA Airman Certification Standards.
5. Demonstrate the required proficiency for a commercial pilot by extended practice in all the required commercial maneuvers.
6. Describe cross-country, instrument flying and emergency procedures required for the Commercial Pilot Practical Test.

AVSC 2440

Ground III - Multi Engine

Credit hours: 1

Designed for pilots preparing for multi-engine airplane operations. Covers the theory of multi-engine airplane flight and the significant aerodynamic differences between single-engine and multi-engine airplane flight. Includes system operation of constant speed propellers, multi-tank and pump fuel systems, dual electrical systems, turbocharger and ice control systems. Discusses multi-engine weight and balance and use of performance charts. Prepares students for the oral exam portion of the FAA Multi-Engine Airplane Practical Test and Airplane Pilot Knowledge Test.

Course Learning Outcomes

1. Demonstrate knowledge of multi-engine airplane flight characteristics and aerodynamic differences between multi-engine and single-engine airplanes by answering both oral and written questions correctly.
2. Define multi-engine performance charts to calculate weight and balance data and other necessary flight data.
3. Describe the procedures for handling an engine failure in a multi-engine airplane during all phases of flight operations.
4. Identify the required flight procedures during normal flight both during VFR and IFR flight conditions.
5. Recite the emergency procedures for each system failure.
6. Explain location and use of all operation controls for all aircraft systems.

AVSC 2450

Flight III - Multi Engine

Credit hours: 1

Prepares students for flight in complex multi-engine airplanes. Stresses normal and emergency flight procedures and skills demonstrated and practiced for all phases of flight. Includes single-engine operation of a multi-engine airplane in varying flight environments and situations. Discusses complex systems operation as well as instrument flight procedures. Prepares the student for the required FAA Multi-engine Airplane Practical Test. Course fee of \$11,938 for flight applies.

Course Learning Outcomes

1. Demonstrate all required flight maneuvers in a multi-engine airplane with both engines operating.
2. Use the multi-engine pilots operating handbook to calculate weight and balance data and all other required operational performance data.
3. Demonstrate normal operation of a multi-engine airplane in instrument conditions.
4. Fly a multi-engine airplane with one engine inoperative within the required performance envelope.
5. Operate complex multi-engine airplane systems such as constant speed propellers, multi-tank and pump fuel systems, dual electrical systems, turbo chargers and ice control systems.
6. Perform emergency procedures while flying in instrument conditions.

AVSC 2710

Aviation Marketing

Credit hours: 3

Teaches principles of aviation marketing, market research and promotional concepts. Covers planning and coordination, advertising, and media as well as sales presentations. Explores aviation trade shows trade events, and networking as industry marketing tools. Covers the history of customer service in the aviation industry. Introduces customer service principles applicable to both general and commercial aviation. Analyzes customer rights and carrier responsibilities and explores diffusion of confrontational customers. Analyzes airline and corporate cultures and resulting effects on employees and customers.

Course Learning Outcomes

1. Describe the history and development of customer service concepts in aviation.
2. Explain the scope and history of aviation marketing.
3. Demonstrate the role and value of sales presentations.
4. Describe the importance of effective communication in customer service interactions.
5. Examine print media, trade journals, radio, television, and other advertising media.
6. Explain the relationship between customer service and marketing.

AVSC 3020

Aviation Insurance and Risk Management

Credit hours: 3

Explores the complexity of aviation risk management from flight operations and aircraft maintenance perspectives. Examines industry insurance practices and standards, including the development of risk management procedures to meet both government and insurance requirements. Analyzes basic underwriting procedures and requirements. Presents basic principles of hazardous materials handling in aviation.

Course Learning Outcomes

1. Describe the organization and structure of the aviation insurance industry.
2. Develop risk management procedures for implementation in aviation business entities.
3. Identify high risk factors in aviation.
4. Describe how insurance rates are determined.
5. Explain hazardous materials handling and procedures.
6. Describe methodology to reduce high risk factors in aviation.

AVSC 3030

Air Traffic Control I

Credit hours: 3

Teaches tower, approach, and center techniques and terminology. Covers radar and non-radar control environments and the pilot's responsibility in each. Explains effective use of the Air Traffic Control System.

Course Learning Outcomes

1. Differentiate between approach/ center radar responsibilities and terminal radar use.
2. Describe FAA regulations pertaining to aircraft separation, terrain avoidance, and other controlled responsibilities.
3. Communicate effectively using radio or interphone techniques.
4. Examine different classes of aircraft; their higher speeds, characteristics, and appearance.
5. Apply flight planning and FAA flight plan forms.
6. Differentiate between VFR and IFR regulations that govern air traffic control.

AVSC 3060

Airline Management

Credit hours: 3

Prepares student for management level duties at air carriers. Examines airline operational considerations, regulation, financing, accounting methods, marketing, customer service, profitability, and labor relations. Discusses how some airlines succeed and others fail.

Course Learning Outcomes

1. Identify the role of managers and administrators in the regional airline environment.
2. Apply the principle regulatory hurdles in obtaining and keeping government certification.
3. Differentiate between the steps for obtaining short-term, operating, and long-term finance.
4. Apply the process of fleet selection and whether to lease or purchase aircraft.
5. Identify key difficulties inherent in airline labor relations and how to overcome them.
6. Identify the place that regional and national airlines have in the larger commercial aviation market.
7. Identify the success potential for new entrant and existing regional airlines inside the commercial airline industry.

AVSC 3090

Airline and Dispatch Operations

Credit hours: 3

Introduces airline and corporate flight department operations and flight dispatch procedures. Teaches effects of weather, air traffic control and maintenance on fleet logistics. Introduces responsibilities of dispatchers, routers, maintenance controllers, and general system operations. Covers pertinent crew and operational federal aviation regulations. Examines tools and practices of airline system control and corporate flight departments. Explores responsibilities and authority of dispatchers and schedulers.

Course Learning Outcomes

1. Identify purpose and scope of dispatch and scheduling operations.
2. Apply effects of weather, air traffic management and maintenance on fleet scheduling and dispatch.
3. Demonstrate responsibilities and authority of dispatchers in airline operations.
4. Demonstrate responsibilities and authority of dispatchers in corporate or fractional ownership operations.
5. Apply roles of maintenance controllers and aircraft routers in fleet operations.
6. Identify purpose of crew schedulers as it relates to efficient system operations.
7. Apply pertinent crew and dispatcher federal aviation regulations.
8. Identify tools used in scheduling and dispatch along with accepted practices and procedures.
9. Discuss effects of operational decisions made by dispatch and scheduling personnel.

AVSC 3100

Corporate Aviation Management

Credit hours: 3

Introduces basic principles of corporate flight department management. Discusses regulatory requirements in corporate aviation, acquisition procedures, insurance requirements, and pilot certification programs. Explores fractional ownership programs and management.

Course Learning Outcomes

1. Describe operating procedures in corporate aviation.
2. Design and develop an aircraft acquisition strategy that meets the needs of a corporation.
3. Define the needs and requirements of aviation maintenance.
4. Examine applicable Federal Aviation Regulations.

AVSC 3120

Airport Management

Credit hours: 3

Explores airport management at both small and large airports. Emphasizes basic requirements and attributes of successful airport managers. Course includes discussion of local and state airport finance and regulatory issues. Discusses pertinent Federal Aviation Regulations and security issues.

Course Learning Outcomes

1. Describe the development and history of airports in the United States.
2. Apply federal aviation regulations to the field of airport management.
3. Explain the types of airport ownership.
4. Demonstrate key principles of airport operations.
5. Explain key terms and phraseology applicable to airport flight operations.
6. Demonstrate principles of airport finance and land use planning.

AVSC 3200

Flight Physiology

Credit hours: 3

For pilots with a career goal in commercial Aviation. Teaches physiological and psychological factors that affect pilot performance. Studies issues such as human error, fatigue, fitness, attitudes, training devices, controls, cabin space, and human payload. Includes lecture, demonstration, experiments, group projects, class discussion, and possible guest lecturers.

Course Learning Outcomes

1. Describe the factors regarding physiological effect of flight.
2. Explain appropriate countermeasures associated with physiological hazards of flight.
3. Demonstrate knowledge of aviation physiology regarding the physical and mental effects of flight on aircrew personnel and passengers.
4. Describe the devices and procedures that will contribute to the safety and efficiency of all who fly.
5. Research Federal Aviation Regulations regarding medical standards, certification and operation applicable to flight crew members.

AVSC 3300

Jet Transport Systems

Credit hours: 3

Provides training on turbine driven engines, thrust vectoring, pneumatics, electrical, hydraulic, and auxiliary systems. Includes subjects such as pressurization, de-ice and anti-ice, environmental, and warning systems. Utilizes schematic drawings, computer based trainers, and various jet operating manuals. Includes lecture, class discussion, demonstrations, group practice, and possible guest lecturers.

Course Learning Outcomes

1. Explain the theory of operation of all major aircraft systems.
2. Define jet aircraft system characteristics and limitations.
3. Examine the impact of aircraft systems on aircraft performance.
4. Examine how jet aircraft systems impact requirements for effective crew resource management during normal and abnormal flight conditions.

AVSC 3320

Aviation Managerial Accounting

Credit hours: 3

Provides aviation administration students with knowledge of financial, managerial, and basic cost accounting concepts and applications. Introduces basic accounting methods, accounting information systems and the utilization of accounting information in the decision making process. Uses aviation industry case studies and examples. May be delivered online.

Course Learning Outcomes

1. Prepare the Income Statement, Balance Sheet, Statement of Owner's Equity, and Statement of Cash Flow.
2. Evaluate the Income Statement, Balance Sheet, Statement of Owner's Equity, and Statement of Cash Flow.
3. Utilize job order, process and activity based costing as well as cost allocations to determine more accurate product costs.
4. Utilize accounting methods and tools to generate information to make managerial decisions and ethical judgments through the use of case studies.

AVSC 3400

International Flight Operations

Credit hours: 3

Provides an overview of international flight operations including advanced air navigation systems. Explores navigation equipment and aids utilized in international flight operations. Teaches the operation of the "Glass Cockpit" flight data center. Utilizes simulation for operation of a glass cockpit equipped aircraft.

Course Learning Outcomes

1. Demonstrate knowledge associated with the fundamentals of initial and advanced principles of aircraft navigation.
2. Demonstrate knowledge of navigational equipment and procedures associated with international flight operations.
3. Describe the current trends for aircraft navigation systems.
4. Explain regulatory requirements associated with international aircraft operation.

AVSC 3530

Flight Aerodynamics

Credit hours: 3

Teaches the aerodynamics involved in commercial aircraft. Includes aircraft turning and accelerated climb performance, take off velocity, load factors, hypersonic flight, and laminar flow airfoils. Includes demonstration, examples, experiments, and class discussion. May be delivered online.

Course Learning Outcomes

1. Explain the aerodynamic forces acting upon aircraft in flight.
2. Analyze aircraft flight performance, stability and control as they relate to aircraft design.
3. Examine principles of high speed flight and aircraft design.
4. Explore methods for aerodynamic testing.
5. Survey modern and future design concepts.

AVSC 3600

Multi-piloted Operations

Credit hours: 3

Explores concepts of Crew Resource Management (CRM), Threat and Error Management (TEM), and Advanced Qualification Program (AQP) concepts. Covers crew coordination, communication, flight discipline, pilot flying and pilot monitoring protocols in multi-piloted environments.

Course Learning Outcomes

1. Describe principles of effective Crew Resource Management (CRM).
2. Explain communication and coordination skills needed to be effective flight crew members.
3. Describe crew coordination, communication, and resource management during pre-flight, flight, post-flight operations to include flight and cabin crew members, maintenance, dispatch personnel and other roles associated with the flight.
4. Apply principles of Crew Resource Management to abnormal and emergency situations.

AVSC 4020

Applied Aviation Finance

Credit hours: 3

Examines financial management in the aviation corporate and public sectors and the role of financial markets and institutions. Introduces finance terminology and techniques. Discusses time value of money, fundamentals of security valuation, capital asset pricing model and capital budgeting. Introduces weighted average cost of capital and contrasts debt policy and governance in the public and private aviation sectors.

Course Learning Outcomes

1. Apply basic finance terminology.
2. Explain the role of financial markets and institutions.
3. Measure financial performance and compare performance appropriate benchmarks.
4. Apply time value of money in the evaluation of financial decisions.
5. Value debt and equity securities.
6. Utilize the capital asset pricing model to determine required return appropriate for an investment.
7. Analyze investment decisions and capital budgeting solutions using accepted financial analysis techniques.
8. Incorporate Federal Aviation Administration Grant and Funding Policies into capital budgeting, including airport grants and essential air service programs.

AVSC 410G

Global Ethical and Professional Issues in Aviation GI

Credit hours: 3

Designed for aviation managers and pilots to develop a global perspective and understanding of key intercultural issues facing aviation. Studies the role of multi-culturalism and globalization, especially where these issues impact safety and the business environment. Includes a study of aviation regulation and scenario-based problem solving skills.

Course Learning Outcomes

1. Analyze global or intercultural issues.
2. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
3. Demonstrate knowledge of the diversity of approaches toward flight training and professional aviation among varying cultures and nationalities.
4. Describe the problems of prejudice, communication problems and misconceptions in multi-cultural crew and business relationships and develop potential solutions to mitigate these problems.
5. Compare and contrast specific differences between regulatory, professional and training standards used by varying nationalities.
6. Research an in-depth examination of a differing approach to a professional or regulatory standard in global aviation.
7. Identify the primary issues in the debate over globalization and outsourcing in the aerospace and aviation industry.
8. Evaluate how ones own cultural values compare with those from different backgrounds.

AVSC 4160

Aviation Law WE

Credit hours: 3

Introduces the student to the United States Constitution plus derivation and application of international, federal, state and local laws as applied to aviation. Covers administrative, civil and criminal law including torts, principles of liability, contracts, sales, commercial transactions, the environment, labor law and Federal Aviation regulations.

Course Learning Outcomes

1. Summarize the chronological history and development of civil commercial aviation in the US and selected other countries; identify and describe the structural features of contemporary airlines.
2. List the various government regulatory agencies that impact aviation and air commerce and state the source of their authority and extent of their responsibility.
3. Compile a list of private and professional aviation organizations and state how they affect the aviation industry.
4. Review policy and procedures established by airlines to deal with customers, air passengers and cargo.
5. Describe the National Airspace System, regulatory requirements for aircraft operations and reasons the system was established.
6. Discuss the basic concepts of airport regulation, international laws and agreements and enforcement of regulations.
7. Examine the liability of individuals and business entities in the aviation industry.
8. Apprise and write about various legal and regulatory requirements within the aviation industry, while also formulating and composing their own responses to various current legal and regulatory issues.

AVSC 4500

Aerospace Aftermarket Support Services

Credit hours: 3

Explores organizational structures, geographical location selection, staffing, service delivery, and infrastructure requirements of an effective aftermarket product support program associated with aerospace vehicles. Explores existing support concepts to enable the student to design and plan an integrated and deployable product support organization. Emphasizes key elements of customer relationship management. Includes studies for both Original Equipment Manufacture (OEM) and third-party service providers.

Course Learning Outcomes

1. Discriminate the roles, qualifications, and character traits of key support personnel and the key elements of building successful customer relationships and high levels of customer satisfaction
2. Summarize the existing and likely future methods of customer/product support delivery, infrastructure, and maintenance information system elements necessary to support an aerospace vehicle in the field
3. Assess the engineering, field service, customer support, repair facility, and component inventory and logistics requirements to sustain an aerospace product at various points of its life cycle
4. Compare the services offered, character, market position, customer satisfaction, and locations of various product support organizations involved in aftermarket support services
5. Design a product support organization and maintenance information system based upon a given aerospace product and market scenario

AVSC 4550

Aerospace Vehicle Certification-Reliability-Maintainability Systems

Credit hours: 3

Explores the standards, regulations, infrastructure, and issues involving the certification, reliability, maintainability, risk management, and safety of aerospace vehicles through their life cycle. Studies the aerospace sectors of civil, defense, unmanned, and space-based systems. Investigates global training and certification standards of maintenance engineers and technicians.

Course Learning Outcomes

1. Contrast the certification, reliability, and maintainability standards necessary to mitigate risk and to ensure the safe, long-term use of an aerospace vehicle between each of the aerospace sectors
2. Outline the infrastructure organization, expertise, standards, and facilities necessary to sustain an aerospace vehicle through its life cycle for each sector
3. Determine the relationship between regulations, certification standards, reliability, maintainability, and risk management associated with aerospace products
4. Evaluate the training and certification standards for roles associated with the inspection, maintenance, and repair of aerospace vehicles based on various international agencies
5. Generate a workflow plan that integrates certification standards, regulatory requirements, maintenance planning, safety management, and training for a given product within one of the aerospace sectors

AVSC 4700

Aviation Professional Seminars

Credit hours: 3

Informs aviation students on personal and career development through guest lectures and industry seminars. Discusses career opportunities to develop and promote career success.

Course Learning Outcomes

1. Research multiple aviation career opportunities in transportation.
2. Practice skills needed to prepare for employment in various aviation disciplines.
3. Explain the importance of professional development for lifelong learning.
4. Develop an overall career path plan to achieve career success.

AVSC 4710

Aviation Career Preparation

Credit hours: 1

Prepares students for the rigors of an aviation interview by reviewing important areas including Federal Aviation Regulations, aviation specific discipline knowledge and interpersonal skills necessary to successfully obtain a position in the aviation industry. Includes specific resume, background search, and interview preparation procedures.

Course Learning Outcomes

1. Prepare a professional aviation oriented resume.
2. Identify applicable areas of Federal Aviation Regulations related to personnel certification requirements.
3. Research best practices in preparation for aviation career interviews.
4. Demonstrate interpersonal skills knowledge related to the aviation environment.
5. Determine necessary reference material required for a background check in safety sensitive position.

AVSC 4800

Professional Pilot Capstone

Credit hours: 3

Teaches systems, operations and performance limitations of the CRJ. Emphasizes operating practices, along with systems indoctrination, and procedures training. Includes systems and operations common to most turbine and transport category aircraft. Provides insight into the rigors of studying for ground school systems class. Utilizes lecture, demonstration, and cockpit procedure trainers. Prepares students who complete the course to pass the applicable written exam.

Course Learning Outcomes

1. Apply the basic concepts related to regional jet operations in multiple ground and in-flight scenarios.
2. Research current industry issues related to professional pilots culminating in a proposed solution.
3. Describe specific jet aircraft systems, operational limitations, common procedures.
4. Evaluate prescribed aircraft systems checklists for normal, abnormal and emergency procedures.

AVSC 481R

Cooperative Work Experience

Credit hours: 1 to 8

For upper division Aviation majors. Requires a current job in an aviation related field to register for this course. Includes course content that is individualized, with students setting objectives in consultation with their faculty coordinator and their on-the-job supervisor. Determines credit by the number of hours a student works during the semester. May be repeated for a maximum of 8 credits toward graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Develop and achieve goals in performance for professional development.
2. Support an Existing Skill.
3. Develop the Students Career.
4. Support employee confidence and foster greater communication with employer.

AVSC 4900

Strategic Aviation Management Capstone

Credit hours: 3

Provides aviation administration students with the opportunity to practice and apply their cumulative knowledge acquired over the entire course of study. Teaches the components of formulating a strategic plan, implementing and controlling its execution, and evaluating its success. Applies principles of accounting, finance, economics, labor, logistics, operations, research and strategy development through simulation and aviation case studies.

Course Learning Outcomes

1. Explain the necessity to work with diverse team members and stakeholders.
2. Formulate a business strategy utilizing a simulated aviation company.
3. Communicate the vision of the organization with a variety of individuals and stakeholders.
4. Utilize organizational data, reports, and forecasts to support the business strategy.

AVSC 4950

Aerospace Technology Management Capstone Project WE

Credit hours: 3

Assesses significant evidence of learning within the discipline studied through a culminating project. Documents evidence of achievement, experience and competencies for current and prospective employers to aid in job placement or promotion.

Course Learning Outcomes

1. Analyze significant issues that impact the aerospace industry, or a local aerospace-related company, for the purpose of topic selection for the project proposal.
2. Generate a project plan that includes significant milestones, resource assignments, schedule, critical paths, and tasks that supports successful project completion.
3. Investigate solutions and recommendations for the project utilizing resources available to the student to include research databases and collaboration with industry partners.
4. Compose a formal research paper related to the significant issue selected for a project that involves defining the problem, generating innovative solution(s), and providing effective implementation methods for the solution(s).
5. Develop and deliver a formal presentation related to the research and report outcomes to peers and industry advisory members.

BIOL 1010

General Biology BB

Credit hours: 3

Introduces major themes and concepts of biology including cell and molecular biology, genetics, diversity, evolution, and ecology. Provides students with necessary information and skills to critically evaluate what they hear, read, and see in the living world; communicate clearly; and apply methods to interpret data for making informed decisions concerning the role of biology in a world of which they are a part. May be delivered online.

Course Learning Outcomes

1. Distinguish the process of science from other ways of understanding the world.
2. Evaluate evidence to solve problems using scientific thinking.
3. Apply scientific literacy to issues of today, such as evolution, human population growth, genomic medicine, climate change, GMOs, vaccination and disease, ecosystem health and conservation, among others.
4. Explain evolution as the cornerstone of modern biology, uniting the main topics of cell, molecular biology, genetics, organismal biology, and ecology.
5. Apply knowledge of the interconnectedness of all life and the environment to personal attitudes and actions concerning the health of this planet.

BIOL 1011

Introduction to Bioinformatics BB

Credit hours: 3

Covers fundamental topics of bioinformatics including bioinformatics databases, sequence and structure alignment, and protein structure prediction. Uses current examples to introduce an overview of methodologies and applications sufficient to introduce students to the field of bioinformatics.

Course Learning Outcomes

1. Distinguish the process of science from other ways of understanding the world.
2. Evaluate evidence to solve problems using scientific thinking.
3. Describe the basic terminology and principles of the bioinformatic "omics" - such as genomics, transcriptomics, proteomics.
4. Contrast the different methodologies of DNA sequencing.
5. Effectively use databases, websites, and computational methods for studying biological data in relation to the evolution of genes, proteins, and whole genomes.
6. Interact with the practical applications of bioinformatics, including some basic coding.

BIOL 1015

General Biology Laboratory

Credit hours: 1

Covers introductory topics in general biology. Complements the student's experience in the General Biology 1010 course with emphasis on the application of the scientific method. Includes actual student experiences with living organisms, use of the microscope, and an introduction to techniques used in the study of life. Course lab fee of \$13 for supplies applies.

Course Learning Outcomes

1. Demonstrate safe and effective use of basic laboratory equipment.
2. Use the processes of scientific inquiry to examine biological concepts including diffusion and osmosis, photosynthesis, cellular respiration, biological macromolecules, and ecological interactions.
3. Explain the biological principles of cell division, genetics, and evolution.
4. Effectively communicate scientific findings with peers and through written laboratory reports.
5. Compare and contrast reproductive structures of plants and animals.

BIOL 1610

College Biology I BB

Credit hours: 4

Gives a broad exposure to many aspects of the life sciences. Covers topics of biochemistry, energetics, cell structure and function, genetics, and evolution. BIOL 1615 is recommended, but not required for pre-nursing or pre-dental hygiene majors.

Course Learning Outcomes

1. Appropriately use key terms and concepts currently used in the study of biology.
2. Describe cell structure and function, energetics, and genetics.
3. Discuss natural selection and the scientific evidence of evolution.
4. Discuss the relevance of biology to society.
5. Apply the process of science by generating hypotheses, critically evaluating data, and solving problems.

BIOL 1615

College Biology I Laboratory

Credit hours: 1

Laboratory course to accompany BIOL 1610. Topics covered include scientific method, biomolecules, cell structure and function, cellular reproduction, Mendelian and molecular genetics, DNA technology, and evolution. Course Lab fee of \$24 applies.

Course Learning Outcomes

1. Demonstrate safe and effective use of basic laboratory equipment and reagents.
2. Conduct inquiry-based labs involving the study of biological processes including diffusion and osmosis, photosynthesis, and cellular respiration.
3. Explain the mechanisms governing the functions and/or processes regulating biological macromolecules, cell division, genetics, evolution, and biotechnology.
4. Effectively communicate scientific findings and data interpretations with peers verbally and through written laboratory reports.
5. Incorporate primary, peer-reviewed, scientific literature into written laboratory reports.

BIOL 1620

College Biology II

Credit hours: 3

Provides the second semester material in the two semester introductory course designed for biology majors. Covers the evolution of life, the relationships between major taxa, anatomy and physiology of these major taxa, and interactions between living organisms and their environments. Discusses major current issues in the biological field.

Course Learning Outcomes

1. Analyze phylogenetic trees using morphological and molecular data.
2. Explain how fossil and phylogenetic evidence work together to illustrate how life is related and has evolved on Earth.
3. Summarize the major hypotheses and theories that explain the evolution of life on Earth from unicellular to complex multicellular life forms as well as the evidence that supports these hypotheses and theories.
4. Compare the anatomy, physiology, and diversity of the major taxa of living organisms.
5. Describe animal behavior using scientific approaches such as anatomical, developmental, physiological, and evolutionary principles.
6. Explain how we study ecological systems at the organismal, population, community, ecosystem, and biosphere levels.
7. Evaluate ways humans impact and modify organisms.
8. Identify what tools we can use to avoid and mitigate negative human impacts.

BIOL 1625

College Biology II Laboratory

Credit hours: 1

Laboratory course to accompany BIOL 1620. Topics covered include animal biology and diversity and plant biology and diversity. Course Lab fee of \$30 for lab, transportation applies.

Course Learning Outcomes

1. Identify the major groups included in the biodiversity of life on earth and their relationships within the tree of life.
2. Describe the classification of Bacteria, Archaea, Protists, Fungi, Plants, and Animals using their physical characteristics.
3. Describe the anatomy of the organisms covered in lab.
4. Differentiate the major stages of animal development.
5. Demonstrate the use of microscopes for observation of both prepared and living specimens.

BIOL 3100

Introduction to Data Analysis for Biologists

Credit hours: 3

Introduces computational methods for analyzing and visualizing common biological data types, focusing on developing computational skills and best practices for working with biological data. Provides instruction in command-line computing and appropriate software environments to enable robust and reproducible analyses of varied data sets.

Course Learning Outcomes

1. Demonstrate proficiency in proper data entry, management, and storage for scientific research with an emphasis on reproducibility.
2. Convert untidy data to "tidy data" for analyses.
3. Discuss the basic principles of exploratory data analyses within appropriate software environments.
4. Evaluate the rationale behind using code to analyze data and present results.
5. Develop computational skills for processing common biological data formats, such as DNA sequences.
6. Create appropriate and meaningful data visualizations using appropriate software environments.
7. Integrate principles of experimental design, statistical modeling, hypothesis testing, and data visualization to critically analyze a unique data set.
8. Present a fully- reproducible report using a unique data set.

BIOL 3400

Cell Biology

Credit hours: 3

Teaches students the fundamentals of cell biology. Emphasizes the molecular basis of cell structure and functions as well as cell signaling.

Course Learning Outcomes

1. Assess the importance of membrane lipid and protein components in membrane function including the production and maintenance of membrane potentials through electrochemical gradients.
2. Describe the structure, function, and components of the endomembrane system including the endocytic and exocytic pathways.
3. Analyze how the different properties of cytoskeletal elements contribute to the different functions of these polymers in cells.
4. Explain how motor proteins harness energy to move along cytoskeletal tracks to induce muscular contraction and intracellular trafficking.
5. Examine the relationships between cell-cycle checkpoints, cancer, gene mutations and environment.
6. Outline the basic principles of intracellular signal transduction mechanisms including response specificity, role of monomeric and trimeric G-proteins, phosphorylation and second messengers.
7. Evaluate the importance of cell-cell communication in coordinating function in multicellular organisms and the role of the extracellular matrix.
8. Compare the general mechanisms that allow some newly synthesized proteins to be released into the cytoplasm versus other cellular compartments.
9. Evaluate how a cell's interactions with its environment can influence cell morphology, behavior, division, or survival.

BIOL 3405

Cell Biology Laboratory

Credit hours: 1

Uses laboratory exercises to demonstrate topics covered in BIOL 3400. Includes experimental methods for studying cell processes, enzymes, tissue specific proteins, organelles, and experimental design. Course Lab fee of \$100 applies.

Course Learning Outcomes

1. Correctly use the equipment necessary for cell biology research;
2. Compare and contrast enzymes of different organisms;
3. Determine the presence of specific proteins in different types of tissue;
4. Separate and analyze the components of cell organelles;
5. Collect, tabulate and critically analyze data generated from the experiments;
6. Use bacteria models to study transduction, transcription and translation;
7. Design and carry out experiments dealing with cell biology by using observations, hypothesis generation, critical thinking, literature research and the equipment available.
8. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Think critically about published literature and be able to interpret the literature that apply to their own; 2 - Ask questions related to cell biology and be able to set up experiments to answer those questions; 3 - Appreciate the impact of cell biology research on society.

BIOL 3500

Genetics

Credit hours: 3

For Biology majors. Studies the genetic basis of life and the mechanisms by which information to make life is stored in the DNA. Presents classical, molecular, and population genetics in the background of current techniques and understanding of genetic processes. Provides an understanding of the basic principles of genetics and preparation for more advanced courses in other aspects of biology. Canvas CourseMat \$103/Macmillan applies

Course Learning Outcomes

1. Contrast the processes of mitosis and meiosis and how they regulate the transmission of genetic information;
2. Use basic patterns of genetic inheritance in eukaryotes to predict the transmission of genetic attributes to future generations;
3. Describe how genes and the environment interact with each other to generate the physical and behavioral attributes of organisms;
4. Analyze the processes that generate genetic variation;
5. Describe the mechanisms that generate genetic imbalances and predict their consequences;
6. Describe the mechanisms of genetic exchange in bacteria;
7. Describe the structure of DNA and explain how its structure facilitates replication and information transfer;
8. Explain the mechanisms of mutation and repair;
9. Describe how genes are transmitted through populations and how differential transmission of alleles leads to evolution.

BIOL 3550

Molecular Biology

Credit hours: 3

Examines the structure, organization, replication, and expression of genomes. Explores the methods used for study of genome structure and function, including nucleotide and protein extractions, separations, and characterizations. Compares sequence data of genomes, transcriptomes, and proteomes. Examines primary literature in the field.

Course Learning Outcomes

1. Identify the hallmarks of different genomes and genome elements.
2. Identify the underlying mechanisms of genome expression (i.e. transcription and translation).
3. Explain how genomes are replicated and maintained in the cell.
4. Investigate the structure-function relationships of macromolecules.
5. Explain the methods of extraction, separation, characterization and manipulations of nucleic acids and proteins.
6. Interpret the sequence data of genomes, transcriptomes and proteomes.
7. Interpret published research reports on genomes, transcriptomes, proteomes, and regulation of genome expression.

BIOL 3600

Biological Chemistry

Credit hours: 3

Introduces principles of the chemical processes that define living organisms. Covers structure and function of proteins, carbohydrates, lipids and nucleic acids. Explores metabolic pathways, biosynthesis, enzymatics, thermodynamics, membrane dynamics and related processes within a living cell. Emphasizes molecular mechanisms of reactions and their outcome.

Course Learning Outcomes

1. Analyze the fundamentals of biochemistry in the world around them.
2. Identify biomolecules, including carbohydrates, lipids, and proteins, and their roles in the fundamental biochemical pathways, including metabolic pathways.
3. Evaluate the relevance of biochemistry to human concerns, including the health sciences and other fields of chemistry.
4. Explain the relationship of Biochemistry to both Biology and Chemistry.

BIOL 3605

Biological Chemistry Lab

Credit hours: 1

Introduces laboratory techniques in biochemistry. Studies methods and theory behind purification of proteins and nucleic acids including chromatography and electrophoresis. Uses methods in assessing enzyme activity and kinetics and protein structure analysis. Includes analysis and manipulation of DNA and RNA.

Course Lab fee of \$145 applies.

Course Learning Outcomes

1. Explain how to use modern recombinant DNA techniques to express protein targets.
2. Differentiate between modern chromatographic techniques used to purify/enrich proteins.
3. Analyze proteins using a variety classical and modern methods.
4. Measure Enzyme Kinetics parameters using spectroscopic and other analytical techniques.
5. Justify how Protein Structural Analysis can be used for molecular docking and structure-based drug design.

BIOL 3700

General Ecology

Credit hours: 3

Introduces the relationships between organisms and their environment, including processes at the individual, population, community, ecosystem, and biosphere levels. Includes specific topics such as adaptation to abiotic factors in terrestrial and aquatic habitats, global climate patterns and biomes, evolution of life histories, reproductive strategies and social behaviors, population distributions and dynamics, species interactions, community structure and succession, energy flow and nutrient cycles in ecosystems, global biodiversity, and the impact of humans on ecological processes.

Course Learning Outcomes

1. Identify the levels at which ecology can be studied and the questions that can be addressed at each level.
2. Describe the abiotic challenges organisms face in aquatic and terrestrial habitats and the adaptations they have evolved to cope with these challenges.
3. Differentiate between the characteristics of earth's terrestrial and aquatic biomes as well as the processes that contribute to their formation.
4. Describe the characteristics of a population's distribution and its dynamics through time.
5. Explain how evolutionary processes have led to distinct life-history, reproductive, and social traits and strategies.
6. Contrast the different types of species-species interactions and the characteristics of each.
7. Describe how ecological communities develop, persist, and change through time.
8. Examine the flow of energy through ecosystems, the cycling of vital nutrients within ecosystems, and the impacts that humans have on these processes.
9. Discuss ways in which biodiversity can be valued and the role humans have in causing or avoiding loss of this biodiversity.

BIOL 4260

Ethical Issues in Biology WE

Credit hours: 2

Offers an in-depth analysis of current ethical issues in biology. Requires extensive reading and an analytical term paper. Presents subjects in lecture and in lab sessions. Concentrates on readings and on analyses of issues and their effects on people. Explores and discusses individual participant paradigms.

Course Learning Outcomes

1. Explore current issues in biology.
2. Analyze current issues in biology.
3. Analyze personal paradigms related to issues in biology.
4. Write a scholarly analytical paper on an ethical issue in biology.
5. Examine data that support various positions on ethical issues in biology.

BIOL 4500

Principles of Evolution WE

Credit hours: 3

Focuses on the concepts of evolution as a fundamental principle of biology. Emphasizes the mechanisms and explanations of the tremendous diversity of life. Studies classical, molecular and current explanations of evolution in the background of current techniques and understanding of the genetic processes. Examines the principles of evolution and the various aspects of natural selection and speciation.

Course Learning Outcomes

1. Discuss classic literature on the subject of evolutionary biology.
2. Explain the molecular and genetic basis for evolution.
3. Explain the mechanisms of evolution (natural selection, migration, genetic drift, mutation, and nonrandom mating) and their relationship to genetics of populations and sources of variability.
4. Apply Hardy-Weinberg calculations to various populations.
5. Describe the mechanisms of speciation and origin of new species.
6. Evaluate how the fossil record relates to current views of evolution.
7. Analyze evolutionary trends demonstrated by phylogeny.
8. Investigate the course of evolution in prokaryotes and eukaryotes, with an emphasis on hominin evolution.
9. Compose a variety of disciplinary-appropriate texts; for example scientific essays evaluating various evolutionary topics, scientific posters, scientific manuscripts, mock grant proposals, etc.

BIOL 4550

Molecular Evolution and Bioinformatics WE

Credit hours: 3

Focuses on the concepts of evolution as a fundamental principle of biology with emphasis on change at the molecular level. Teaches how natural selection shapes the evolution of genes, gene systems, macromolecules, and organisms. Explores the roles of mutation, natural selection, population size and subdivision, and genetic recombination. Introduces different approaches for testing hypotheses about how molecules evolve by using phylogenetic analysis.

Course Learning Outcomes

1. Integrate sub-disciplines of Molecular Biology into the unifying theme of Molecular Evolution.
2. Recall the major scientists and ideas that contributed to the history of evolutionary thought.
3. Explain the mechanisms of evolution: natural selection, migration, genetic drift, mutation, and nonrandom mating.
4. Define the basic terminology and principles of the bioinformatic omics - such as genomics, transcriptomics, proteomics, etc.
5. Contrast the different methodologies of DNA sequencing.
6. Effectively use databases, websites, and computational methods for studying biological data in relation to the evolution of genes, proteins, and whole genomes.
7. Interpret reconstructed evolutionary trees derived from sequence data.
8. Apply the broader impacts of molecular evolutionary change as they relate to topics such as the tree of life, coevolution, biodiversity, evolutionary development, cultural issues, social issues, etc.
9. Compose a variety of disciplinary-appropriate texts, for example: scientific essays evaluating various evolutionary topics, scientific posters, scientific manuscripts, mock grant proposals, etc.

BIOL 4600

Bioinformatics Capstone

Credit hours: 3

Applies concepts from the previous Bioinformatics sequence of courses to the real world. Allows students to work with faculty members and industry experts to design and complete a project that incorporates various concepts that have been presented in previous Bioinformatics courses. Requires development and/or application of bioinformatic tools and presentation of results.

Course Learning Outcomes

1. Interpret bioinformatic problems within the framework of core bioinformatics concepts.
2. Critique existing bioinformatic pipelines and tools.
3. Create solutions to bioinformatics problems with existing or new tools.
4. Develop reproducible pipelines capable of successfully addressing chosen solutions.
5. Present fully-reproducible reports of bioinformatic analyses.

BIOL 492R

Professional Development

Credit hours: 1

Focuses on professional skills required for students to move forward in their chosen career. Emphasizes writing an effective cover letter, resume and personal statement and communicating effectively in an interview setting. Addresses social media branding for professional settings. Requires students to complete the biology major field test and other department assessments. May be repeated for a maximum of 2 credits toward graduation.

Course Learning Outcomes

1. Evaluate their knowledge and skill growth throughout their college career.
2. Develop professional social media branding to effectively promote themselves in their chosen field.
3. Communicate professionally with individuals in their chosen field, both electronically and in interview settings.
4. Write an effective cover letter, resume, personal statement, and/or CV.

BIOL 4940

Student Seminar WE

Credit hours: 2

Requires students to research scientific literature, give oral presentations, write a research paper, and lead discussions on assigned biology topics in specific areas of current research in biology.

Course Learning Outcomes

1. Access current resources (e.g., peer reviewed journals) of biological research information.
2. Critically analyze the findings presented in scientific journals.
3. Discuss shortcomings in presented research findings.
4. Describe current techniques in biological research and their area of application.
5. Synthesize a cohesive research paper on a biological topic of interest that incorporates multiple journal articles.
6. Present an appropriate oral summary of several journal articles based on your research paper.

BIOL 497R

Biology Colloquium

Credit hours: .5 to 1

Requires students to attend lectures presented by department faculty and/or invited speakers. Features lectures that are usually a summary of the speaker's recent research results, presented at a level appropriate for junior and senior biological science majors. May be repeated for a maximum of 2 credits toward graduation.

Course Learning Outcomes

1. Summarize material presented by scientific speakers.
2. Evaluate lectures in an oral or written response.
3. Develop questions based on the material presented by scientific speakers.
4. Compose a written reflection on the relevance of scientific presentations to current concerns of society.

BIT 1010
Building Codes

Credit hours: 3

Teaches the nonstructural standards of the Uniform Building Code. Includes occupancy classifications, building area, height and location limits, exit requirements, and fire-resistive standards.

Course Learning Outcomes

Please see the department for information.

BIT 1170
Field Lab Building Codes

Credit hours: 1

For students, building inspectors, architects, and builders. Provides practical on-the-job experience in inspecting footings, foundation walls, reinforcement steel, the building structure, and interior and exterior coverings.

Course Learning Outcomes

Please see the department for information.

BIT 1230
Plan Review

Credit hours: 3

Designed to introduce students to the techniques of nonstructural plans examination through familiarization of the plan and construction documents, specifications, and the application of code requirements.

Course Learning Outcomes

Please see the department for information.

BIT 1240
Plumbing Codes

Credit hours: 3

A comprehensive study of plumbing code requirements relating to the principles of plumbing design, materials, installation standards, water and gas distribution systems, storm and sanitary sewer systems, water heaters, and mobile home connections.

Course Learning Outcomes

Please see the department for information.

BIT 1330

Mechanical Codes

Credit hours: 3

This is a comprehensive course which covers the entire Uniform Mechanical Code. Students will gain a working knowledge of requirements for mechanical systems, including heating, cooling, ducts, ventilation, refrigeration, kitchen hood and ducts, fuel-gas piping, appliance venting, combustion air, and related requirements.

Course Learning Outcomes

Please see the department for information.

BIT 1340
Electrical Codes

Credit hours: 3

Studies the National Electrical Code in its entirety. Covers electrical wiring systems, methods, electrical equipment, special occupancies, special equipment, special conditions, and communication systems.

Course Learning Outcomes

Please see the department for information.

BIT 1380
Ride Along Lab

Credit hours: 1

For students, building inspectors, architects, and builders. Students will accompany a building inspector as he or she conducts on-the-job inspections. There will be a rotation system established to give students experience in a variety of jurisdictions. This class is for fourth-semester students only.

Course Learning Outcomes

Please see the department for information.

BMED 4200

Methods of Teaching Business/Marketing/Digital Technology

Credit hours: 3

Provides foundation knowledge of business education. Includes methods of teaching business, marketing, digital media, emerging technologies, and keyboarding. Includes philosophical foundations of business education, curriculum trends impacting business and technology classrooms, classroom management, curriculum planning, and assessment. Includes curriculum standards, competency-based instruction, career and technical education, and professionalism. Requires field observation. May be delivered hybrid. Lab access fee of \$45 applies.

Course Learning Outcomes

1. articulate the importance of professional standards, reflecting on the business education discipline, and embracing teaching as a lifelong learning commitment.
2. Create, analyze, revise, and implement curricula to prepare students for success in business and life.
3. Facilitate the learning of dynamic subject matter in a diverse learning environment.
4. Assess student progress to enhance the learning environment to optimize student success.
5. Demonstrate positive and effective techniques for managing the classroom environment.
6. Exhibit an understanding of communication as a dynamic system of people, processes, cultures, media, and fluid boundaries in developing strategies.
7. Maintain a solid foundation in business content, general education, and professional education.

BMED 4300

Methods of Teaching Computer Science

Credit hours: 3

Methodology course designed for secondary education students and current educators to gain the pedagogical knowledge and learn best practices necessary for teaching secondary computer science (CS) concepts. Combines pedagogical principles with computer science knowledge to create an effective learning environment. Includes reading, discussing, reflection, evaluation, micro-teaching, and field observations. Addresses the standards set by the International Society for Technology in Education (ISTE) for students and for teachers, and utilizes in the design, implementation, and assessment of learning materials. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Create curriculum that follows the guidelines set in the national high school computer science model that supports learning across STEM disciplines.
2. Develop detailed lesson plans to teach computer science concepts and selected computer science topics.
3. Prepare instructional strategies and activities that foster inquiry-based learning.
4. Develop various types of assessments (e.g., formative and summative, authentic, and performance assessments) to evaluate student content knowledge and computational thinking practices.
5. Describe classroom management techniques for a computer science classroom or laboratory.
6. Establish a bank of resources for teaching computer science in secondary education.
7. Demonstrate professionalism by actively participating in professional communities such as CSTA and ACM and by keeping up with research in the area of computer science education.

BOT 2400

Plant Kingdom BB

Credit hours: 4

Surveys of the Divisions (Phyla) traditionally studied by botanists, emphasizing structure, reproduction, systematics, and evolution. Completers should be familiar with the morphological features of the major prokaryotic, fungal, algal, and plant groups. Includes a weekly laboratory. Course Lab fee of \$50 for supplies applies.

Course Learning Outcomes

1. Describe the processes of meiosis and mitosis;
2. Describe how plants are named and classified;
3. List the distinguishing attributes of the major plant groups and name some representatives of each;
4. Discuss evolutionary trends in the morphological and reproductive attributes of members of the plant kingdom;
5. Explain "alternation of generations" and how it occurs in each of the major plant groups;
6. Explain sexual reproduction in flowering plants in detail;
7. Explain the process of natural selection and how it accounts for the evolution of living organisms;
8. Describe a general phylogeny of the plant kingdom.

BOT 3340

Plant Biology

Credit hours: 4

Covers structure-function interrelationships from the cellular to whole plant level, including aspects of plant anatomy, physiology, reproduction, growth and development with emphasis on the angiosperms (flowering plants). Designed for Biology Education majors and others wishing a one semester upper division combined plant anatomy/plant physiology course. Includes weekly laboratory. Course lab fee of \$30 for supplies applies.

Course Learning Outcomes

1. Describe plant cell and organelle ultrastructure and function with emphasis on structures unique to plants.
2. Describe plant cell division and maturation, including origin, development and variation in structure of plant cell walls and how wall structure is related to a plant's physical characteristics.
3. Describe the structure and function of the primary and secondary meristems, including the cells, tissues, tissue systems, and organs derived from each.
4. Examine the anatomy of stems, roots, and leaves, both in the primary and secondary plant body, and how the anatomy is related to the function of each.
5. Analyze major biochemical pathways, including photosynthesis (C3, C4, CAM) and photorespiration, found in plants and how these pathways interact within the broader ecosystem.
6. Describe the mechanisms of material transport in the plant, from cellular to organismal levels, including water potential and xylem and phloem function.
7. Assess major plant hormones, their mode of action, influence, and regulation on plant development, homeostasis, biological responses, and life cycles.
8. Evaluate plant requirements for growth.
9. Relate plant requirements for growth to the anatomical and physiological adaptations to ecosystems.

BOT 4050

Plant Ecology

Credit hours: 3

Studies the interrelationships between plants and their environment, including population, community, and ecosystem processes. Specific topics include adaptation to abiotic factors, plant life history patterns, species interactions such as competition and herbivory; community structure, diversity, and dynamics; biome structure and distribution, and energy flow and nutrient cycles in ecosystems. Presents the impact of humans on plant communities and ecological processes.

Course Learning Outcomes

1. Locate and classify different categories of experiments in the scientific literature;
2. Discuss how plants utilize abiotic resources;
3. Explain plant population dynamics and evolution;
4. Describe life history patterns of growth and reproduction;
5. Discuss community structure, diversity, and dynamics;
6. Describe species interactions;
7. Apply what they learn about energy flow and nutrient cycling to real-world situations;
8. Explain a variety of plant adaptations to environmental conditions;
9. Discuss the role of humans in influencing plant communities and ecological processes.

BOT 4055

Plant Ecology Laboratory

Credit hours: 1

Laboratory component of Plant Ecology in which students acquire skills in the collection, analysis, and presentation of ecological data. Includes field sampling of plant populations, laboratory and greenhouse experiments, and scientific writing. Field trips, including one weekend field trip, are required. Course Lab fee of \$97 for lab, transportation applies.

Course Learning Outcomes

1. Quantify and recognize community structure, diversity, and dynamics;
2. Design scientific experiments;
3. Collect and analyze data;
4. Synthesize scientific information into professional presentations and written reports.

BOT 4100

Plant Anatomy

Credit hours: 4

Covers the structure and development of cells, tissues and tissue systems in stems, roots, leaves, and reproductive structures in vascular plants, with emphasis on the angiosperms. Discusses primary and secondary plant body, including wood anatomy. Includes weekly laboratory. Course lab fee of \$47 for supplies applies.

Course Learning Outcomes

1. Differentiate plant anatomical positional and directional terms.
2. Summarize plant cell structure and function as they relate to plant productivity and growth.
3. Appraise the origin, development, and variation in structure of primary and secondary cell walls and how wall structure correlates to physical characteristics.
4. Differentiate parenchyma, collenchyma, and sclerenchyma cell and tissue types and the dermal, vascular, and ground tissue systems.
5. Contrast the structure and activity of the root and shoot primary meristems, the maturation of their derivatives, and resulting mature primary anatomy of roots, stems, and leaves.
6. Interpret the origin and structure of the vascular and cork cambia and how these produce the secondary plant body, including the structure of secondary xylem, phloem, and periderm and variations as observed in woody plants.
7. Evaluate the origin, development, and structure of secretory structures as they relate to their importance to ecosystem functions and human use.
8. Correlate anatomical structures with their functions and variations that have evolved in particular habitats such as aquatic, mesic, and xeric habitats.
9. Interpret the anatomy of reproductive structures as they relate to plant evolution.

BOT 4200

Plant Systematics

Credit hours: 3

Covers the principles of plant classification and the techniques employed in gathering and analyzing taxonomic data. Focuses on the essentials of phylogenetic analysis in plants and on the evolutionary relationships between the major groups of vascular plants. Includes a weekly laboratory. Course Lab fee of \$47 for materials applies.

Course Learning Outcomes

1. Describe the field of plant systematics and its major components, foci, and relevance to other scientific disciplines.
2. Explain the development of plant classification and nomenclature through human history.
3. Describe a plant using accepted botanical terminology.
4. Examine various sources of evidence used in construction of plant classifications and phylogenies.
5. Analyze data towards reconstruction of the evolutionary history of a group of plants.
6. Differentiate morphological characteristics that define primitive vascular plants, gymnosperms, and angiosperms in the context of evolutionary history.
7. Compare and contrast distinguishing characteristics of major plant families in Utah placed in the context of evolution, historical taxonomy, and human use.

BOT 4600

Plant Physiology WE

Credit hours: 3

Covers the physiological processes occurring in plants. Includes experimental techniques used in the investigation of processes such as photosynthesis, water and solute transport, tissue culture, growth regulation and responses and plant hormones. Involves problem solving and critical thinking skills.

Course Learning Outcomes

1. Describe the physiological responses of plants to their environment.
2. Discuss scientific methodology used in plant research.
3. Critically evaluate material from the scientific literature.
4. Synthesize information within a cohesive research paper on a plant physiology research topic.

BOT 4605

Plant Physiology Laboratory

Credit hours: 1

Focuses on laboratory aspects of topics in BOT 4600. Covers experimental methods for studying plant physiological processes such as respiration, photosynthesis, mineral nutrition, transpiration and tissue-water relations. Course Lab fee of \$35 applies.

Course Learning Outcomes

1. Demonstrate proficient use of equipment needed to measure physiological parameters in plants.
2. Evaluate the effect of different environmental cues on the physiology of plants.
3. Use scientific inquiry to analyze the physiological responses of plants to a particular environmental cue.
4. Use statistical tools to analyze results of plant physiology experiments.
5. Generate a coherent scientific research written report of empirical data.

BTEC 1010

Fundamentals of Biotechnology I Career Survey BB

Credit hours: 3

Explores careers in biotechnology with emphasis on central dogma of biology, DNA techniques, applications in biotech, and bioethics. Examines forensics and human cloning. Includes lab work. Course Lab fee of \$26 applies.

Course Learning Outcomes

1. Describe, in general terms, the field of Biotechnology.
2. Discuss, in general terms, the risks and benefits of Biotechnology to society.
3. Apply some of the basic methods of Biotechnology in a laboratory setting.
4. Describe some of the applications of Biotechnology for human welfare.

BTEC 2010

DNA Manipulation and Analysis

Credit hours: 3

Facilitates the mastery of lab skills relevant to DNA technology including recombinant DNA cloning, DNA gel electrophoresis, polymerase chain reaction and DNA sequencing. Course fee of \$86 for lab applies.

Course Learning Outcomes

1. Work safely in a laboratory environment.
2. Successfully prepare laboratory solutions.
3. Maintain a laboratory notebook.
4. Apply laboratory methods for DNA manipulation and analysis.
5. Describe the methods used in genetic engineering.
6. Describe the principles behind the methods used in genetic engineering.

BTEC 2020

Protein Purification and Analysis

Credit hours: 3

Teaches current techniques with protein production, purification, and analysis. Includes instruction and practice with polyacrylamide gel electrophoresis (PAGE), chromatography, western blot, and FPLC analysis. Course fee of \$107 for lab applies.

Course Learning Outcomes

1. Manipulate proteins in the laboratory.
2. Purify proteins from complex mixtures.
3. Determine the physical properties of a protein using current methodology.
4. Describe the methods of protein purification.
5. Describe the methods of protein analysis.

BTEC 2030

Cell Culture Techniques

Credit hours: 2

Teaches basics of eukaryote cell culture. Includes handling, storage, and maintenance of mammalian stocks. Emphasizes media preparation and sterile techniques. Includes in vitro labeling and transfection. Course fee of \$195 for lab applies.

Course Learning Outcomes

1. Use sterile technique.
2. Propagate animal cells in the laboratory.
3. Distinguish between cell types in culture.
4. Distinguish between normal and abnormal cells in culture.
5. Design simple experiments in the laboratory.
6. Execute simple experiments in the laboratory.

BTEC 2040

Advanced Nucleic Acid Laboratory

Credit hours: 3

Teaches advanced nucleic acid modification and analysis methods. Includes site-directed mutagenesis, DNA sequencing, and RNA analysis methods, high-resolution DNA melting for genotyping and real-time PCR to quantitate DNA in samples. Incorporates methods to mutate 2 genes using CRISPR gene editing technology followed by RT-PCR to analyze gene expression (RNA isolation, creating cDNA, followed by real-time PCR).

Course Learning Outcomes

1. Construct site-directed alterations of DNA sequences.
2. Determine the sequence of DNA molecules.
3. Isolate RNA molecules.
4. Analyze RNA molecules.
5. Construct DNA copies of RNA molecules.

CA 1000

Culinary Basics

Credit hours: 3

Designed for hospitality management majors and as elective credit for other business majors. Explains the techniques and procedures of quality and quantity food production. Studies the selection and preparation of major food products. Provides an extensive set of basic and complex recipes for practice. Includes lectures, lab, visits of guest chefs, and field trips. Completers should be prepared to enter the working field as a prep cook. Course fee of \$150 for materials applies.

Course Learning Outcomes

1. List reasons why it is important to keep food safe.
2. Identify the equipment needed for efficient food production.
3. Apply effective "mise en place" through practice.
4. Demonstrate proper use of the three types of cooking.
5. Perform basic food cost calculations and convert recipes based on yield.
6. Prepare ingredients and cook basic stocks and sauces.
7. Perform various cooking methods with meats and seafood.
8. Differentiate between lean doughs, rich doughs, sponge doughs, and sourdoughs and give examples.
9. Describe and prepare steamed puddings and dessert souffles.

CA 1120

Cooking Skills Development

Credit hours: 5

Covers basic food service skills in a commercial kitchen environment. Stresses the use of standardized recipes and procedures. Introduces basic ingredients, stocks, soups, mother sauces, protein fabrication, cooking methods and breakfast items. Includes daily end product assessment. Emphasizes sanitary food handling practices and professional work habits. Course fee of \$750 for materials and equipment applies.

Course Learning Outcomes

1. Demonstrate proper operation and care of commercial cooking equipment.
2. Demonstrate proficiency using knives and small wares for classical knife cuts and basic protein fabrication.
3. Use safety and sanitation when preparing, cooking, and storing food items.
4. Identify herbs, spices and seasonings used in cooking.
5. Define mise en place relative to preparation, timing, and cooking.
6. Define the cooking methods, stocks, soups, mother sauces, and breakfast items.
7. Prepare basic proteins, vegetables, starches, mother sauces, soups, stocks, and breakfast items using the various cooking methods.
8. Cook basic proteins, vegetables, starches, mother sauces, soups, stocks, and breakfast items using the various cooking methods.
9. Evaluate quality of stocks, mother sauces, soups, breakfast items, and individual performance.

CA 1140

Professional Dining Room Services

Credit hours: 1

Covers the key aspects and responsibilities of table servers in different styles of operations. Covers taking reservations, greeting guests, basic table settings, formal and specialized settings, food and beverage service, selling menu specials, closing checks, customer complaints, emergency procedures, and using a Point of Sale system.

Course Learning Outcomes

1. Describe the mechanics of proper table service as it pertains to American, English, Russian, French, and buffet service.
2. Explain the importance of communication between the front and back of the house.
3. Describe the various functions of dining service personnel.
4. Perform the duties associated with a front and back server.
5. Discuss sales techniques used in increasing the guest check average.
6. Develop a guest service process for handling ADA accommodations, dietary restrictions, and difficult situations.
7. Explain the training procedures required for working with the dining room personnel.
8. Explain the importance of using proper automated procedures when processing guest checks.

CA 1150

Nutrition and Food Service

Credit hours: 3

Provides an understanding of how and why the relationship between food and health has moved into sharp focus. This course will trace the change in dietary patterns that have been noted by the food service industry. This course has been designed to help meet the need of developing adequate healthful food programs. You will learn about the changes in eating attitudes and be able to define the various responsibilities of the food service industry. You will learn how to identify whether a market exists for a healthful food program and how to plan and manage such a program. The course will also explore nutrients and their food sources; physiological and metabolic aspects of nutrient functions; individual requirements; food choices and selection; prevention and treatment of common nutritional-related disease; along with contemporary and controversial issues. Canvas Course Mats \$39/Wiley applies.

Course Learning Outcomes

Please see the department for information.

CA 1160

Culinary Math

Credit hours: 1

Reviews basic math functions. Applies basic math functions to culinary specific uses including unit conversion, recipe scaling, yields, recipe costing, menu costing, food service expenses and costs, and baker's percentages.

Course Learning Outcomes

1. Demonstrate use of basic addition, subtraction, multiplication and division.
2. Perform basic math functions including fractions, decimals, ratios, percentages, and measurements.
3. Convert between various measurements and measurement systems.
4. Perform recipe scaling, costing, and pricing calculations.
5. Apply percentages in culinary specific applications.
6. Define revenues and expenses within a food service operation.
7. Identify marketing techniques to increase sales and profitability of restaurant operations.

CA 1170

Pastry and Baking Skills

Credit hours: 5

Covers basic baking and pastry skills in a commercial kitchen environment. Stresses the use of standardized recipes and procedures. Covers baking terms, equipment and ingredients. Includes daily end product critiquing. Covers yeast-leavened breads, quick breads, pies and tarts, custards, creams, cookies, brownies, pâte à choux, and meringues. Introduces nutritional and specialty diet concerns in baking and pastry. Emphasizes sanitary food handling practices and professional work habits. Course fee of \$750 for materials and equipment applies.

Course Learning Outcomes

1. Demonstrate proper operation of commercial baking equipment.
2. Define baking terms.
3. Define properties and functions of various ingredients.
4. Demonstrate scaling, adjusting and measuring recipes.
5. Define yeast-leavened breads, quick breads, pies, tarts, cookies, brownies, pate a choux, meringues, creams, and custards.
6. Prepare yeast-leavened breads, quick breads, pies, tarts, cookies, brownies, pate a choux, meringues, creams, and custards.
7. Evaluate yeast- leavened breads, quick breads, pies, tarts, cookies, brownies, pate a choux, meringues, creams, custards, and individual performance.
8. Recognize nutritional and specialty diet concerns related to baking and pastry.

CA 1180

Professional Kitchen Garde Manger

Credit hours: 5

Covers preparation of cold food items in a commercial kitchen environment. Covers salad greens, tossed, compound and composed salads, sandwiches, dressings & sauces, cold soups, display platters, assorted forcemeats, savory mousse, preservation techniques, cold hors d'oeuvres, cold appetizers, cheese and centerpieces. Course fee of \$750 for materials and equipment applies.

Course Learning Outcomes

1. Demonstrate the setup of proper mise-en-place.
2. Utilize a variety of fresh vegetables, fruits, cheeses, grains, pasta and legumes in cold food preparations.
3. Demonstrate proficiency using knives and garnishing tools to achieve professional quality results when producing vegetable and/or fruit carvings.
4. Demonstrate safe and sanitary use of garde manger equipment.
5. Identify various salad greens, salad dressings, composed salads, sandwiches and cheeses.
6. Prepare various salad greens, salad dressings, composed salads, cold soups, cold sauces, sandwiches, cold hors d'oeuvres, cold appetizers, aspic gelee, forcemeats, savory mousse, trays and preserved items.
7. Evaluate various salad greens, salad dressings, composed salads, cold soups, cold sauces, sandwiches, cold hors d'oeuvres, cold appetizers, aspic gelee, forcemeats, preserved items, plates, platters, and cheeses.

CA 1230

Professional Kitchen I Cooking

Credit hours: 5

Covers advanced food service skills in a commercial kitchen environment. Introduces center of plate foods, starches, vegetables, and compound sauces. Advances comprehension of ingredients, stocks, soups, sauces, protein fabrication, cooking methods, flavor and taste development . Includes daily end product assessment. Emphasizes sustainability, sanitary food handling practices and professional work habits. Course fee of \$750 for materials and equipment applies.

Course Learning Outcomes

1. Demonstrate mise en place relative to preparation, timing, cooking, and serving.
2. Use herbs, spices, and seasonings in cooking national and international food items.
3. Explain the factors that affect taste to optimize flavors when preparing and cooking food.
4. Prepare center of plate food items using advanced proteins, vegetables, and starches using various cooking methods.
5. Cook center of plate food items using advanced proteins, vegetables, and starches using various cooking methods and modern plate design.
6. Prepare a variety of compound sauces.
7. Demonstrate the process of cooling, storing, labeling and dating, and reheating food utilizing the sanitary procedures when working with all food items.
8. Explain sustainability practices in a foodservice operation.

CA 1310

Purchasing and Storeroom Management

Credit hours: 3

Teaches principles and practices concerning purchasing of foods, supplies, and materials for a modern full-service food service operation. Emphasizes buying, writing specifications, determining needs, and controlling quality.

Course Learning Outcomes

Please see the department for information.

CA 1320
Culinary Management

Credit hours: 3

Focuses on employee management and supervision concepts used in the food service field.
Includes instruction on writing a professional resume.

Course Learning Outcomes

Please see the department for information.

CA 1490

Food Service Sanitation

Credit hours: 1

Explains effective sanitation measures that will keep customers and employees safe. Uses the ServSafe Program from the National Restaurant Association to meet the state wide requirements for food service employee's sanitation and safety training.

Course Learning Outcomes

1. Identify microorganisms related to food spoilage and foodborne illnesses.
2. Explain correct procedures when preparing potentially hazardous food.
3. Explain good personal hygiene in a food service operation.
4. Outline the requirements for receiving and storage of food products.
5. Identify Hazard Analysis Critical Control Points (HACCP) throughout the food handling process.
6. Recognize sanitary and safety design features of food production equipment and facilities.
7. Describe appropriate measures for pest control.
8. Review the laws and regulatory agencies governing safety and sanitation in food service operations.

CA 2120

Professional Kitchen II Restaurant

Credit hours: 5

Focuses on practical applications of all Culinary arts courses by running Restaurant Forte. Enhances knowledge of cooking methods, mise en place, flavor building, soups, salads, entrees and desserts through regional and international cuisines. Course fee of \$750 for materials, equipment applies.

Course Learning Outcomes

1. Demonstrate a comprehensive understanding of operating a current restaurant to industry standards.
2. Demonstrate proper station mise en place, organizational skills, and time management.
3. Demonstrate effective techniques in presenting food that maximizes the flavor and aesthetic quality of the products used with regards to regional and international cuisines.
4. Demonstrate the ability to work harmoniously within a restaurant setting to achieve the desired outcomes.
5. Prepare appetizers, salads, soups, sauces, entrees, and dessert items incorporating various proteins, vegetables, fruits, and starches using different cooking methods.
6. Evaluate appetizers, salads, soups, sauces, entrees, and desserts items incorporating various proteins, vegetables, fruits, and starches using different cooking methods.
7. Discuss current presentation and service styles of restaurant food, beverages and glassware in a restaurant setting.
8. Demonstrate how to maximize food freshness, quality, safety and sanitation when serving and storing hot and cold foods.

CA 2130

Advanced Pastry Baking

Credit hours: 5

Covers advanced baking and pastry skills in a commercial kitchen environment. Covers cakes, icing, decoration of cakes, petit fours, dessert sauces, laminated doughs, and fillings and toppings. Introduces the use and role of value added dessert items, and banquet and catering dessert requirements. Emphasizes sanitary food handling practices and professional work habits. Course fee of \$750 for materials and equipment applies.

Course Learning Outcomes

1. Demonstrate the set up of proper mise-en-place.
2. Define advanced baking terms.
3. Define properties and functions of various ingredients.
4. Define various cakes, icings, cake decorations, dessert sauces, fillings, and toppings.
5. Prepare various cakes, icings, cake decorations, dessert sauces, fillings, and toppings.
6. Evaluate various cakes, icings, cake decorations, dessert sauces, fillings, and toppings.
7. Demonstrate the presentation of baked goods and desserts.
8. Discuss the application of value added products.

CA 2450
Menu Design

Credit hours: 2

Introduces menu design. Explores the relationship between menus and restaurant design for both production and service areas. Explains fundamental principles and techniques for planning menus for different operation styles.

Course Learning Outcomes

Please see the department for information.

CA 282R

Culinary Arts Internship

Credit hours: 1 to 8

Provides a transition from school to work where learned theory is applied to actual practice through a meaningful on-the-job experience commensurate with classroom instruction. May be repeated for up to eight hours toward graduation in the Culinary arts degree. May be graded credit/no credit.

Course Learning Outcomes

1. Obtain a meaningful position in an industry-related area.
2. Establish skills in setting individual work objectives.
3. Improve human relations skills.
4. Develop abilities to establish social skills in the work environment.
5. Develop an understanding of proper work habits and work ethics.
6. Develop abilities to evaluate own performance objectively and take corrective action where needed.
7. Enhance written communication skills through weekly reports.
8. Apply classroom learning to current employment based internship objectives with the director of the Culinary arts Institute.

CAW 1130

Residential Cabinetry

Credit hours: 4

Studies cabinetmaking methods including joinery, construction, gluing, and clamping. Includes building a set of residential cabinets. Introduces hand and portable electric and air tools. Covers tool care and minor repairs. Stresses functions, selection, maintenance, and safety. Course fee of \$15 for materials, equipment applies.

Course Learning Outcomes

Please see the department for information.

CAW 1140

Millworking and Safety Shop I

Credit hours: 5

A lab for CAW students. Teaches fundamentals of woodworking machines and standard millwork operations. Studies correct construction techniques. Safety is taught the first 15 hours and stressed throughout the course. Course fee of \$25 for materials, equipment applies.

Course Learning Outcomes

Please see the department for information.

CAW 1150

Design Drafting and Billing

Credit hours: 3

For CAW majors and other interested community members. Teaches detailed drawing concepts, writing bills of materials, and material cost estimates. Uses all elements of good design.

Course Learning Outcomes

1. Make sketches and working drawings of shop projects
2. Make bills of materials for projects
3. Read and interpret blueprints
4. Make bills of materials for projects
5. Enlarge by squares
6. Draw one point perspectives

CAW 1170

Finish Technology

Credit hours: 2

For CAW majors and other interested community members. Studies types of stains, fillers and finishes, and techniques to properly prepare wood. Teaches hand and spray painting. Includes lab experience. Course fee of \$15 for materials applies.

Course Learning Outcomes

Please see the department for information.

CAW 1210
Cabinetmaking Materials and Hardware

Credit hours: 1

Emphasizes characteristics of wood, plastic laminates, plywoods, and particle boards. Discusses proper use and residential hardware. Covers specifications, types, selection, and installation.

Course Learning Outcomes

Please see the department for information.

CAW 1240 **Millworking Shop II**

Credit hours: 5

A second semester shop course for CAW students and interested community members. Teaches the design and construction of more difficult millworking projects. Studies advanced jointers, finishing techniques, and fastening devices. Stresses safety. Course fee of \$25 for materials, equipment applies.

Course Learning Outcomes

Please see the department for information.

CAW 1250

Drafting and Computer Applications for Cabinetmakers

Credit hours: 4

Emphasizes design, purpose, function, appearance, materials, and construction for quality cabinetmaking. Covers efficient timesaving methods. Teaches material cost estimating. Teaches basic CNC software. Uses computer software Cabinet Vision& Master CAM. Course fee of \$15 for materials, software applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Students will use the computer to aid in designing projects relating to the woodworking industry.
2. Students will use the computer to aid in estimating projects relating to the woodworking industry.
3. Students will use the computer to aid in the production of project parts relating to the woodworking industry.

CAW 140R

Millwork Technology

Credit hours: 4

Teaches the techniques and skills necessary to construct quality furniture using current technology and processes. Stresses safety, machine and tool usage, joinery, and operations. Each semester the joinery and operations will differ and increase in difficulty depending on the required project. May be repeated for a maximum of 16 credits toward graduation.

Course Learning Outcomes

1. Demonstrate safety associated with machine, power tool, and hand tool usage.
2. Implement project planning.
3. Demonstrate mastery of specific joinery.
4. Demonstrate mastery of wood working operations.

CAW 2250

Computer Aided Manufacturing for Woodworking

Credit hours: 4

Teaches how to use computer numerical controlled "CNC" machines to aid in the manufacturing of wood products. Includes machine setup, tooling, software usage, and parts production. Uses CAM software.

Course Learning Outcomes

1. Demonstrate CNC concepts, machine setup, interface, and usage.
2. Demonstrate proficiency with CAM software.
3. Choose appropriate tooling for specific applications.
4. Produce parts necessary to complete a require project.

CAW 2300

Counter Top Technology

Credit hours: 3

Explores methods used to produce different types of counter-tops. Studies high pressure laminates, solid wood, solid surface, tile, and stone. Includes field trips to counter-top shops. Course fee of \$25 for materials, equipment applies.

Course Learning Outcomes

Please see the department for information.

CAW 2310
Cabinetry Math

Credit hours: 2

Covers math used in cabinetmaking. Includes fractions, decimals, percents, interest, volume, and metrics. Studies special trade formulas. Students receive instruction through structured situations to cope with the special problems required in the woodworking industry.

Course Learning Outcomes

Please see the department for information.

CAW 2430

Commercial Cabinetry Technology

Credit hours: 4

Studies zoning, shop flow, and production set. Includes field trip to commercial cabinet shop. Teaches set up of machines used in the industry. Course fee of \$15 for materials, equipment applies.

Course Learning Outcomes

Please see the department for information.

CAW 2450

Machine Maintenance and Upkeep

Credit hours: 2

Studies the maintenance and upkeep of machines and tools used in the woodworking industry. Focuses on sharpening, routine maintenance, machine set-up, adjustments, and diagnosing problems.

Course Learning Outcomes

1. Create a maintenance schedule and perform necessary operations for maintenance.
2. Understand and sharpen tools, bits, cutters.
3. Set-up and make adjustments to power tools and machines.
4. Diagnose and make repairs to power tools and machines.

CAW 299R

Skills USA

Credit hours: 1

Supports and facilitates the goals and objectives of Skills USA pre-professional student organization that develops social awareness, civic, recreational, and social activities. Students may participate in local, state, and national contests. May be repeated for a maximum of 2 credits toward graduation.

Course Learning Outcomes

Please see the department for information.

CGCL 6100

Foundations of American Constitutionalism

Credit hours: 3

Surveys the philosophical and historical foundations of constitutionalism in America. Covers ancient, medieval, and modern political theorists' ideas about regimes and constitutions. Focuses on the English constitution, the American state constitutions, and the articles of Confederation that the framers of the United States Constitution drew upon in creating the 1787 national constitution. Includes discussion of the Federalist and Anti-Federalist Papers. Analyzes how these foundations continue to shape American constitutional law today.

Course Learning Outcomes

1. Discuss how ancient, medieval, and early modern ideas shaped the framing of the United States Constitution.
2. Interpret primary source documents from the history of political thought.
3. Distinguish between what promotes and what undermines the American constitutional order.
4. Promote measures that will increase American citizens' understanding of the foundations of their constitutional order.

CGCL 6110

Structures of Government in American Constitutional Law

Credit hours: 3

Engages students in an effort to understand the institutional logic that animates the American Constitution. Examines the structure of government established by the Constitution, focusing primarily on the two fundamental institutional features that characterize that structure: separation of powers and federalism.

Course Learning Outcomes

1. Discuss the rationale, structure, and content of the United States Constitution.
2. Interpret key texts in the history of American constitutional interpretation.
3. Discuss the historical development of the structural principles of American constitutionalism.
4. Explain how important judicial decisions have shaped American constitutional law.
5. Distinguish between what promotes and what undermines federalism and the separation of powers.
6. Promote measures that will increase American citizens' understanding of federalism and the separation of powers.

CGCL 6120

Rights and Liberties in American Constitutional Law

Credit hours: 3

Focuses on the content and enforcement of constitutionally protected civil rights and civil liberties in the United States. Begins with the foundational ideas that formed the content of the American tradition of civil liberties in the early republic and gave rise to reliance on judicial review as a guarantor of constitutional rights. Examines the constitutional disputes over equal protection, property rights, criminal due process, freedoms of speech, press, and association, religious liberty and other judicially created rights concerning privacy, marriage, and parental rights. Explores primary sources, both in the form of judicial opinions and non-judicial documents.

Course Learning Outcomes

1. Discuss the role of a constitution in a democratic republic, both as law that limits political discretion and as an ordering mechanism that shapes political action.
2. Interpret key texts in the history of American constitutional interpretation.
3. Discuss the institutional and political context of judicial decisionmaking, particularly as this context enables and constrains judicial enforcement of constitutional rights and liberties.
4. Explain how important judicial decisions have shaped American constitutional law.
5. Distinguish between what promotes and what undermines rights and liberties in America.
6. Promote measures that will increase American citizens' understanding of rights and liberties.

CGCL 6200

Foundations of American Democracy

Credit hours: 2

Surveys the philosophical and historical foundations of American democracy and equal citizenship. Covers key texts about democracy from ancient and modern republican writers, including theorists of democracy in America, like Publius, John Adams, and Thomas Jefferson, and observers of democracy in America like Alexis de Tocqueville. Focuses on the United States Constitution.

Course Learning Outcomes

1. Analyze the historical foundations of American democracy and the requirements for its continuation.
2. Interpret primary source documents from American democratic history.
3. Evaluate how American historical developments have promoted or undermined democracy.
4. Appraise the health of democracy in the American political system today.

CGCL 6300

Foundations of American Liberty

Credit hours: 2

Surveys the philosophical and historical foundations of individual rights, limited government, and liberty in America. Covers key texts from the classical liberal tradition, including Roger Williams, John Locke, Thomas Paine, John Adams, Thomas Jefferson, Publius, George Washington, and John Taylor. Focuses on the Declaration of Independence.

Course Learning Outcomes

1. Assess the historical foundations of American liberty and the requirements for its continuation.
2. Interpret primary source documents from the history of American liberty.
3. Evaluate how American political thought has promoted or undermined liberty.
4. Appraise the strength of the idea of liberty in American intellectual life today.

CGCL 6400

American Political Development

Credit hours: 2

Surveys the development of the American political regime. Focuses on the major political ideas and institutions that have informed the thought and practice of American politics over the course of American history. Includes a study of the development of American constitutionalism, federalism, Congress, the presidency, and the Supreme Court.

Course Learning Outcomes

1. Assess the historical development of the American political system and the requirements for its continuation.
2. Interpret primary source documents from American political history.
3. Evaluate how the development of American political ideas and institutions has continued, expanded on, or departed from the American founding.
4. Analyze how ideas and institutions have interacted over the course of American political development.

CHEM 1110

Elementary Chemistry for the Health Sciences PP

Credit hours: 4

Introduces the fundamentals of chemistry to students in the health sciences. Covers chemical measurements and calculations, atomic structure, chemical bonding, chemical reactions, states of matter, solutions, chemical equilibrium, acid-base systems, and introduces organic chemistry.

Course Learning Outcomes

1. Discuss the different states of matter, and the relationship between matter and energy.
2. Identify the elements and chemical compounds by name(s) and symbol(s).
3. Solve stoichiometry problems to identify different chemical balance and reaction types.
4. Solve chemistry problems using units in calculations.
5. Identify the internal structure of the atom and its relationship to radioactivity.
6. Discuss the basic structure of molecules and how the structure affects chemical reactions.

CHEM 1115

Elementary Chemistry Laboratory

Credit hours: 1

Introduces inorganic laboratory experiments including density, precipitation, determination of empirical formulas, gas laws and acid-base reactions. Course Lab fee of \$27 applies.

Course Learning Outcomes

1. Practice proper chemical safety procedures within the laboratory.
2. Measure chemicals properly, safely and accurately, with proper application of significant figures.
3. Safely operate equipment and instruments within the laboratory.
4. Conduct experiments covering the nature of matter, chemical processes, and chemical stoichiometry.
5. Prepare reports interpreting the results of these experiments using standard formats.

CHEM 1210

Principles of Chemistry I PP

Credit hours: 4

First semester of a full-year course primarily for students in the physical and biological sciences and engineering. Covers fundamentals of chemistry including atoms, molecules, reactions, stoichiometry, chemical bonding, thermochemistry, and gas laws.

Course Learning Outcomes

1. Use mathematical and chemical knowledge to solve stoichiometric and other types of chemistry problems.
2. Use the periodic table to make predictions about the structure and properties of atoms, ions, and chemical reactions.
3. Explain in basic terms the current quantum mechanical model of the atom.
4. Differentiate types of chemical compounds on a molecular level.
5. Apply basic thermodynamic principles to chemical reactions.

CHEM 1215

Principles of Chemistry I Laboratory

Credit hours: 1

Primarily for students in the physical and biological sciences and engineering. Introduces laboratory safety and chemical waste disposal practices. Teaches techniques of using standard laboratory equipment. Shows how to record laboratory data and prepare laboratory reports. Experiments follow topics in CHEM 1210. Course Lab fee of \$26 applies.

Course Learning Outcomes

1. Practice proper chemical safety procedures with in the laboratory.
2. Measure chemicals properly, safely and accurately, with proper application of significant figures.
3. Safely operate equipment and instruments within the laboratory.
4. Use laboratory skills learned to conduct experiments covering the nature of matter, chemical processes, and chemical stoichiometry.
5. Prepare reports interpreting the results of these experiments using standard formats.

CHEM 1220
Principles of Chemistry II PP

Credit hours: 4

Continuation of Chemistry 1210. Primarily for students in the physical and biological sciences and engineering. Covers intermolecular interactions, properties of solutions, kinetics, equilibria, thermodynamics, and electrochemistry.

Course Learning Outcomes

Please see the department for information.

CHEM 1225

Principles of Chemistry II Laboratory

Credit hours: 1

Is designed for the physical and biological sciences and engineering. Teaches intermolecular interactions, properties of solutions, kinetics, equilibria, thermodynamics, and electrochemistry. Follows CHEM 1215 and emphasizes topics from CHEM 1220. Course Lab fee of \$42 applies.

Course Learning Outcomes

1. Practice proper safety procedures within a laboratory with a variety of chemicals.
2. Measure chemicals properly, safely and accurately, with proper application of significant figures.
3. Safely operate equipment and instruments within the laboratory.
4. Use laboratory skills learned to conduct experiments covering the nature and states of matter, chemical processes including thermochemistry, electrochemistry, chemical kinetics, and acid-base chemistry.
5. Prepare reports interpreting the results of these experiments using standard formats.

CHEM 1250

Chemistry Cornerstone- Research and Careers

Credit hours: 1

Explores scientific literature, culture and careers. Teaches college success strategies for STEM fields to support students interested in a STEM major.

Course Learning Outcomes

1. Collaborate with campus partners, such as faculty, advisors, and library staff
2. Employ time- management skills to navigate higher education and enable a path to graduation
3. Exhibit awareness of potential career paths in chemistry
4. Acclimate to the norms and culture of the chemistry community
5. Navigate chemistry literature, including searching, analysis, and proper citation thereof
6. Demonstrate professional etiquette in electronic communication and face-to- face interactions
7. Develop job-search skills such as resume and cover letter creation, interviewing, and cultivating a professional online presence
8. Describe the professional and educational qualities and standards that employers expect

CHEM 1260

Chemistry Cornerstone- Ethics

Credit hours: 1

Explores scientific ethics. Teaches college success strategies for STEM fields to support students interested in a STEM major.

Course Learning Outcomes

1. Evaluate ethical dilemmas in scientific context
2. Critically read scientific literature
3. Utilize campus resources to support the pursuit of a STEM degree
4. Communicate scientific concepts both in writing and in oral presentations

CHEM 2310

Organic Chemistry I

Credit hours: 4

The first in a series of two organic chemistry classes for students majoring in science and for those interested in careers in medicine, dentistry, veterinary science, and pharmacy, who must complete two semesters of organic chemistry. Teaches bonding and structures of organic molecules. Explores the relationship between structure and reactivity of organic functional groups. Introduces the concepts of nomenclature, stereochemistry, and reaction mechanism. Canvas Course Mats \$84/Wiley applies.

Course Learning Outcomes

1. Demonstrate the relationship between molecular structure and function, using inter- and intramolecular forces and their influence on the physical properties of organic molecules.
2. Illustrate organic molecules and organic reactions in three dimensions.
3. Identify what qualities of an acid, base, nucleophile, or electrophile that make it strong or weak.
4. Propose plausible arrow-pushing mechanisms to illustrate electron flow during organic chemical reactions, such as addition, substitution, and elimination
5. Explain what factors govern the stereo-, regio-, and chemoselectivity of organic reactions
6. Evaluate the relative stability among competing intermediates and transition states in organic reactions using energy and reaction coordinate diagrams.
7. Apply the basic concepts of synthetic organic chemistry to propose and evaluate the preparation of organic molecules in fewer than ten steps from simple starting materials
8. Use IR (Infrared) spectra to identify functional groups in organic molecules, to differentiate similar molecules, and to predict the outcome of organic chemical reactions
9. Relate how organic chemistry topics are relevant in the real world.

CHEM 2315

Organic Chemistry I Laboratory

Credit hours: 1

The first of a series of two laboratory courses to accompany CHEM 2310 and 2320. For students majoring in science and those interested in careers in medicine, dentistry, veterinary science, and pharmacy. Introduces safety in organic chemistry lab and chemical waste disposal. Teaches basic separatory, purification, and analytical techniques in organic chemistry such as crystallization, melting points, distillation and chromatography. Introduces organic synthesis using simple organic reactions. Introduces natural product isolation. Course Lab fee of \$88 applies.

Course Learning Outcomes

1. Demonstrate understanding of the paramount importance of laboratory safety and proper waste disposal in the organic chemistry laboratory;
2. Synthesize organic compounds by carrying out simple organic reactions;
3. Use basic separatory and purification techniques, such as distillation and crystallization, to isolate the products of organic reactions;
4. Apply basic analytical techniques, such as melting point determination and chromatography, to characterize the products of organic reactions.

CHEM 2320

Organic Chemistry II

Credit hours: 4

Introduces spectroscopic techniques used in identification of organic compounds. Teaches carbon-carbon bond formation strategies. Introduces the concept of aromaticity. Teaches free radicals and their effects on environment and life. Surveys biologically important organic molecules such as carbohydrates, proteins, lipids, and nucleic acids. Canvas Course Mats \$84/Wiley applies.

Course Learning Outcomes

1. Explain the relationship between molecular structure and function, using inter- and intramolecular forces and their influence on the physical properties of organic molecules.
2. Illustrate organic molecules and organic reactions in three dimensions.
3. Identify what qualities of an acid, base, nucleophile, or electrophile that make it strong or weak.
4. Propose plausible arrow-pushing mechanisms to illustrate electron flow during organic chemical reactions, such as addition, substitution, elimination, rearrangement, oxidation, reduction, condensation, and pericyclic
5. Explain what factors govern the stereo-, regio-, and chemoselectivity of organic reactions
6. Evaluate the relative stability among competing intermediates and transition states in organic reactions using energy and reaction coordinate diagrams.
7. Apply the basic concepts of synthetic organic chemistry, including retrosynthetic analysis, to propose and evaluate the preparation of organic molecules in fewer than ten steps from simple starting materials
8. Use Infrared, Ultraviolet, and Nuclear Magnetic Resonance spectroscopy and Mass Spectrometry to identify functional groups in organic molecules, to differentiate similar molecules, and to predict the outcome of organic chemical reactions
9. Relate how organic chemistry topics are relevant in the real world.

CHEM 2325

Organic Chemistry II Laboratory

Credit hours: 1

The second of a series of two laboratory courses to accompany CHEM 2310 and 2320. For students majoring in science and those interested in careers in medicine, dentistry, veterinary science, and pharmacy. Provides hands-on experience in organic synthesis using a series of single and multistep transformations. Teaches identification of products of reactions using spectroscopic techniques. Explores biologically important organic molecules. Course Lab fee of \$88 applies.

Course Learning Outcomes

Please see the department for information.

CHEM 3000

Analytical Chemistry

Credit hours: 2

For Chemistry majors and others interested in the basic principles of chemical measurement. Studies principles of quantitative analysis, stoichiometry, equilibrium theory, and volumetric analysis. Introduces error analysis and instrumental methods, especially electrochemistry, spectrophotometry, chromatography, and mass spectrometry

Course Learning Outcomes

1. Explain the role of error in quantitative analysis.
2. Illustrate aqueous chemical equilibria.
3. Use classical analytical techniques in chemical measurements.
4. Use modern instrumental techniques in chemical measurements.
5. Apply error analysis in reporting experimental data.

CHEM 3005

Analytical Chemistry Laboratory

Credit hours: 2

For Chemistry majors and others interested in the basic principles of chemical measurement. Laboratory companion to CHEM 3000. Involves conducting experiments in quantitative and qualitative analysis, including volumetric and gravimetric analysis. Also, students will conduct experiments in introductory instrumental methods, including experiments in spectrophotometry, electrochemistry, and chromatography. Course Lab fee of \$146 applies.

Course Learning Outcomes

1. Demonstrate the role of glassware calibration in reducing random error in quantitative analysis.
2. Perform experiments using classical and modern analytical techniques.
3. Interpret results from classical and modern analytical experiments.
4. Prepare a proper laboratory notebook according to the standards of the American Chemical Society and the chemical sciences.

CHEM 3060

Physical Chemistry I WE

Credit hours: 4

Offers an advanced discussion of the laws of thermodynamics and chemical thermodynamics. Applies the laws to chemical reactions and equilibrium. Covers changes of state, including phase diagrams. Discusses real gases and real solutions. Introduces electrochemistry and chemical kinetics.

Course Learning Outcomes

1. Apply thermodynamics in an integrated way to all areas of chemistry.
2. Solve chemical equilibrium problems to predict outcomes of chemical reactions.
3. Analyze phase diagrams to predict the chemical and physical properties of real gases and solutions.
4. Differentiate kinetic versus thermodynamic control of reactions.
5. Summarize articles within the field of physical chemistry.
6. Provide meaningful feedback to others about their writing.
7. Translate the writings within the field of physical chemistry into everyday language.

CHEM 3065

Physical Chemistry I Lab

Credit hours: 1

Demonstrates physical chemistry experiments exploring principles and concepts introduced in CHEM 3060. Teaches design and execution of physical chemistry experiments and interpretation of the observations, as well as application of physical chemistry to solving physical chemistry problems. Course lab fee of \$75 applies.

Course Learning Outcomes

1. Measure the chemical and physical properties of real gases and liquids.
2. Measure equilibrium reactions to solve chemical equilibrium problems.
3. Measure reaction kinetics to solve kinetic problems.
4. Design experiments by manipulating scientific equipment, making measurements, and interpreting physical chemistry experiments.
5. Communicate chemical information effectively in written and oral formats.

CHEM 3070

Physical Chemistry II

Credit hours: 4

Provides an advanced discussion of quantum mechanics, including solutions to the Schrodinger wave equation. Connects quantum mechanics with observables, including spectroscopy.

Course Learning Outcomes

1. Describe the limitations of classical mechanics at molecular scales.
2. Describe the connection of quantum mechanical operators to observables, and the connection of observables to what is observed.
3. Calculate solutions to the Schrodinger wave equation, including probability densities and their graphs.
4. Interpret spectra.
5. Communicate chemical information effectively in written and oral formats.

CHEM 3075

Physical Chemistry II Lab

Credit hours: 1

Demonstrates physical chemistry experiments exploring principles and concepts. Provides opportunity to design and execute physical chemistry experiments and interpretation of the observations. Applies physical chemistry to solving physical chemistry problems.

Course Learning Outcomes

1. Solve the time dependent Schrodinger wave equation for one dimensional particle in a box.
2. Determine the energy levels for a simple molecule modeled as a harmonic oscillator.
3. Determine the energy levels for a two dimensional rotation of a simple molecule.
4. Analyze a spectrogram.
5. Calculate the Morse potential.
6. Design experiments by manipulating scientific equipment, making measurements, and interpreting physical chemistry experiments.
7. Communicate chemical information effectively in written and oral formats.

CHEM 3100

Advanced Inorganic Chemistry

Credit hours: 4

Reviews major trends across the periodic table. Surveys basic structure, bonding, and oxidation states of the elements. Introduces inorganic stereochemistry including coordination compounds.

Course Learning Outcomes

Please see the department for information.

CHEM 3115

Advanced Inorganic Chemistry Lab

Credit hours: 1

Explores principles and concepts introduced in CHEM 3100. Teaches design and execution of inorganic chemistry experiments and interpretation of the observations. Uses application of inorganic chemistry to solving inorganic chemistry problems. Course Lab fee of \$130 applies.

Course Learning Outcomes

1. Design experiments, including manipulating scientific equipment, making measurements, and interpreting inorganic chemistry experiments.
2. Explain the procedures and equipment used in conducting laboratory experiments in Inorganic Chemistry.
3. Measure the chemical and physical properties of matter.
4. Analyze results of Inorganic Chemistry laboratory experiments.
5. Communicate chemical information effectively in written and oral formats.

CHEM 3600

Biological Chemistry

Credit hours: 3

Introduces principles of the chemical processes that define living organisms. Covers structure and function of proteins, carbohydrates, lipids and nucleic acids. Explores metabolic pathways, biosynthesis, enzymatics, thermodynamics, membrane dynamics and related processes within a living cell. Emphasizes molecular mechanisms of reactions and their outcome.

Course Learning Outcomes

1. Analyze the fundamentals of biochemistry in the world around them.
2. Identify biomolecules, including carbohydrates, lipids, and proteins, and their roles in the fundamental biochemical pathways, including metabolic pathways.
3. Evaluate the relevance of biochemistry to human concerns, including the health sciences and other fields of chemistry.
4. Explain the relationship of Biochemistry to both Biology and Chemistry.

CHEM 3605

Biological Chemistry Lab

Credit hours: 1

Introduces laboratory techniques in biochemistry. Studies methods and theory behind purification of proteins and nucleic acids including chromatography and electrophoresis. Uses methods in assessing enzyme activity and kinetics and protein structure analysis. Includes analysis and manipulation of DNA and RNA. Course Lab fee of \$145 applies.

Course Learning Outcomes

1. Explain how to use modern recombinant DNA techniques to express protein targets.
2. Differentiate between modern chromatographic techniques used to purify/enrich proteins.
3. Analyze proteins using a variety classical and modern methods.
4. Measure Enzyme Kinetics parameters using spectroscopic and other analytical techniques.
5. Justify how Protein Structural Analysis can be used for molecular docking and structure-based drug design.

CHEM 3620

Biological Chemistry II

Credit hours: 3

Is a continuation of CHEM 3600. Teaches in-depth the biochemistry of molecular and cell biology processes. Explores the topics of molecular information flow and signaling. Examines current understanding in biochemical methods and ideas beyond those discussed in Biochem I.

Course Learning Outcomes

1. Describe the major concepts of molecular biology and the biochemistry of anabolic and information-related life processes.
2. Describe current trends in biochemical science.
3. Contrast meaningful and poor biochemical science using a conceptual basis.
4. Explain the chemical basis for biological phenomena such as disease, immunology, and medical intervention.
5. Summarize the molecular details of biochemical compounds and pathways.

CHEM 4000

Instrumental Analysis WE

Credit hours: 2

Covers modern instrumental methods and basic principles of instrumentation. Includes spectroscopic and chromatographic analysis.

Course Learning Outcomes

1. Identify the internal components of modern instrumentation in chemical science.
2. Evaluate various atomic spectrometric methods, instrumentation, and their use in quantitative analysis.
3. Distinguish between various molecular spectroscopic methods, instrumentation, and their use in quantitative and qualitative analysis.
4. Evaluate various electroanalytical methods, instrumentation, and their use in quantitative analysis.
5. Distinguish between various analytical separation methods, instrumentation, and their use in quantitative and qualitative analysis.
6. Formulate concepts of validation of data and experimental design.
7. Compose Chemistry- appropriate texts such as SOPs, research reports and review articles for multiple audiences.

CHEM 4005

Instrumental Analysis Laboratory

Credit hours: 2

Experiments in selected areas of instrumental methods of analysis. Covers both quantitative and qualitative methods of analysis. Includes introductory laboratory exercises and laboratories using advanced sample preparation and instrumental analysis techniques. Involves the independent creation and implementation of an advanced laboratory exercise. Course Lab fee of \$333 applies.

Course Learning Outcomes

1. Understand the operation of analytical instrumentation seen in a typical laboratory setting.
2. Understand and conduct laboratory experiments using advanced sample preparation and analytical instrumentation techniques.
3. Create and conduct independent experiments using advanced techniques.
4. Analyze and interpret the results of these experiments.
5. Write Lab Reports of a quality seen in an advanced academic/government/business laboratory setting.

CHIN 1020

Beginning Chinese II LH

Credit hours: 4

Offers a continuation of basic Chinese. Uses various methods of instruction that focus on the development of functional competence in listening, speaking, reading, and writing. Provides comprehensive explanations of basic Chinese grammar along with structural practice for building language accuracy. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken and written conversations at the "novice mid" level.
2. Express preferences or feelings using practiced or memorized words, phrases, and simple sentences at least at the "novice mid."
3. Present information orally and in writing using practiced or memorized words, phrases, and simple sentences at least at the "novice mid."
4. Identify the main idea and some basic details in conversations and texts supported by gestures or visuals at least at the "novice mid."
5. Reproduce aspects of Chinese grammar at least at the "novice mid."
6. Recognize aspects of China's cultural heritage, society and everyday life.

CHIN 2010

Intermediate Chinese I LH

Credit hours: 4

Offers a continuation of basic Chinese. Reviews and builds additional skills from 1000-level language courses. Uses various methods of instruction that focus on the development of functional competence in listening, speaking, reading, and writing. Introduces authentic texts and provides discussions based on reading. Provides comprehensive explanations of basic Chinese grammar along with structural practice for building language accuracy. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken and written conversations at the "novice high" level.
2. Express feelings or opinions on a given topic at least at "novice high."
3. Present information orally and in writing at least at "novice high."
4. Summarize the main idea in informational texts that are spoken and written at least at "novice high."
5. Summarize the main idea in informational texts that are spoken and written at least at "novice high."
6. Develop a better conceptual understanding and partial control over basic Chinese structures at least at "novice high."
7. Reproduce aspects of Chinese grammar at least at "novice high."
8. Recognize aspects of China's cultural heritage, society and everyday life.

CHIN 202G

Intermediate Chinese II HH GI

Credit hours: 4

Emphasizes increased communicative ability as well as grammatical accuracy; adds more complex, literary grammatical structures, as well as discussion of contemporary cultural and political themes. Includes reading of basic 1000 characters and writing of basic 450-600 characters. Uses diglot weave (mixture of English and Chinese) and character-romanization mix to ease learning of characters. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Show comprehension of spoken Chinese at the intermediate level
2. Demonstrate increased speaking ability through guided and spontaneous conversation about contemporary cultural and political topics
3. Give a demonstration of a basic familiarity with written Chinese
4. Display awareness of some of the complexities of everyday culture in the Chinese-speaking world, as manifested in both verbal and non-verbal behavior
5. Interrelate knowledgeably and respectfully within the context of Chinese-speaking society

CHIN 3050

Advanced Chinese

Credit hours: 3

Designed for non-native Mandarin speakers who, as a result of foreign residency or similar exposure to the language, have attained a good mastery of basic Mandarin Chinese. Sharpens students' speech-making, reading, and writing skills through advanced Chinese readings about culture, civilization and society, with an emphasis on vocabulary, grammar and syntax. Enhances students' cultural knowledge and awareness through a variety of carefully designed practices and activities. Taught predominantly in Chinese. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Master a variety of grammatical concepts, including Chinese sentence structure, and Chinese vocabulary, in Mandarin Chinese;
2. Comprehend a variety of literary and cultural texts written in Chinese;
3. Describe a variety of cultural topics orally and in writing;
4. Develop competence in Chinese language and culture;
5. Describe Chinese culture, society and customs.

CINE 2312

Film History II

Credit hours: 3

Explores the development of the feature film, both in America and abroad from 1940 to the Present. Emphasizes the continuing evolution of motion pictures from the height of the Studio System 1930s through to its status as one "form" of digital entertainment in 2010. Examines film as a serious historical study of a form of mass communication, which has had ethical, social, and political consequences on society. Includes lecture, screenings, and demonstrations with critical discussions of assigned readings and films. (Note: Some films screened may be considered controversial and carry an "R" rating.)

Course Learning Outcomes

1. Outline the evolution of American film industry practices from 1940 to the Present.
2. Explain the connection between this evolution and the advancement of current motion picture practices.
3. Compare the characteristics of motion picture industries in the United States with those of emerging world cinemas.
4. Articulate the creation and evolution of various genres, movements, and stars.
5. Argue the ethical, social, and political consequences of industry practices on society.

CIVE 2000

Introduction to Civil Engineering Seminar

Credit hours: 1

Introduces various civil engineering careers and related industries. Emphasizes the importance of life-long learning and active participation in professional societies and communities through lectures given by practicing engineers using their own experiences. Covers resume creation, internship opportunities, and licensure process.

Course Learning Outcomes

1. Describe available career paths in civil engineering.
2. Prepare a professional resume.
3. Collect information on skills and technical knowledge needed for a given area of civil engineering.
4. Present own findings regarding requirements for pursuing a specific civil engineering area.

CIVE 2130

Engineering Economics and Statistics

Credit hours: 3

Covers fundamental engineering economic topics and introduces concepts of probability and statistics. Includes economic compound interest and discount rate factors, nominal and effective interest rates, cash flow diagrams, capitalized cost, net present worth analysis, equivalent uniform annual cost, internal rate of return, benefit-cost analysis, basic microeconomics, cost estimation, and cost indexes. Includes probability theories, random sampling, Gaussian distributions, Chi-Squared distributions, hypothesis testing, and analysis of variation.

Course Learning Outcomes

1. Calculate present worth, interest rates, future worth, and life cycle
2. Construct cash flow diagrams
3. Implement economics knowledge in a cost estimation and life-cycle cost analysis
4. Determine probability of various events using different theories
5. Calculate statistical parameters of data sets
6. Interpret the findings from a statistical or probabilistic analysis
7. Conduct a regression analysis

CIVE 3000

Civil Engineering Career Planning Seminar

Credit hours: 1

Examines various civil engineering careers and related industries. Emphasizes the importance of life-long learning and active participation in professional societies and communities through lectures given by practicing engineers using their own experiences. Introduces various engineering codes of ethics. Prepares upper-division students for their engineering careers.

Course Learning Outcomes

1. Collect information on different job types and post-bachelor's opportunities.
2. Analyze ethical decisions using ASCE or NSPE codes of ethics.
3. Compare different employment paths for civil engineering.
4. Prepare a five-year career plan.

CIVE 3010

Introduction to Transportation Engineering

Credit hours: 3

Covers analysis and design of transportation systems and their components. Introduces technological, economic, and social aspects of transportation. Covers economic considerations, role of public policy, system planning, design, management, traffic flow models, intersection control, network analysis, and environmental impact. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Conduct field studies of traffic speed, volume, and turning movements
2. Determine optimal intersection configurations and signal timing plans for efficient flow of traffic
3. Assess capacity, flow rate, operating speed, and level of service for various types of highway configurations
4. Apply principles of engineering economics and life cycle cost analysis to transportation systems
5. Design horizontal and vertical curves in highway geometry
6. Prepare mass flow diagrams
7. Prepare technical reports for transportation systems

CIVE 3130

Introduction to Structural Engineering

Credit hours: 3

Introduces fundamental principles of structural loads, analysis, steel, and concrete design. Covers gravity and lateral loads, and how to apply these to the analysis and design of structures. Develops the fundamentals of steel and concrete design; including materials, tension, compression, shear and bending member design. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Determine design loads for a building and its components
2. Analyze determinate trusses and beams
3. Analyze simple indeterminate beams
4. Draw shear and moment diagrams for determinate beams and frames
5. Draw influence diagrams for determinate trusses and beams
6. Calculate deflections of statically determinate trusses and beams

CIVE 3210

Introduction to Geotechnical Engineering

Credit hours: 3

Focuses on the study of soil properties, classifications, and behavior. Applies principles of mechanics to soil as an engineering material. Introduces consolidation and compaction theories, effective stresses, shear strength, and earth pressure and slope stability. Includes a design component. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Identify soil type and gradation.
2. Calculate appropriate weight-volume parameters for soil.
3. Conduct soil classification assessment.
4. Calculate hydraulic conductivity for soils.
5. Calculate the vertical and horizontal effective stress and total stress in soil.
6. Calculate the settlement of footings on sand and clay based on settlement and consolidation parameters.

CIVE 3310

Civil Engineering Fluid Mechanics

Credit hours: 3

Covers the fundamentals of fluid mechanics including fluid properties, fluid statics, the Bernoulli equation, fluid kinematics, the integral and differential analyses of fluid flow. Introduces dimensional analysis, similitude, and modeling. Covers viscous internal and external flows, and turbomachines. Includes a design component.

Course Learning Outcomes

1. Define fluid properties such as density, specific weight, viscosity, and specific gravity.
2. Calculate the buoyancy force acting on floating and immersed objects.
3. Apply conservation of mass and momentum to fluid problems.
4. Calculate energy losses in pipe flow and fittings.
5. Use pump performance curves to select pumps for various applications.

CIVE 3320

Introduction to Water Resources

Credit hours: 3

Covers weather patterns, precipitation measurement, distribution, and runoff. Focuses on pipe flow and open channel flows. Introduces storm hydrograph and peak flow analysis, flood design, reservoir and channel routing. Includes a design component. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Evaluate pumps to meet given applications and constraints
2. Perform hand calculations for a simple water pipe network
3. Use modeling software to design a more complex water distribution system
4. Apply energy and momentum equations to design open channels
5. Perform calculations of various hydrologic processes
6. Apply frequency analysis to determine risk of failure for hydraulic structures sized for flood events
7. Compute peak flow and surface runoff hydrographs for a watershed
8. Analyze culvert performance for various inlet and outlet control conditions
9. Design a storm water retention pond to meet specified constraints

CIVE 3335

Hydrology and Hydraulics Lab WE

Credit hours: 2

Covers temperature, pressure, and flow measurement, along with calibration of thermal/fluid sensors in a lab setting. Focuses on experiments to investigate various phenomena in fluid flow, hydraulics, and hydrology. Investigates the performance of pumps. Includes a writing component. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Perform temperature measurements using thermocouple wires, RTD, and thermistors
2. Perform pressure measurements using manometers, barometers, and various gauges
3. Perform flowrate measurements using mass and time technique, rotameters, and obstruction meters
4. Perform velocity measurements using pitot tube
5. Write simple data acquisition programs to collect data
6. Analyze experimental data
7. Communicate experimental results in oral and written engineering formats
8. Prepare written reports and memoranda detailing experimental theory, procedures, results, conclusions and recommendations

CIVE 3410

Introduction to Civil Engineering Materials

Credit hours: 3

Focuses on introducing concepts and designs related to civil engineering materials, especially concrete, asphalt, steel and wood. Includes aspects of mechanical properties, testing methods, manufacturing or construction processes, distresses and degradation mechanisms, and their effects on design or selection of various materials used in civil engineering infrastructure.

Course Learning Outcomes

1. Identify chemical components that comprise common civil engineering materials.
2. Explain the process of manufacturing cement, steel, and asphalt binder.
3. Explain the degradation mechanisms of concrete, metal, asphalt and wood.
4. Design a concrete mixture to achieve desired criteria.
5. Identify test procedures associated with various mechanical properties.

CIVE 3415

Civil Engineering Materials Lab WE

Credit hours: 2

Focuses on testing of civil engineering materials such as soil, asphalt, concrete, and metals related to geotechnical, pavement, and structural aspects of civil engineering. Evaluates writing skills with individual laboratory reports. Course lab fee of \$25 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Perform experiments on common civil engineering materials.
2. Evaluate properties statistically based on given measurements or data.
3. Perform tests according to ASTM and AASHTO Standards.
4. Prepare written documents detailing purpose, procedures, results, and conclusions.

CIVE 4810

Civil Engineering Capstone I

Credit hours: 3

Serves as a comprehensive two-semester civil engineering design experience with practical constraints. Focuses on applying civil engineering principles and the design process along with economic analysis and project management methods to a real-world project, and present the findings to other engineers and the public. Capstone I and II must be taken in consecutive semesters. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Identify creative solutions to real problems in civil engineering
2. Examine solutions to real problems in civil engineering
3. Use effective team processes, communication, and conflict resolution skills
4. Design a civil engineering solution that meets a set of economical and physical constraints

CIVE 4820

Civil Engineering Capstone II

Credit hours: 3

Serves as a second semester of the two-semester design experience from conception to modeling or prototype. Focuses on applying civil engineering principles and the design process along with economic analysis and project management methods to a real-world project, and present the findings to other engineers and the public. Capstone I and II must be taken in consecutive semesters. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Analyze alternative creative solutions to real problems
2. Identify the best solution to a given problem
3. Design a civil engineering project that meets a set of economical and physical constraints
4. Present the solutions to real problems to other professionals and to the public

CJ 1010

Introduction to Criminal Justice SS

Credit hours: 3

Presents the processes, institution, and administration of criminal justice in the United States. Examines the crime problem, criminal law, law enforcement, criminal prosecution, criminal defense, bail, the jury system, and sentencing among adult and juvenile offenders. Explores the correctional system; namely, probation, prisons, inmates' rights, and parole.

Course Learning Outcomes

1. Explain how the United States manages crime, articulating what is considered justice
2. Outline crime statistics in the United States with particular emphasis on how crime data is collected.
3. Describe the role, mission, legal aspects and challenges of policing in the United States.
4. Describe the United States Criminal Court System including the process and participants.
5. Use criminal law vocabulary correctly.
6. Describe the common procedural steps in a criminal case.
7. Describe corrections including probation and parole.
8. Identify various career opportunities within the field of criminal justice.
9. Explain the juvenile justice system and the role it plays within the criminal justice system.

CJ 1300

Introduction to Corrections Process

Credit hours: 3

Introduces the corrections system. Includes origin and evolution, philosophies of corrections, perspectives on sentencing, and alternatives to incarceration. Includes community corrections; probation and parole; offender rights and legal issues; adult, juvenile, and special needs offenders; corrections specialists, staff, and administration as a profession; and special challenges for the future.

Course Learning Outcomes

1. Describe the history and evolution of the American Correctional System
2. Define probation, parole and prerelease programs
3. Describe community based corrections
4. Examine institutional facilities and their procedures
5. Identify special populations' inmates
6. Describe corrections staffing and administration
7. Identify the correctional process and the processing of offenders
8. Define rehabilitation and restorative justice.
9. Examine legal and administrative issues of corrections.

CJ 1330

Criminal Law

Credit hours: 3

Provides an overview of criminal law. Covers history and terminology of the criminal justice system, the elements of specific offenses, and the role of the criminal justice profession in the fact-gathering process.

Course Learning Outcomes

1. Analyze various crimes and defenses by their elements and requirements
2. Apply specific criminal statutes and potential defenses to a given set of facts and circumstances
3. Define how crimes and defenses are categorized
4. Describe the criminal procedure process
5. Explain how the U.S. Constitution provides significant protections relating to criminal law and procedure

CJ 1340

Criminal Investigations

Credit hours: 3

Introduces the fundamentals of criminal investigations. Examines the techniques commonly utilized by investigative personnel for crimes against property and persons to include case management and documentation, interacting with victims, witnesses and suspects, and crime scene analysis. May be delivered online.

Course Learning Outcomes

1. Describe the role of the first responders and crime scene investigators.
2. Evaluate the facts and circumstances of a crime scene.
3. Distinguish the appropriate investigative techniques to be applied to each individual crime scene.
4. Develop a method from which to interact, interview and/or interrogate victims, witnesses and suspects.
5. Describe the process of crime scene analysis and evidence gathering principles.

CJ 1350

Introduction to Forensic Science

Credit hours: 3

Studies Forensic Science and multiple forensic disciplines as they correlate with criminal investigations. Teaches the identification and importance of multiple types of physical evidence typically found at a crime scene and how that evidence is used to provide a link between the victim, suspect, and crime scene. Explains the proper techniques needed to document a crime scene and physical evidence. Provides the process of taking the evidence from the scene and the scientific analysis of the evidence, which is completed at the crime laboratory.

Course Learning Outcomes

1. Discuss the historical aspects of forensic science and how they have evolved to current forensic practices.
2. Identify the various types of physical evidence typically found at a crime scene.
3. Explain the principles of crime scene documentation.
4. Explain the role of science as applied to criminal investigations.
5. Indicate proper collection and scientific analysis for various types of physical evidence collected at a crime scene.

CJ 1390

Introduction to Policing

Credit hours: 3

Evaluates police organizations, administration, and duties within federal, state, and local law enforcement agencies. Includes history and philosophy of law enforcement, evaluation of administrative practices, recruitment and hiring of new personnel, patrol and criminal investigative assignments, issues confronting American law enforcement agencies, emerging concepts, professionalism, and community crime prevention.

Course Learning Outcomes

1. Analyze the history of law enforcement practices from past to present.
2. Compare the differences between local, state, and federal law enforcement agencies.
3. Identify the different police assignments within American law enforcement agencies.
4. Describe issues, problems, and emerging concepts within American law enforcement agencies.
5. Explain the evolution of law enforcement toward increased professionalism and standards.
6. Discuss best practices in addressing special populations and the implementation of community crime prevention.

CJ 1800

POST Module I

Credit hours: 8

Completes all training required by Utah Peace Officer Standards and Training (POST) to become certified as a Special Function Officer. Provides certification that may become active when hired by an agency with Peace Officer authority.

Course Learning Outcomes

1. Explain U.S. and Utah State Constitutions with regard to criminal and traffic codes.
2. Perform physical skills and defensive tactics in response to criminal activities.
3. Implement emergency medical response.
4. Classify crimes and crime scenes.
5. Recognize mental health issues and how to interact appropriately with those in need.

CJ 1810

POST Module II

Credit hours: 12

Completes all training required by Utah Peace Officer Standards and Training (POST) to become certified as a Law Enforcement Officer. Provides certification that may become active when hired by an agency with Peace Officer authority.

Course Learning Outcomes

1. Investigate crimes in progress in buildings and vehicles.
2. Perform advanced physical skills and arrest control tactics in response to criminal activities.
3. Provide proper responses to scenarios involving law enforcement activities.
4. Handle firearms safely and appropriately while under stress.
5. Solve complex situations to find peaceful resolutions.

CJ 2200

Writing for Criminal Justice Professionals WE

Credit hours: 3

Teaches written communication across the criminal justice spectrum. Emphasizes basic formats and language used to present accurate, understandable and factual information. Requires written reports, affidavits, warrants, probable cause statements and other legal documents. Applies proper communication principles to legal writing situations. Allows students to author a variety of formal legal documents. Canvas Course Mats of \$53/Pearson applies.

Course Learning Outcomes

1. Apply proper grammar, punctuation, tense and voice in criminal justice and legal documents and reports.
2. Practice correct principles of effective writing and narration to complete case and other reports.
3. Formulate various types of reports capturing essential information, minimizing verbiage and maximizing efficiency.
4. Identify all types of criminal documents and their purpose.
5. Compose a variety of criminal justice documents such as narrative statements, affidavits, witness statements, summons, tickets, probable cause statements, search warrants, use of force statements, legal briefs, reports, documents and papers.

CJ 2330

Juvenile Justice

Credit hours: 3

Provides an overview of the juvenile justice system from its origin through present-day trends and development. Examines the origin and development of the juvenile court as well as its changing social and political philosophy. Discusses the role and relationship of municipal law enforcement toward the juvenile offender. Examines closed juvenile institutions, juvenile probation, parole, and alternative placement such as group homes.

Course Learning Outcomes

1. Describe elements of juvenile law.
2. Define the primary differences between the Juvenile Justice System and the Adult Justice System.
3. Identify factors that potentially cause juvenile delinquency.
4. Identify sociological, psychological, and biological theories attempting to explain juvenile delinquency.
5. Describe how juvenile delinquency may contribute to adult criminal activity.
6. Identify the juvenile court process.
7. Analyze the effectiveness of the juvenile deterrent practices.
8. Explain the influence of peers, family, school and other social influence in shaping a child's behavior.
9. Critique prevention and treatment of juvenile delinquency.

CJ 2350

Laws of Evidence

Credit hours: 3

Examines the principles and practices of the laws and rules of evidence pertaining to the use of criminal evidence in the trial process. Studies legal issues including admissibility of evidence, judicial notice, burdens of proof, hearsay, documentary evidence, evidentially privileges and witnesses. Studies the various sources of rules at the Federal and State levels discovering how the American system of case law affects the development of evidence law.

Course Learning Outcomes

1. Discuss evidence law using appropriate terminology and language.
2. Compare the rules of evidence in Federal and State systems.
3. Analyze case law and application to rules of evidence.
4. Identify the court's legal and ethical standards for admission of evidence at trial.
5. Identify the proper rules(s) of evidence, common law rules, constitutional provisions, and applicable case law relevant to the resolution of problems.
6. Distinguish the rules and principles governing the admissibility of evidence in civil and criminal trials.

CJ 250G

Justice For All GI

Credit hours: 3

Examines issues of diversity in criminal justice and current trends associated with racial and ethnic conflict. Investigates the topics of racism, immigration, gender, sexual orientation, and socio-economic disparity. Discusses salient issues to facilitate critical thinking, enhance knowledge, and inform perspectives. Analyzes varying viewpoints to provide a deeper understanding of the actions taken by individuals both inside and outside the criminal justice system. Emphasizes the social construction of crime and the treatment of minorities as offenders and victims.

Course Learning Outcomes

1. Discuss the importance of the Rule of Law and how the United States Constitution protects basic human rights.
2. Explain how race and ethnicity are connected to crime and the criminal justice system.
3. Describe the role that race, gender and ethnicity play as offenders are processed through the criminal justice system.
4. Explain the impact of research and media reporting on the public's perception of crime.
5. Evaluate policy recommendations for meaningful change within the criminal justice system.
6. Identify the basic patterns of who commits major crime and who the principal victims are within the criminal justice system AND Examine the perceptions and realities of race and crime.
7. Analyze and evaluate global or intercultural issues.
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
9. Evaluate how one's own cultural rules and biases compare and contrast with those from different cultures.

CJ 3270

Criminology

Credit hours: 3

Introduces the field of criminology, providing an overview of the issues involved in defining, measuring, and explaining crime. Examines the nature, extent, and general characteristics of criminal behavior and the potential causes of criminal offenses and offenders. Reviews early and contemporary theories which attempt to explain criminal behavior from a sociological, psychological, and biological perspective; the effectiveness of theories in explaining crime; theory integration and application of theory to selected issues as they relate to the modern world.

Course Learning Outcomes

1. Explain the concepts of law, crime, and criminology.
2. Describe the differences between criminology and criminal justice.
3. Identify the various theories of crime causation.
4. Evaluate the policy implications of each theory.
5. Evaluate the various types of criminal behavior.
6. Assess the characteristics of different types of crimes.
7. Apply criminological theory to specific types of criminal behavior.

CJ 3300
Victimology
Credit hours: 3

Presents historic treatment and emerging roles of the crime victim in the criminal justice process. Investigates problems and dilemmas faced by crime victims and victimization risk factors. Studies systemic and societal creation of victims, relationships between victims and offenders, crime victim compensation, and reparations.

Course Learning Outcomes

1. Explain the history of victimology.
2. Describe various victimization theories and victim's rights movements.
3. Outline crime statistics in the United States with particular emphasis on how crime data is collected.
4. Identify the problems and dilemmas of crime victims.
5. Outline how the criminal justice system interacts with crime victims.
6. Outline the various career opportunities within the field of victimology.
7. Execute a service-learning project with an organization that assists crime victims.

CJ 3400

Drugs and Crime

Credit hours: 3

Presents historical, economic, social, and political roles of legal and illegal drugs. Explains the drug contribution to crime and the impact that drugs have on the criminal justice system. Compares drug production and distribution systems. Illustrates efforts to combat the drug epidemic including decriminalization, prevention, and treatment.

Course Learning Outcomes

1. Explain the historic, economic, social, and political roles of legal and illegal drugs.
2. Outline drug-taking behavior(s).
3. Summarize biological, psychological, and sociological perspectives on drug use and abuse.
4. Identify drug law and drug enforcement as it pertains to society on city, state, and federal levels.
5. Identify various drugs and the effects the drugs have on the human body.
6. Compare drug prevention and treatment programs.

CJ 4060

Special Problems in Criminal Justice WE

Credit hours: 3

Examines selected current issues and problems in criminal justice. Researches external factors related to the professions of police, courts, and corrections. Demonstrates functions of the criminal justice system through realistic situations and events.

Course Learning Outcomes

1. Identify critical issues facing the criminal justice system.
2. Evaluate the underlying rationale behind current criminal justice issues.
3. Assess the components of complex criminal justice problems and issues within this profession.
4. Compose valid solutions to criminal justice problems based on contemporary programs and processes.

CJ 4160

Constitutional Criminal Rights

Credit hours: 3

Studies decisions in leading U.S. Supreme Court criminal cases. Presents an overview of criminal procedure relating to constitutional amendment laws with a criminal justice emphasis. Discusses leading cases concerning constitutional rights and responsibilities.

Course Learning Outcomes

1. Examine the history and basis of the United States Constitution with an emphasis on the Bill of Rights.
2. Assess past and present Supreme Court cases and their philosophy specific to amendments of the Constitution.
3. Analyze the jurisdiction, interpretation, and application of constitutional law in federal and state courts.
4. Explain the importance of constitutional guarantees as they relate to citizens, subjects, and criminal defendants.
5. Identify other constitutional rights and liberties as they apply to current trends.

CJ 4200

Ethical Issues in Criminal Justice

Credit hours: 3

Presents major ethical problems within the criminal justice system. Studies differences between moral decay and the ideal justice system. Uses an issue-based approach to solve individual, group and departmental ethical dilemmas.

Course Learning Outcomes

1. Describe the unique interaction of morality and the law, morality and behavior.
2. Identify concepts for determining moral behavior and making ethical decisions.
3. Detail the ethics of criminal justice professionals such as police, lawyers, and judges to identify different types of corruption.
4. Describe the ethics of punishment and corrections including institutional and community corrections.
5. Identify the ethical choices caused by terrorism and the "War on Terror".
6. Analyze ethical dilemmas.
7. Identify different types of corruption.

CJ 4250

Criminal Justice Career Strategies

Credit hours: 2

Emphasizes the development of effective techniques for successfully locating, applying for and securing employment as well as advancing in a Criminal Justice related career path. Includes industry and job research, demonstration, role play, and application exercises. Should be taken during second semester junior year. Provides preparation for coop/internship experience.

Course Learning Outcomes

1. Identify personal strengths, skills and characteristics.
2. Research the Criminal Justice industry to select a career path.
3. Describe professionalism and the value of networking in locating job leads and creating a career.
4. Prepare pre-employment documents including resumes, cover letters, reference sheets and applications.
5. Prepare for the interview process including dress, grooming, questions and answers, concluding the interview, and follow up.
6. Evaluate interview performance and make appropriate improvements.
7. Create a portfolio to showcase skills.
8. Demonstrate how to accept and reject job offers.

CJ 470G

Comparative Criminal Justice Systems GI

Credit hours: 3

Studies the implementation of criminal justice within the four major legal traditions and the cultural issues that influence its administration. Compares and contrasts the differences in interpretation of procedural and substantive law, policy-making, law enforcement, court systems, corrections, and juvenile justice with that of the United States.

Course Learning Outcomes

1. Analyze the role of law enforcement, the judiciary, corrections and juvenile justice systems in various countries representing the four major legal systems.
2. Explain similarities and differences in how various countries organize and administer their respective justice systems.
3. Explain how culture influences the respective criminal justice systems around the world.
4. Analyze global or intercultural issues.
5. Discuss stereotypical cultural conceptions.
6. Evaluate how one's own cultural values compare with those from different backgrounds.
7. Recognize the complexity and variety of different cultural groups.

CJ 4880

Qualitative Research Methods in Criminal Justice

Credit hours: 3

Explores the methods of research used by criminal justice educators and practitioners. Introduces the application of basic research practices to law enforcement and corrections problems. Includes the use of American Psychological Association (APA) style.

Course Learning Outcomes

1. Explain the basic types of research in which criminal justice educators and practitioners engage.
2. Construct the basic elements of ethically conducting research.
3. Apply the principles associated with the use of the American Psychological Association (APA) style.
4. Measure published research and critically evaluate its overall quality.
5. Conduct a comprehensive literature review, write a research proposal, and be able to conduct basic research under close faculty supervision.

CJ 4990

Criminal Justice Capstone Seminar

Credit hours: 3

Applies qualitative, quantitative, and/or mixed research methods to selected issues and dilemmas in criminal justice. Requires the student to develop and present an undergraduate research project both orally and in writing.

Course Learning Outcomes

1. Develop a criminal justice research proposal to be completed as a group.
2. Conduct criminal justice research.
3. Evaluate information gathered from criminal justice research.
4. Present findings of the criminal justice research.

CMGT 1010

Introduction to Construction Management WE

Credit hours: 3

Presents an overview of the practice of construction management including heavy civil, commercial, and residential construction. Examines the 5 M's of Construction Management- Money, Machines, Materials, Manpower and Marketing. Introduces construction documents including 2D and 3D building information models (BIM). Utilizes guest lecturers, and field trips in addition to traditional classroom activities.

Course Learning Outcomes

1. Describe the construction industry from its historical roots to current practices and the professional opportunities available
2. Identify the various professional roles and responsibilities of individuals involved in construction
3. Identify the phases and processes of a construction project from conceptualization to close-out
4. Explain the advantages of various project delivery methods
5. Discuss current trends and issues pertaining to the construction industry
6. Compose a variety of discipline appropriate texts within multiple situations and for multiple audiences

CMGT 1020

Construction Materials and Methods I

Credit hours: 3

Provides a basic knowledge of the materials and methods used in heavy civil, commercial, and residential construction projects. Includes lectures, site visits and laboratory work. Curriculum covers CSI Divisions 01-05. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Compare the scope of activities and disciplines involved in building construction including commercial, heavy civil, residential and industrial
2. Identify the range of engineering, technical and architectural aspects of heavy civil, commercial and residential construction
3. Recognize the purpose of building codes and Construction Specifications Institute (CSI)
4. Describe the requirements to consider when selecting construction materials for heavy civil, commercial and residential projects including performance characteristics and structural properties
5. Identify the various types of soils and foundation systems and how they interact
6. Define various types of concrete, masonry and stone products and their specific uses and strength characteristics including the roles of concrete and admixtures in heavy civil, commercial and residential applications

CMGT 1150

Construction Safety

Credit hours: 2

Introduces OSHA safety practices and its role in the construction industry. Reviews related safety theories, procedures and practices used in the construction industry. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Recognize industry health and safety hazards on a construction project
2. Identify regulations and mitigation techniques to improve accident prevention and promote regulatory compliance
3. Apply business and communication skills after performing a site safety audit and reporting the findings
4. Apply problem solving strategies by conducting a job hazard analysis and correcting safety concerns
5. Analyze a company safety plan
6. Receive a 30 hour OSHA construction safety authorization card

CMGT 1190

Concrete and Framing Lab

Credit hours: 3

Offers applied learning experience in concrete and framing methods on a construction project.
Course Lab Supply fee of \$10 for materials applies.

Course Learning Outcomes

1. Define the materials, methods and labor required for foundations and framing systems on a construction project
2. Compare the scope of activities and disciplines involved in building construction
3. Identify the range of engineering, technical and architectural aspects to the project
4. Recognize the purpose of building codes
5. Describe the requirements to consider when selecting construction materials

CMGT 1220

Finishing Lab

Credit hours: 3

Offers lab experience in finishing methods and techniques on a construction project. Course Lab Supply fee of \$10 for materials applies.

Course Learning Outcomes

1. Define the materials, methods and labor required for finishes on a construction project
2. Compare and contrast the scope of activities and disciplines involved in building construction
3. Identify the range of engineering, technical and architectural aspects to the project
4. Recognize the purpose of building codes
5. Describe the requirements to consider when selecting construction materials

CMGT 2010

Construction Materials and Methods II

Credit hours: 3

Provides basic knowledge of the materials and methods used in heavy civil, commercial, and residential construction projects. Includes lectures, site visits and laboratory work. Curriculum covers CSI Divisions 06-39. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Define the materials, methods and labor required for construction activities including commercial, heavy civil, residential and industrial and their correlating CSI divisions
2. Describe the requirements to consider when selecting construction materials for heavy civil, commercial and residential projects including performance characteristics and structural properties
3. Identify the various material products and systems in residential and commercial construction such as structural components, building envelopes, interior finishes, equipment and furnishings.
4. Identify the range of engineering, technical and architectural aspects to a traditional civil, commercial or residential project.

CMGT 2035

Construction Computer Applications

Credit hours: 3

Emphasizes construction industry-specific, project management software use. Covers spreadsheets, scheduling, document manipulation, storage, dissemination and collaboration. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Utilize current construction project management software applications
2. Create spreadsheet worksheets and workbooks, databases and tables
3. Utilize basic scheduling software
4. Manipulate electronic documents for project management purposes
5. Collaborate project requirements and documents through electronic file storage and dissemination

CMGT 2060

Construction Job Site Management

Credit hours: 3

Covers the role and duties of job site managers of heavy civil and commercial construction projects. Includes documentation, time and cost control, jobsite layout and control, labor relations, conflict resolution, OSHA safety practices. Emphasizes the design and implementation of project safety plans. Focuses on project quality, productivity, cost control and safety management. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply management techniques successfully that meet the goals and objectives of construction projects.
2. Contrast the roles and responsibilities of the various participants in construction projects with differing delivery systems.
3. Describe the purpose of the various documents, drawings, and record keeping used at the construction jobsite.
4. Plan meetings for construction projects to resolve common issues.
5. Organize jobsite labor and safety appropriately.
6. Work effectively and ethically with suppliers and sub-contractors.
7. Utilize management techniques to control the productivity, quality, and cost of construction projects.
8. Use appropriate processes, procedures, computer software, and other technology for project administration and control.
9. Identify safety, health and environmental concerns on projects.

CMGT 2080

Principles of Construction Scheduling

Credit hours: 3

Provides fundamental skills required to plan and schedule civil and commercial construction projects. Familiarizes students with computer scheduling software packages used to monitor and control construction projects. Defines the sequencing, phasing, and critical path management of construction activities. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply current technical concepts and practices in planning and scheduling through critical path method (CPM) scheduling methods
2. Describe the construction project phases with current scheduling software
3. Define durations of activities based on historical data, input from project participants, and analysis of work to be done
4. Use the project schedule and proper management techniques to monitor and control project execution
5. Communicate the project schedule to the project team with reports, network diagrams, and bar charts

CMGT 289R

Construction Industry Seminar

Credit hours: 0.5

Provides the opportunity to hear professionals teach about unique aspects of the industry. Must be repeated twice for one credit for graduation, but may be repeated for a maximum of two credits.

Course Learning Outcomes

1. Identify potential companies for future employment.
2. Describe several unique niches within the construction industry.
3. Explain strategies and/or concerns within the industry.
4. Identify opportunities for industry expansion, development, research, etc.

CMGT 3010

Construction Materials Testing

Credit hours: 3

Investigates the general physical properties of construction materials and their common quality control/assurance tests conducted in the construction industry. Analyzes results of these tests and how they affect construction design. Emphasizes the performance of field and lab testing procedures used in heavy civil construction. Course Lab Supplies fee of \$17 for materials applies.

Course Learning Outcomes

1. Describe the general physical properties of construction materials and their common design assemblies
2. Explain how the material properties of steel and wood affect construction design
3. Demonstrate the ability to set up and perform common materials tests for aggregates, soil, concrete, and asphalt
4. Calculate aggregate, soil, concrete, and asphalt results in standard industry formats
5. Evaluate the results of aggregate, soil, concrete, and asphalt testing reports and how they affect construction design

CMGT 3020

Building Envelopes and Mechanical Systems

Credit hours: 3

Covers mechanical, electrical and plumbing (MEP) principles. Provides problem solving experience in the analysis and design of building envelopes and MEP systems used in construction applications. Software fee of \$5 applies. Course fee of \$10 for materials, transportation applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Compare the design and analysis principles of mechanical, electrical and plumbing systems utilized in building construction including commercial, heavy civil, residential and industrial projects
2. Define the materials, methods and labor required for mechanical, electrical, plumbing applications, and fire suppression systems
3. Describe plumbing codes and plumbing system design including potable water and sanitary systems in commercial, heavy civil, residential and industrial projects
4. Compare the factors to be considered when designing heating and air conditioning systems
5. Describe the process of heat, air and moisture exchange in building envelopes and how they affect heating and cooling load analysis and design
6. Work effectively and ethically with suppliers and sub-contractors of mechanical, electrical, plumbing and fire suppression systems

CMGT 3030

Principles of Construction Estimating

Credit hours: 3

Introduces the preparation of detailed cost estimates based on contract models and documents. Includes the use of software for performing reliable quantity take-offs. Covers labor, material, and equipment pricing. Includes lectures and laboratory work. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Calculate appropriate quantities of materials and labor required for construction projects
2. Apply appropriate production and labor rates during the estimating process
3. Develop construction cost estimates for common trade categories
4. Communicate estimates through an effective computerized platform
5. Identify project level general expense items to include in a construction estimate
6. Determine cost of construction equipment in residential, commercial and heavy civil construction projects
7. Utilize critical thinking methods in analyzing and identifying factors that affect cost in construction projects
8. Work effectively and ethically with suppliers and sub-contractors in a bidding environment

CMGT 3080

Construction Financial Management

Credit hours: 3

Builds on basic principles of accounting and finance as utilized in the construction industry. Emphasizes labor burden, financial needs and decision tools, construction accounting systems, cash flow, profit and tax projections on construction projects. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply knowledge of finance and accounting principles to construction project management
2. Apply business and communication skills as a construction financial manager in a project environment
3. Apply current accounting and finance concepts and practices for planning and scheduling the financial requirements of a construction project
4. Implement cash flows in a project environment

CMGT 3160

Building Information Modeling

Credit hours: 3

Introduces 3D architectural models for cost estimating, clash detection, collaboration between multiple disciplines and documenting and quantifying project data. Covers model design theory, parametric modeling methods, generation of residential and commercial construction plans and details sufficient for cost estimating, building components and systems, and manipulation of model information. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply Building Information Modeling (BIM) concepts;
2. Examine residential and commercial construction materials/techniques within a BIM model;
3. Utilize the model with other software for clash detection and cost estimating;
4. Manipulate model information for quantifying project materials.

CMGT 4010

Construction Contracts

Credit hours: 3

Utilizes appropriate construction documents such as contracts, waivers, change orders, employee documents and specifications. Addresses the dispute process in the United States and the contractual relationship associated with construction project delivery methods.

Course Learning Outcomes

1. Explain how the knowledge of law and contracts contributes to dispute prevention and resolution in construction management
2. Describe the role of the legal system in the United States and how it applies in the construction management industry
3. Describe the roles and responsibilities of stakeholders in construction projects with differing delivery systems
4. Describe the legal aspects associated with the construction industry including contract formation, breach, damages and contract scope
5. Use appropriate processes of employment issues, documentation administration, changes, delays, and sales of materials
6. Describe the legal aspects associated with environmental concerns, real property, intellectual property, torts and warranties
7. Utilize management techniques to control the processes in construction associated with insurance, bonds, liens and waivers

CMGT 405G

Global Sustainability and the Built Environment GI WE

Credit hours: 3

Explores sustainability issues from a global perspective. Discusses global sustainability and focuses specifically on the LEED green building rating system. Emphasizes the local and global impacts on the built environment through writing. May include guest lectures, site visits, and group assignments. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the local and global impact of project life-cycle and sustainability and the impact on the built environment
2. Define the materials, methods and labor required for sustainable projects
3. Analyze stereotypical conceptions regarding multicultural diversity and the built environment
4. Define the contributions of various cultural and social groups in environmental concerns
5. Discuss stereotypical conceptions regarding natural resources
6. Analyze global or intercultural issues
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups
8. Evaluate how one's own cultural values compare with those from different backgrounds
9. Compose a variety of discipline appropriate texts within multiple situations and for multiple audiences

CMGT 4500

Senior Capstone

Credit hours: 3

Designed for senior Construction Management and related majors. Involves execution of a construction project case simulation covering all aspects of construction management for either heavy civil, commercial or residential projects. Engages students with local representatives from the construction industry. Requires a written project report and oral presentations. Software fee of \$5 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply problem solving strategies and leadership skills in a simulated team project environment
2. Develop construction cost estimates and project proposals
3. Apply current technical concepts and practices in planning and scheduling
4. Apply business and communication skills to propose a project plan
5. Explain how the knowledge of law and contracts contributes to dispute prevention and resolution in construction management
6. Apply knowledge of finance and accounting principles to construction project management to illustrate project profitability and financial control
7. Explain the advantages of various project delivery methods as they relate to a project
8. Create a site logistics plan for a project considering worker safety, public safety, material and equipment mobilization, and governmental regulations

CMGT 481R

Internship

Credit hours: 1 to 4

Provides application of classroom theory while working as an employee in the construction industry. Requires communication of personal goals, tracking performance and work hours with the employer. Credit is determined by the number of hours a student works during the semester and completion of individually set goals. May be repeated for a maximum of 4 credits toward graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Apply classroom education to on-the-job experiences
2. Reflect on how classroom experience applies to a professional setting
3. Develop professional relationships with coworkers, supervisors, and clients in a project environment
4. Refine personal career interests relative to their internship experiences
5. Further explore career opportunities in construction management

CMHC 6000

ACA Ethics and Professional Orientation

Credit hours: 3

Introduces students to the history of the counseling profession, professional roles (practitioner, supervisor, educator, etc.) and professional organizations. Provides a foundation for the ethical practice of professional counseling and applies the American Counseling Association (ACA) Code of Ethics to various ethical and legal situations using various ethical decision-making models.

Course Learning Outcomes

1. Recall the basics of the ethical code.
2. Apply ethical decision-making and illustrate the process of ethical decision-making.
3. Describe counselors' roles and responsibilities as members of interdisciplinary community outreach and emergency management response teams.
4. Assess ethical case studies and justify ethical decisions.
5. Practice ethical standards of professional counseling organizations, credentialing bodies, and applications of ethical and legal considerations in professional counseling.
6. Describe the course and career trajectories of mental health counselors.
7. Distinguish the similarities and differences between their profession and allied professions.

CMHC 6010

Theories of Counseling

Credit hours: 3

Introduces basic Counseling and psychotherapeutic theories and associated techniques. Provides a survey of models and theories consistent with current research (evidenced-based) and practice in the Counseling profession. Analyzes approaches including psychoanalytic, individual psychology, person-centered, existential, cognitive-behavioral, Gestalt, family systems, and postmodern theories. Examines the influence of sociocultural and historical factors on the development of Counseling theories.

Course Learning Outcomes

1. Practice critical writing skills in case conceptualizations.
2. Apply critical introspective skills through writing.
3. Critique assumptions and arguments of Counseling theorists.
4. Develop their personal theory of Counseling.

CMHC 6020

Techniques of Counseling

Credit hours: 3

Analyzes the theoretical approaches to Counseling which have been demonstrated to be culturally-relevant and conceptually inclusive of multiple theories and techniques: Advanced Cognitive Behavioral Therapy techniques will be emphasized (other techniques will also be explored). Emphasizes selected readings, academic discussion and clinical application. Requires critical thinking and active participation. Applies theoretical information towards a goal of case conceptualizations as a precursor to effective treatment planning.

Course Learning Outcomes

1. Execute open-ended questions and responses to affect, content, and meaning.
2. Differentiate, in role-play, when and how to use basic clinical skills.
3. Illustrate counseling and psychotherapy technique.
4. Apply nuances of technique in a multi-culturally sensitive manner.

CMHC 6030

DSM Diagnostics

Credit hours: 4

Provides an overview of the major disorders in the current edition of the DSM. Examines a range of mental disorders from adjustment disorders to serious psychopathologies, and includes an overview of the etiology, developmental course, multi-axial diagnosis, treatment planning, and policy/advocacy issues associated with various disorders to address socially responsible practice. Addresses biological, environmental, cultural, intrapersonal, and interpersonal risk and protective factors, along with the sociocultural and theoretical critiques of limitations of diagnosis and the DSM.

Course Learning Outcomes

1. Diagnose mock clients in case studies accurately.
2. Recall pertinent facts and criteria for each diagnosis.
3. Relate diagnosis to techniques for treatment.
4. Critique the ontological and moral assumptions of the DSM.

CMHC 6040

Professional Orientation

Credit hours: 3

Provides a detailed exploration of the field of mental health counseling. Offers inquiry into the nature of the profession, including the professional organization and why many professionals join them. Describes the usual career trajectories of mental health counselors across various disciplines. Requires student development of a career plan and specialization-appropriate resume. Orients students to the requirements for their internship and practica.

Course Learning Outcomes

1. Describe the course and career trajectories of mental health counselors.
2. Distinguish the similarities and differences between their profession and allied professions.
3. Plan a career course for themselves.
4. Explain typical CMHC career trajectories.

CMHC 6050

Career Counseling

Credit hours: 3

Introduces students to the concepts of career development. Presents the philosophical and historical foundations of career Counseling. Applies career Counseling theory to practice. Includes career Counseling technique, career assessment, career exploration, job market strategies, examination of workplace issues, and lifestyle and wellness concepts.

Course Learning Outcomes

1. Outline career development theory.
2. Relate the role of historical oppression to career development.
3. Apply career Counseling technique with a mock client.
4. Examine situatedness of career possibilities within current socioeconomic contexts.

CMHC 6060

Psychological Assessment

Credit hours: 3

Provides an introductory overview of assessment methods, instrumentation, and basic principles of measurement. Reviews techniques for assessing intellectual ability, aptitude/ achievement, psychopathology, emotion, and personality. Includes clinical assessment, communicating results, multicultural considerations, and ethical/ legal issues. Orients students to common instruments used in educational and clinical settings, common selection procedures, measurement methods, administration, scoring, and interpretation.

Course Learning Outcomes

1. Practice the processes of intake assessments.
2. Complete an intake assessment adequately with a mock client.
3. Select appropriate assessment tools in the appropriate clinical context.
4. Apply assessment creation processes.

CMHC 6070

Group Counseling

Credit hours: 3

Provides an introduction to many of the important challenges facing group leaders and group members in contemporary society. Discusses ethical guidelines particular to group work. Exposes students to how common Counseling theories can be applied in group settings. Provides an understanding of group developmental stages and processes, and how these dynamics influence group growth and productivity. Emphasizes leader skill development. Includes approximately 20 hours of class time spent in a laboratory experience wherein each student is provided the opportunity to function in a group.

Course Learning Outcomes

1. Recognize the stages of group development.
2. Critique existing group therapy theory.
3. Develop group therapy theory.
4. Apply group therapy intervention techniques.

CMHC 6080

Eastern Counseling Approaches

Credit hours: 3

Explores the new trends in the field of counseling around mindfulness and meditation interventions. Discusses the history and background of each approach embedding them in their original frame. Facilitates critique of utilizing techniques divorced from original intent. Practices the intended form of these modes of being. Encourages model and psychotherapeutic interventions expanding the usual analytic frame.

Course Learning Outcomes

1. Discuss the nature and history of mindful interventions.
2. Appraise the psychological effects of these interventions.
3. Apply these interventions appropriately to treatment plans.
4. Differentiate these interventions with Western analytic interventions.

CMHC 6090

Psychopharmacology

Credit hours: 3

Explores the principles of psychopharmacology from a practitioner-oriented frame. Introduces the basic principles and concepts behind the types and purposes of various psychoactive substances. Provides neurochemical and biological models appropriate to non-physicians. Presents the mechanisms of action and the relationships between various drugs in the mental health field.

Course Learning Outcomes

1. Identify classes of psychopharmacological substances.
2. Explain basic purposes of medicines used in the mental health field.
3. Discuss effects and side-effects of the various drugs.
4. Analyze appropriate and inappropriate uses of psychoactive medication.

CMHC 6100

Crisis Management

Credit hours: 3

Provides an overview of the types of crises mental health practitioners may involve themselves with, including natural disasters, terrorism, crime, suicide, and homicide. Discusses the research on responses to these types of traumas and some of the mental health conditions that may arise due to such experiences. Provides models of treatment for acute and chronic crises, including both systemic and organizational interventions as well as individual psychotherapeutic interventions.

Course Learning Outcomes

1. Analyze the widespread views on crisis and trauma and the diversity of approaches for clinical intervention.
2. Assess personal characteristics of people that influence a person's response to crisis and trauma.
3. Evaluate social dimensions of human difference that influence a person's response to crisis and trauma.
4. Develop comprehensive individual treatment plans and appropriate recording of clinical interventions.
5. Discuss approaches to fostering Posttraumatic Growth (PTG) and resiliency in individuals and communities.
6. Distinguish the variety and magnitude of crisis from micro-frame to macro-frame situations and events.

CMHC 6110

Research Methods

Credit hours: 3

Provides a conceptual understanding of research design and application. Offers an overview of research principles and methodology including qualitative and quantitative approaches and analysis. Enables students to become better, more critical consumers of research projects, methods, and designs. Prepares students to apply relevant research to their clinical practice.

Course Learning Outcomes

1. Interpret research findings accurately.
2. Evaluate the quality of research projects.
3. Critique research methods and designs.
4. Apply relevant research findings to clinical practice.

CMHC 6120

Addiction Counseling

Credit hours: 3

Introduces relevant theory, research, and practice associated with substance abuse and addictions Counseling. Presents a blend of didactic and practical elements to increase student knowledge of fundamental concepts while providing opportunities to experiment with approaches to working with clients presenting with substance abuse and /or addictions concerns. Explores topics that include pharmacological issues and terminology, models of addiction, theories on etiology, diagnosis and assessment, and evidence-based treatment strategies. Requires students to practice the introductory concepts of Motivational Interviewing in a practicum element that will accompany lectures, group discussion, case studies, and demonstrations over the course of the semester.

Course Learning Outcomes

1. Assess substance abuse and dependence symptoms.
2. Review for co-morbid mental illnesses.
3. Construct appropriate treatment plans for a mock client.
4. Apply appropriate intervention techniques for a mock client.

CMHC 6130

Multicultural Counseling

Credit hours: 3

Exposes students to various cultures and the methods, values, and beliefs that organize family life and human development. Utilizes the oppression model to examine how the intersections of race, class, culture, gender, ethnicity, and sexuality shape and affect the lives of individuals and families and the therapeutic process itself. Explores intervention practices, social advocacy models, and resistance strategies.

Course Learning Outcomes

1. Apply oppression model in case studies.
2. Identify the intersections of identity in readings.
3. Apply intersectional treatment plans.
4. Contribute social advocacy and resistance strategies as appropriate in case studies.

CMHC 6140

Program Evaluation

Credit hours: 3

Introduces research methods and program evaluation as it pertains to the field of professional Counseling. Explores major research designs including both quantitative and qualitative methods. Discusses research procedures, such data collection, sampling, and data analysis, and issues related to validity, reliability, and limitations of different approaches. Examines the history and development of program evaluation and provides an introduction to needs assessment in regard to program development, data collection methodology, and data analysis. Reviews ethical and culturally relevant strategies for interpreting and reporting the results of research and program evaluation studies.

Course Learning Outcomes

1. Evaluate program evaluation theory.
2. Construct a model for program evaluation that is clinically relevant.
3. Apply a program development model.
4. Determine programmatic changes based on evaluation findings.

CMHC 6150

Cognitive Therapies

Credit hours: 3

Explores the principles of cognitive-behavioral theory, conceptualization, and psychotherapy techniques. Provides a framework for assessing and treating child and adult clinical problems from the perspective of cognitive-behavioral treatment approaches that have been empirically supported. Presents several assessment strategies including behavioral observation, self-report, self-monitoring, and structured interviews and rating scales. Stresses the important link between assessment and treatment planning, and evaluating treatment outcome. Explores the advantages and disadvantages of techniques discussed within a developmental framework. Emphasizes the assessment of anxiety, depression, addictive behaviors, social skills, and marital dysfunction.

Course Learning Outcomes

1. Recall readings in Cognitive Behavioral Theory.
2. Discuss application of Cognitive Behavioral principles to the field of Counseling.
3. Employ practice and skill development of Cognitive Behavioral techniques.
4. Investigate new developments in Cognitive Behavioral therapies.

CMHC 6160

Human Development

Credit hours: 3

Presents an overview of various models and theories in the discussion of the characteristics, developmental needs, and tasks at different stages of a person's life cycle. Discusses the impact of social, cultural, biological, and psychological factors on prenatal life, childhood, adolescence, adulthood, and aging. Explores the psychosocial development, cognitive functioning, life transitions, coping and adaptation, work and retirement, bereavement, and related issues in a person's life cycle in relation to students' work as counselors.

Course Learning Outcomes

1. Apply developmental theories.
2. Critique the limitations of developmental models.
3. Combine developmental theories and research.
4. Apply principles of development to clinical practice.

CMHC 671R

Practicum

Credit hours: 3

Provides a forum for students to attain supervised clinical experience in which the students develop basic Counseling skills and integrate professional knowledge. Requires students to complete 100 hours of field training in a clinical mental health setting, including attaining 40 direct hours through both individual and group Counseling. Provides students with individual supervision by faculty and group supervision in seminar which is designed to be responsive to students' practicum experiences and concerns for their clients and sites. Evaluates students' ability to apply Counseling theories and techniques assessment and diagnostic information, clients' characteristics in case conceptualization, and treatment planning. Provides peer support and consultation. Must be taken twice to complete requirements. May be repeated for a maximum of 12 credits toward graduation to complete clinical hours.

Course Learning Outcomes

1. Employ clinical techniques appropriate to context.
2. Apply assessment techniques appropriate to context.
3. Plan treatments specific to client needs.
4. Criticize intrapsychic dynamics.

CMHC 689R

Internship

Credit hours: 1 to 3

Provides a forum for students to attain clinical experience in which they develop more advanced counseling skills and integrate course knowledge into their work. Requires that this course is repeated until students complete direct and indirect clinical hours as required by DOPL and the CMHC accrediting body. Requires attendance to a one hour per week course group supervision, in addition to the individual and group supervision provided at their internship site. Assists student practice of their clinical skills particularly case conceptualization, treatment planning, and treatment implementation. Allows flexibility for student scheduling, but is typically a 3 credit course. May be repeated for a maximum of 12 credits toward graduation.

Course Learning Outcomes

1. Apply clinical techniques appropriate to context.
2. Apply assessment techniques appropriate to context.
3. Plan treatments specific to client needs.
4. Comply with DOPL requirements for clinical hours for licensure.

COMM 1020

Public Speaking HH

Credit hours: 3

Provides an introduction to basic concepts, theories, principles of oral communication as applied to a variety of speaking situations. Develops competence in oral communication through performance, as applied to critical thinking skills, arrangement of ideas, and use of evidence and reasoning to support claims. Explains how culture influences the perception of effective public speaking. Canvas Course Mats of \$90/VitalSource applies.

Course Learning Outcomes

1. Apply course material to social, civic and ethical problems in order to develop responsible ways of thinking and acting.
2. Construct public speeches.
3. Deliver impromptu, informative, persuasive, and celebratory speeches.
4. Use primary sources to support ideas.
5. Incorporate presentation slides and/or visual aids into speeches.
6. Improve listening, note taking and observational skills to engage in the dialogue.
7. Apply the components of public speaking in diverse situations.
8. Explain how culture influences effective speaking.

COMM 1050

Introduction to Communication SS

Credit hours: 3

Surveys the questions, methods, and findings in the discipline of speech communication. Explores communication theory and practice across a variety of contexts and forms, including verbal, non-verbal, interpersonal, group, organization, and mass communication. Canvas Course Mats \$45/Sage applies

Course Learning Outcomes

1. Execute competent communication skills.
2. Apply communication concepts to a variety of contexts.
3. Evaluate the sub-areas of study within the communication discipline.
4. Analyze communication theories and practices across written and oral contexts.
5. Critique the use, intent, and impact of performed, spoken, written, and visual texts.

COMM 2110

Interpersonal Communication SS

Credit hours: 3

Examines the role of communication in interpersonal relationships. Includes the history of interpersonal communication research and theory and applications such as negotiation, conflict management, listening, and assertiveness.

Course Learning Outcomes

1. Explain foundational interpersonal-communication concepts and theories.
2. Evaluate strengths and weaknesses of interpersonal communication research.
3. Synthesize scholarly research in the area of interpersonal and family communication.
4. Apply interpersonal communication theories and concepts to existing interpersonal and family communication problems.

COMM 2300

Introduction to Public Relations and Strategic Communication

Credit hours: 3

Introduces the basics of writing for the media, designing corporate literature, and working with the public and key stakeholders on behalf of a business, organization, and/or individual. Canvas Course Mats \$52/Sage applies.

Course Learning Outcomes

1. Apply public relations and strategic communication skills and abilities.
2. Examine strategies, tools, and techniques used by public relations professionals around the globe.
3. Complete writing for the media, designing corporate literature and working with the public on behalf of a business, organization, or individual.
4. Analyze public relations and strategic communication issues facing individuals and organizations.

COMM 2400

Organizational Communication

Credit hours: 3

Teaches how communication processes affect organizations. Applies theory to organizational analysis. Utilizes dialogue and network analysis to improve organizational values and performance.

Course Learning Outcomes

1. Analyze communication problems within organizations.
2. Diagnose communication problems within organizations.
3. Lead others towards more effective and efficient communication practices within organizations.
4. Apply conflict resolution strategies in organizational contexts.
5. Describe communication implications of major organizational theories.

COMM 3020

Communication Research Methods WE

Credit hours: 3

Covers basic communication research methods in both quantitative and qualitative research. Focuses on the research process and discusses the methodological tools for understanding and conducting basic communication research. Includes examples based on research and promotes awareness of the importance of quantitative and qualitative research perspectives as well as of data collection and analytical procedures.

Course Learning Outcomes

1. Explain the importance of integrating theory into communication-research methodology;
2. Apply quantitative research methodology including measurement, sampling, designing research, hypotheses testing, and interpreting quantitative data;
3. Apply qualitative research methodology including designing qualitative research, applying appropriate methods of data collection, and analyzing, interpreting, and reporting qualitative data;
4. Propose a study that involves collecting, analyzing, and reporting research findings;
5. Determine the appropriate research methodology (e.g. quantitative versus qualitative);
6. Compose a variety of disciplinary- appropriate texts within multiple situations and for multiple audiences.

COMM 3050

Theories of Communication and Culture WE

Credit hours: 3

Covers main theoretical approaches to communication and culture. Includes transmission, ritual, symbolic interactionist, structuralist, post-structuralist, postmodern, and critical theories.

Course Learning Outcomes

1. Analyze social science, interpretive, and critical communication theories;
2. Recognize the role that theory plays in communication research and practice;
3. Explain the difference in objective and interpretive epistemologies;
4. Synthesize scholarly research on communication phenomena into course-related assignments and projects;
5. Integrate theory into the solutions for real-world communication problems;
6. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

COMM 3115

Communicating in Environments

Credit hours: 3

Explores how people use communication to navigate both social and natural environments. Investigates social and small group communication; specifically, how small groups are created, what role(s) they play in life. Considers how our culture communicates about the natural world: how do we define nature, who communicates for nature, and how does nature behave as a stakeholder in environmental conflicts. Occurs at the Capitol Reef Field Station, which allows for an experiential application of the theories of small-group and environmental communication. Focuses on the experience and application of the literature of the discipline to create an integrated-learning opportunity.

Course Learning Outcomes

1. Apply current theories of small-group communication.
2. Analyze current theories of environmental communication.
3. Evaluate practical problems and situations involving environmental and small-group communication.
4. Evaluate environmental issues.

COMM 319G

Intercultural Communication Encounters GI

Credit hours: 3

Promotes awareness of the role of competent communication in intercultural awareness and sensitivity. Reviews classical and current definitions of culture and describes their general characteristics, with specific focus on the issue of cultural diversity. Describes the components and process of intercultural communication including perception and motivation. Provides an overview of differences and similarities in verbal and nonverbal intercultural communication. Identifies guidelines for achieving intercultural communication competence.

Course Learning Outcomes

1. Explain the basic conceptualizations of culture, cultural diversity, cultural awareness, cultural sensitivity, and cultural communication competence.
2. Apply knowledge of intercultural communication concepts like ethnocentrism, stereotyping, and prejudice to real life and/or hypothetical intercultural case studies.
3. Analyze global or intercultural issues.
4. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
5. Evaluate how one's own cultural rules and biases compare and contrast with those from different cultures.

COMM 3520

Public Relations and Strategic Communication Case Studies

Credit hours: 3

Examines public relations and strategic planning process through the analysis of case studies. Addresses strategic communication planning issues in media relations, crisis communications, ethics, creative planning, research, and evaluation, using real-world situations and clients. Software fee of \$45 applies.

Course Learning Outcomes

1. Apply the eight-step strategic communication planning process.
2. Analyze public relations strategic planning process through the analysis of case studies.
3. Construct competent public relations campaigns based on research, action planning, execution, and evaluation techniques.
4. Present a competent public relations campaign based on the eight-step strategic communication planning process.

COMM 3530

Public Relations and Strategic Communication Writing

Credit hours: 3

Develops skills in persuasive writing for institutional or individual clients. Provides a hands-on experience in applying public relations and strategic communication writing tools for corporate, non-profit, government, and/or integrated communication organizations. Covers writing for the media, designing and writing corporate literature, and working with the public on behalf of a business, organization, and/or individual as it relates to public relations and strategic communication. Lab access fee of \$20 applies. Software fee of \$45 applies.

Course Learning Outcomes

1. Explain the components of writing as they relate to public relations and strategic communication;
2. Utilize professional writing styles, including Associated Press, in a mix of formats as it pertains to public relations practices and strategic communication efforts;
3. Construct competently-written documents based on standard public relations and strategic communication practices;
4. Develop a written portfolio of work in preparation for employment in public relations and strategic communication professions.

COMM 4850

Public Relations and Strategic Communication Campaigns

Credit hours: 3

Applies PR skills, case studies, and writing analysis to create strategic public relations campaigns for a number of clients. Requires students to generate a portfolio of work for clients. Software fee of \$45 applies.

Course Learning Outcomes

1. Generate strategy using research about publics of interest to the client.
2. Create a fully integrated portfolio for a client.
3. Produce a successful public relations campaign.
4. Apply client research, syndicated research, and personal research to better understand target audience.

COMM 4930

Communication Capstone

Credit hours: 3

Discusses the integration of various principles and objectives covered across the communication curriculum. Includes major thesis or project designed to reflect students' career goals.

Course Learning Outcomes

1. Apply communication knowledge to workplace case studies.
2. Develop self-promotional materials for workplace readiness.
3. Evaluate the effectiveness of self-promotional materials.
4. Synthesize communication knowledge for comprehensive exam.

CRT 1110

Surface Preparation

Credit hours: 2

Covers environmental and personal safety when handling collision industry chemicals. Discusses metal preparation, surface treatment, painting and surface rust removal, proper sanding of old finishes, and film build tolerances. Teaches application and uses of undercoats, primers, primer surfacers, sealers and primer sealers. Covers block sanding, guide coats, wax and grease removers, and surface pre-cleaning techniques. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Identify type and color of finish and produce a refinish plan. Understand personal and environmental safety as it pertains to the painting industry.
2. Discuss removal of existing finishes using a variety of methods
3. Discuss the importance of corrosion protection, proper material usage.
4. Discuss undercoating categories and correct selection of undercoating materials.
5. Define sanding materials and selection categories
6. Prepare adjacent panels for refinish blending techniques.
7. Use a variety of sealer materials for joints and seams.
8. Understand where to use OEM type chip resistant coating and application techniques to both new and repaired parts.
9. Identify a variety of masking materials and understand how to use each.

CRT 111L

Surface Preparation Lab

Credit hours: 1

Provides laboratory experience for surface preparation techniques aligning with lectures from CRT 1110. Topics include finish removal, sanding techniques, undercoating materials. Tool room fee of \$19 for equipment applies. Course Lab fee of \$40 for materials applies.

Course Learning Outcomes

1. Demonstrate various finish removal techniques
2. Determine a variety of refinish defects causes and cures
3. Identify and locate a variety of refinish color codes
4. Demonstrate correct undercoating usage
5. Demonstrate the safe disposal of hazardous waste materials
6. Demonstrate proper handling of spray gun equipment
7. Identify and demonstrate proper use of masking materials

CRT 1120

Nonstructural Repair

Credit hours: 2

Offers in-depth analysis of minor damage and applied metal working techniques. Studies properties of metal, elasticity, corrosion protection, work hardening, rough out, hammer and dolly techniques, heat shrinking, pick and file and grinding methods. Presents application of corrosion protection materials, body fillers, including metal and fiber reinforced fillers, and their shaping. Emphasizes safety precautions. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

Please see the department for information.

CRT 112L

Nonstructural Repair Lab

Credit hours: 1

Provides a laboratory experience for nonstructural repair techniques aligning with lectures from CRT 1120. Topics include fillers use, metallurgy, shrinking and stretching. Tool room fee of \$19 for equipment applies. Course Lab fee of \$22 for materials applies.

Course Learning Outcomes

1. Shrink metal using various techniques
2. Demonstrate proper use of hand and power tools
3. Demonstrate metallurgy repair techniques
4. Identify pressure point areas on metal surfaces
5. Use filler materials properly
6. Identify and repair corrosion protection materials
7. Identify and demonstrate proper use of abrasive materials

CRT 1130

Overall Refinishing and Problem Solving

Credit hours: 2

Teaches use and maintenance of shop paint spray equipment. Studies types of undercoatings including sealers, primers, and primer surfacers, their use, limitations, and application. Discusses refinish products, their solid levels, coverage, and recommended refinish systems. Teaches prevention and removal of refinishing processing defects. Covers cutting and buffing. Uses ICAR Advanced Technical Curriculum. Successful completers should be prepared for ASE certification. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Identify various types of spray equipment, and their proper usage
2. Explain how different types of spray equipment will have an effect on the refinish material.
3. Choose proper chemical additives for specific uses and special effects
4. Explain the chemical cross linking process of various types of refinish products
5. Identify the differences between single stage, two stage, and tri stage refinish materials
6. Identify a variety of masking techniques and materials
7. Explain how Technical Data Sheets are used
8. Explain the use of Material Safety Data Sheets.

CRT 113L

Overall Refinishing and Problem Solving Lab

Credit hours: 1

Provides a laboratory experience for overall refinishing and problem solving techniques aligning with lectures from CRT 1130. Topics include safety, substrate usage, application techniques, base coats, clear coats, single stage paints, and tri coat processes, application / refinish / material defects, causes and cures. Tool room fee of \$19 for equipment applies. Course Lab fee of \$74 for materials applies. .

Course Learning Outcomes

1. Identify and use various types of spray equipment
2. Identify and properly use hazardous chemicals, MSDS sheets, Technical Data Sheets.
Understand right to know laws
3. Use masking materials properly
4. Operate spray and booth equipment safely
5. Spray a variety of refinish chemicals
6. Calculate ratios and fractions
7. Identify and properly use refinish additives

CRT 1140

Panel Replacement and Adjustment

Credit hours: 2

Studies removal, replacement, and alignment of bolt-on body panels. Presents multiple latch mechanisms and their adjustments. Various trim and body fasteners are discussed. Uses ICAR Advanced Technical Curriculum. Successful completers should be prepared for ASE certification. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Apply knowledge of safety related practices during removal, installation, and alignment of panels
2. Demonstrate knowledge of fasteners with bolt on panels
3. Explain why proper alignment is important and demonstrate various methods of alignment
4. Identify alignment tools
5. Describe how to align,remove and install bolt on panels
6. Describe how to align, remove and install weld on panels
7. Explain various attachment processes and how to use them for proper alignment
8. Identify proper alignment tools and safety procedures
9. Identify a variety of interior fasteners and clips

CRT 114L

Panel Replacement and Adjustment Lab

Credit hours: 1

Provides a laboratory experience for panel replacement and adjustment techniques aligning with lectures from CRT 1140. Topics include replacement and alignment of bolt-on body panels, fasteners and trim. Tool room fee of \$19 for equipment applies.

Course Learning Outcomes

1. Remove and Install various bolt-on nonstructural panels
 2. Align all types of bolt-on panels
3. Remove and install structural and removable bolt on glass
4. Identify and properly use a variety of bolts and clips
5. Demonstrate a variety of attachment processes
6. Use alignment tools properly and safely

CRT 1210

Blending Tinting and Detailing

Credit hours: 2

Studies automotive refinish blending techniques. identifies proper procedures for Single stage, Base Coat, and Tri stage blending. Identifies detailing techniques and materials. Uses ICAR Advanced Technical Curriculum. Successful completers should be prepared for ASE certification. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Plan and prepare for blending of refinishes
2. Describe the proper procedures for blending of single stage materials
3. Describe the proper procedures for blending of base coat materials
4. Describe the proper procedures for blending tri stage materials
5. Blend clear coat urethanes, oxythanes, and enamels
6. Describe detailing process of refinish materials
7. Describe detailing process of interiors and exteriors

CRT 121L

Blending Tinting and Detailing Lab

Credit hours: 1

Provides a laboratory experience for blending tinting and detailing techniques. Identifies proper procedures for Single stage, Base coat, and Tri stage blending. Identifies detailing techniques and materials. Tool room fee of \$10 for equipment applies. Course Lab fee of \$53 for materials applies.

Course Learning Outcomes

1. Plan and prepare for blending of refinishes
2. Perform blending of single stage materials
3. Perform blending of Base coat materials
4. Perform blending of Clear coat materials
5. Perform blending of Tri-coat materials
6. Detail interiors and exteriors properly

CRT 1230

Welding and Cutting

Credit hours: 2

Introduces gas welding and cutting followed by intense study of MIG, TIG, STRSW welding of mild, high strength, ultra high strength steels, and aluminums. Studies the most common joints as they apply to current vehicles construction techniques. Introduces plasma arc cutting techniques. Uses ICAR Advanced Technical Curriculum. Successful completers should be prepared for ASE certification. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Explain safety factors involved with handling and working with oxy-acetylene, Metal Inert Gas, STRSW, and Tungsten Inert Gas welding processes
2. Describe differences in cohesive and adhesive welding processes.
3. Identify when and where different types of welding joints are used in current vehicle construction.
4. Identify acceptable welds for specific applications, and know how to destructive test each.
5. Identify weldable and non-weldable materials used in automotive collision repair
6. Handle and safely store high-pressure gases.
7. Describe welding techniques used on structural and non-structural components of current vehicle construction
8. Trouble shoot each of the various welding pieces of equipment and describe the repair process of each.
9. Identify causes of various welding defects, and how to make necessary corrections.

CRT 123L

Welding and Cutting Lab

Credit hours: 1

Provides a laboratory experience for welding and cutting techniques aligning with lectures from CRT 1230. Topics include MIG, TIG, Squeeze Type Resistant Spot Welding (STRSW), welding processes. Tool room fee of \$19 for equipment applies. Course Lab fee of \$39 for materials applies.

Course Learning Outcomes

1. Safely use oxy-acetylene torch, MIG, TIG, STRSW, and Plasma welding/cutting equipment
2. Demonstrate proper welding techniques
3. Demonstrate mastery of a variety of welds in a variety of positions
4. Identify welding equipment malfunctions
5. Identify a variety of metals and their thickness description
6. Demonstrate proper destructive testing of a variety of welds
7. Use Plasma cutting equipment

CRT 2310

Collision Damage Reporting

Credit hours: 2

Teaches estimating procedures. Uses Crash Estimating Guide. Covers labor and material costs, judgment of repairs, estimating, and insurance nomenclature. Includes computer generated damage reporting, page logic, and ethical problem solving. Uses lecture, guest speakers, and practice exercises. Includes demonstrations, and lab. Uses ICAR Advanced Technical Curriculum. Successful completers should be prepared for ASE certification. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Describe the function and importance of damage reports and the general business aspects in the collision repair industry;
2. Use vehicle number and an information source to fully identify a vehicle. Understand other vehicle identification needs and sources;
3. Explain collision energy management and identify different types of damage;
4. Explain the importance of planning and describe the sequence for damage analysis. Identify common industry part names and repair them;
5. Recognize damage to various mechanical systems of the vehicle and include these in a damage analysis plan;
6. Demonstrate an understanding of flat rate as it applies to collision repair. They will also be able to explain the decision for each type of repair choice;
7. Locate and explain information in a collision estimating guide, for example, procedure pages, footnotes, and illustrations. Select parts, and labor amounts;
8. Complete a simple damage report on a manual estimate form. Write the owner and vehicle information, description of damage repairs, judgment amounts, collision estimating guide information, labor rates, and final calculations;
9. Demonstrate an understanding of a computer-assisted damage report and cost estimate. Identify different ways of selecting and entering repair decisions into a computer. Identify different types of computers in current use.

CRT 231L

Collision Damage Reporting Lab

Credit hours: 1

Provides a laboratory experience for collision damage estimating techniques aligning with lectures from CRT 2310. Topics include: damage analysis sequence, repair and replace decisions, using crash estimating guide, procedure page analysis of crash estimating guide, selecting parts and labor amounts in crash estimating guide, and various estimating programs for the computer. Tool room fee of \$19 for equipment applies. Course Lab fee of \$23 for materials applies.

Course Learning Outcomes

1. Use vehicle number and information source to full identify vehicle. Students will also understand other vehicle identification needs and sources;
2. Demonstrate collision energy management and identify different types of damage;
3. Describe the sequence for damage analysis. They also will be able to identify common industry part names and repair them;
4. Locate damage to various mechanical systems of the Cecile and include them in a damage analysis plan;
5. Demonstrate flat rate as it applies to collision repair. They will also be able to demonstrate the decision for each type of repair choice;
6. Locate information in a collision estimating guide, i.e. procedure pages, foot notes, and illustrations;
7. Select parts and labor amounts;
8. Complete a simple damage report on a manual estimate form. The student will write the owner vehicle information, description of damage, repairs, judgment amounts, collision estimating guide information, labor rates, and final calculations;
9. Demonstrate a computer assisted damage report and cost estimate. Also, they will be able to identify different ways of selecting and entering repair decisions into a computer. The student will also identify different types of computers in current use.

CRT 2320

Structural Damage Analysis

Credit hours: 2

Teaches visual inspection, gauging, measuring, laser technology, and procedures needed to correctly evaluate primary and secondary structural damage. Includes lecture, demonstrations, and lab. Uses ICAR Advanced Technical Curriculum. Successful completers should be prepared for ASE certification. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Inspect a damaged vehicle and correctly identify all the damage;
2. Interpret dimension information and locate key reference points on a vehicle, using a body dimension manual;
3. Use the information provided to set up and see various types of measuring systems;
4. Use a tram gauge to measure length and width damage;
5. Demonstrate an understanding of how centering gauges are used to determine centerline misalignment;
6. Use a set of datum line gauges to identify the two types of height damage, and determine the amount and location of each;
7. Demonstrate an understanding of how a universal measuring system is used to determine the types of collision damage;
8. Locate and identify damage on a vehicle using a universal bench and fixture system;
9. Locate and identify damage on a vehicle using a computerized measuring system.

CRT 232L

Structural Damage Analysis Lab

Credit hours: 1

Provides a laboratory experience for analyzing structural damage to conventional and unibody frames. Aligns with lectures from CRT 2320. Topics include: damage identification, body and frame measurement systems, interpret dimension information, set up and properly use a variety of manual, and computerized measuring systems. Tool room fee of \$19 for equipment applies. Course Lab fee of \$20 for materials applies.

Course Learning Outcomes

1. Inspect a damaged vehicle and correctly identify all the damage;
2. Interpret dimension information and locate key reference points on a vehicle, using a body dimension manual;
3. Use the information provided to set up and see various types of measuring systems;
4. Use a tram gauge to measure length and width damage;
5. Demonstrate an understanding of how centering gauges are used to determine centerline misalignment;
6. Use a set of datum line gauges to identify the two types of height damage, and determine the amount and location of each;
7. Demonstrate an understanding of how a universal measuring system is used to determine the types of collision damage;
8. Locate and identify damage on a vehicle using a universal bench and fixture system;
9. Locate and identify damage on a vehicle using a computerized measuring system.

CRT 2330

Structural Repair

Credit hours: 2

Teaches methods, strategies, and technology needed to align and straighten unibody and conventional frame components made from high strength steel and plastics. Studies alignment of steering and suspension components. Includes lecture, demonstrations, and lab. Software fee of \$10 applies. Lab access fee of \$10 applies.

Course Learning Outcomes

1. Properly mount and anchor a vehicle to a pulling system;
2. Select and set up different types of pulling equipment;
3. Discuss hydraulic principles and proper multiple pulls;
4. Apply knowledge of working with high strength steel to make collision repairs;
5. Apply cold and hot stress relief methods to repair damaged parts;
6. Apply knowledge to pull and straighten a front end damaged vehicle;
7. Apply knowledge to pull and straighten a rear end damaged vehicle;
8. Apply knowledge to pull and straighten a vehicle with side impact damage;
9. Apply knowledge to pull and straighten a vehicle with roof damage.

CRT 233L

Structural Repair Lab

Credit hours: 1

Provides a laboratory experience for aligning and straightening unibody and conventional components made from high strength steel and plastics. Tool room fee of \$19 for equipment applies.

Course Learning Outcomes

1. Mount and anchor a vehicle to a pulling system;
2. Select and set up different types of pulling equipment;
3. Discuss hydraulic principles and proper multiple pulls;
4. Apply knowledge of working with high strength steel to make parts;
5. Apply cold and hot stress relief methods to repair damaged parts;
6. Apply knowledge to pull and straighten a front end damaged vehicle;
7. Apply knowledge to pull and straighten a vehicle with rear end damage;
8. Apply knowledge to pull and straighten a vehicle with side impact damage;
9. Apply knowledge to pull and straighten a vehicle with roof damage.

CRT 2340

Full and Partial Panel Replacement

Credit hours: 2

Teaches removal, alignment, welding, gluing, and corrosion protection technology needed to replace unibody components including rails, pillars, and weld-on panels. Includes lecture, demonstrations, and lab. Uses ICAR Advanced Technical Curriculum. Successful completers should be prepared for ASE certification. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Discuss door skin removal, flange repair, welding and adhesive bonding of new panels;
2. Discuss quarter panel removal and reinstall new panel using welds on adhesive bonding;
3. Discuss full and partial panel sectioning and understand the types of joints used in sectioning quarter panels;
4. Repair or replace a complete rail assembly;
5. Repair or replace a rocker panel on a vehicle;
6. Successfully section or completely replace an A-pillar;
7. Successfully section or completely replace a B-pillar;
8. Apply knowledge to repair and replace a floor pan and trunk floor;
9. Apply knowledge to complete a full body section repair.

CRT 234L

Full and Partial Panel Replacement Lab

Credit hours: 1

Provides a laboratory experience for full and partial panel replacement, aligning with lectures from CRT 2340. Topics include: removal, alignment, welding, gluing, and corrosion protection technology needed to replace unibody components: including rails, pillars, and weld-on panels. Tool room fee of \$19 for equipment applies. Course Lab fee of \$15 for materials applies.

Course Learning Outcomes

1. Remove door skin, repair flange on welded and adhesive bonded panels;
2. Remove quarter panel, and install new panel using welds or adhesive bonding;
3. Remove and replace a full quarter panel, and partial panel replacement using proper sectioning methods;
4. Repair or replace a complete rail assembly;
5. Repair or replace a rocker panel on a vehicle;
6. Section or completely replace an A-pillar;
7. Section or completely replace a B-pillar;
8. repair and replace a floor pan and trunk;
9. Complete a full body section repair.

CRT 2400

Plastic Paintless Dent Repair

Credit hours: 2

Teaches plastic parts identification, interpretation of ISO codes, plastic welding equipment and techniques, SMC repairs and sectioning. Instructs in paintless dent repair tools, and methods of repair. Uses Advanced Tech I-CAR curriculum. Includes lecture, demonstrations.

Course Learning Outcomes

1. Identify interior and exterior automotive parts, determine thermoset and thermoplastic and identify ISO codes and their interpretation;
2. Choose correct welding equipment, methods and procedures to repair a weldable plastic part;
3. Use plastic adhesive repair methods, tools, and materials;
4. Repair fiberglass and SMC (sheet moulded compound) panel replacement and sectioning;
5. Identify sheet metals used in vehicles, identify properties of metal, ie.: elasticity, work hardening;
6. Stress relieve roll buckles, hinge buckles, crowns and compound curves;
7. Demonstrate proper metal bumping techniques;
8. Demonstrate proper paintless dent repair tool selection and its desired results;
9. Demonstrate an understanding of vehicle refinish systems.

CRT 240L

Plastic PaintLess Dent Repair Lab

Credit hours: 1

Provides a laboratory experience for plastic parts identification, interpretation of ISO codes, plastic welding equipment and techniques, SMC repairs and sectioning. Instructs in paintless dent repair tools, and methods of repair. Uses Advanced Tech I-CAR curriculum. Includes hands-on demonstrations. Tool room fee of \$19 for equipment applies. Course Lab fee of \$35 for materials applies.

Course Learning Outcomes

1. Identify interior and exterior automotive parts, determine thermoset and thermoplastic and identify ISO codes and their interpretation;
2. Choose correct welding equipment, methods and procedures to repair a weldable plastic part;
3. Use plastic adhesive repair methods, tools, and materials;
4. Repair fiberglass and SMC (sheet moulded compound) panel replacement and sectioning;
5. Identify sheet metals used in vehicles, identify properties of metal, i.e., elasticity, work hardening;
6. Properly stress relieve roll buckles, hinge buckles, crowns and compound curves;
7. Demonstrate proper metal bumping techniques;
8. Demonstrate proper paintless dent repair tool selection and its desired results;
9. Demonstrate an understanding of vehicle refinish systems.

CRT 2440

Mechanical Advanced Vehicle Systems

Credit hours: 2

Teaches basic mechanical systems theory, removal, and replacement. Studies basic four-wheel steering, traction control, G.P.S., electronic stability control, and black box technology information systems, minor diagnosis and troubleshooting. Includes lecture and demonstrations. Uses Advanced Tech I-CAR curriculum.

Course Learning Outcomes

Please see the department for information.

CRT 244L

Mechanical Advanced Vehicle Systems Lab

Credit hours: 1

Provides a laboratory experience for mechanical systems theory, removal, and replacement. Instructs in basic-four wheel steering, traction control, G.P.S., electronic stability control, and black box technology information systems, minor diagnosis and troubleshooting. Includes demonstrations and hands-on. Uses I-CAR Advanced Technical Curriculum. Tool room fee of \$19 for equipment applies.

Course Learning Outcomes

Please see the department for information.

CRT 2450

Bags Brakes Steering

Credit hours: 2

Teaches the operation and repair of active and passive restraint systems. Diagnosis of sensors, modules and related components is also discussed. Discusses drum, disc, and anti-lock brake systems and components. Covers parallelogram, and rack and pinion steering systems, repair, replacement and diagnosis of each system is addressed. Uses Advanced Tech I-CAR curriculum.

Course Learning Outcomes

Please see the department for information.

CRT 245L

Bags Brakes Steering Lab

Credit hours: 1

Teaches the operation and repair of active and passive restraint systems. Diagnosis of sensors, modules and related components is also discussed. Discusses drum, disc, and anti-lock brake systems and components. Covers parallelogram, and rack and pinion steering systems, repair, replacement and diagnosis of each system is addressed. I-CAR Advanced Tech curriculum is used. Tool room fee of \$19 for equipment applies. Course Lab fee of \$27 for materials applies.

Course Learning Outcomes

1. Diagnose and repair air bag systems.
2. Identify procedures required to diagnose and service belt tensioners.
3. Diagnose and service problems on motorized seat belt systems.
4. Explain disc and drum brake systems, inspect and understand parts, repair and replacement.
5. Explain disc and drum brake systems, inspect and understand parts, repair and replacement.
6. Diagnose common brake problem symptoms and diagnosis procedures.
7. Diagnose basic steering systems and wheel alignment concepts.
8. Diagnose operation and inspection of system parts, maintenance, repair and replacement.
9. Diagnose power systems, column and four-wheel steering.

CRT 2510

Custom Welding

Credit hours: 2

For students pursuing a Diploma or an AAS degree in Collision Repair Technology with an emphasis in Custom Street Rod Technology or interested community members with a welding background. Covers TIG welding processes for mild steel, stainless steel, and aluminum. Teaches oxyacetylene welding processes for mild steel, brass, copper, pot metal, and aluminum.

Course Learning Outcomes

Please see the department for information.

CRT 251L

Custom Welding Lab

Credit hours: 1

Provides a laboratory experience for TIG welding processes for mild steel, stainless steel, and aluminum. Instruction in Oxyacetylene welding processes for mild steel, brass, copper, pot metal, and aluminum. Tool room fee of \$19 for equipment applies. Course Lab fee of \$69 for materials applies.

Course Learning Outcomes

1. Demonstrate the safe use of tools and equipment.
2. Identify various metals.
3. Demonstrate the correct welding techniques that would be best for any applications.
4. Demonstrate how to weld steel, aluminum, stainless steel, brass, copper and pot metal to meet industry standards.
5. Demonstrate how to work, form and finish lead.

CRT 2520 **Customizing**

Credit hours: 2

For students pursuing a Diploma or an AAS degree in Collision Repair Technology with an emphasis in Custom Street Rod Technology or interested community members with a welding background. Covers frenching, shaving, body modifications, convertible conversions, building hood scoops, louvers, flare, and other technical customizing processes.

Course Learning Outcomes

Please see the department for information.

CRT 252L

Customizing Lab

Credit hours: 1

Provides a laboratory experience for frenching, shaving, body modifications, convertible conversions, building hood scoops, louvers, flare, and other technical customizing processes. Tool room fee of \$19 for equipment applies. Course Lab fee of \$11 for materials applies.

Course Learning Outcomes

1. Demonstrate the safe use of tools and equipment.
2. French headlights, taillights, and antennas.
3. Shave off unnecessary chrome, door handles, and truck locks.
4. Round door and hoods corners.
5. Flare fenders.
6. Convert coups, sedans, and 4-doors to convertibles.
7. Fabricate hood scoops louvers.
8. Fabricate rolled pans.
9. Remove and replace molding

CRT 2530

Panel Fabrication

Credit hours: 2

For students pursuing a Diploma or an AAS degree in Collision Repair Technology with an emphasis in Custom Street Rod Technology or interested community members. Covers basic fabricating tools such as sheet metal brake, slip rolls, band saw, and nibblers. Uses specialty tools such as English wheel, power hammer, kraftformer, plenisher hammer, shrinkers, and stretchers. Teaches panel fabrication and hammer forming.

Course Learning Outcomes

Please see the department for information.

CRT 253L

Panel Fabrication Lab

Credit hours: 1

Provides a laboratory experience for basic fabricating tools such as sheet metal brake, slip rolls, band saw, and nibblers. Uses specialty tools such as English wheel, power hammer, kraftfomer, plenisher hammer, shrinkers, and stretchers. Teaches panel fabrication and hammer forming. Tool room fee of \$19 equipment applies. Course Lab fee of \$60 materials applies.

Course Learning Outcomes

1. Demonstrate safe use for panel fabrication and use of tools and equipment.
2. Fabricate panels for rust repairs.
3. Form compound curves from sheet metal.
4. Make patterns and transfer patterns to steel.
5. Create bead rolls and body lines.
6. Fabricate body panels from sheet metals.

CRT 2610

Top Chopping Sectioning and Channeling

Credit hours: 2

For students pursuing a Diploma or an AAS degree in Collision Repair Technology with an emphasis in Custom Street Rod Technology or interested community members with a basic welding and collision repair background. Covers the history of vintage vehicles, methods of top chopping, sectioning and channeling techniques.

Course Learning Outcomes

Please see the department for information.

CRT 261L

Top Chopping Sectioning and Channeling Lab

Credit hours: 1

Provides a laboratory experience for methods of top chopping, sectioning and channeling techniques. Tool room fee of \$19 for equipment applies. Course Lab fee of \$16 for materials applies.

Course Learning Outcomes

1. Demonstrate safe use of tools and equipment.
2. Demonstrate how to chop a top with only the roof that it has.
3. Demonstrate how to chop a top by using two tops for a better look.
4. Demonstrate how to section a body on various vehicles.
5. Demonstrate how to channel a body over the frame of various vehicles.
6. Demonstrate how to know the difference between a good job or bad.

CRT 2620

Frames

Credit hours: 2

For students pursuing a Diploma or an AAS degree in Collision Repair Technology with an emphasis in Custom Street Rod Technology or interested community members with a welding background. Identifies the different types of frames and how to modify them. Teaches sub-framing, pro-streering, narrowing of rear ends, drive shafts, and complete frame change over. Covers exhaust systems and other alterations, front to rear.

Course Learning Outcomes

Please see the department for information.

CRT 262L

Frames Lab

Credit hours: 1

Provides a laboratory experience for identifying the different types of frames and how to modify them. Teaches sub-framing, pro-streeting, narrowing of rear ends, drive shafts, and complete frame change over. Covers exhaust systems and other alterations, front to rear. Tool room fee of \$19 equipment applies.

Course Learning Outcomes

1. Demonstrate safe use of tools and equipment.
2. Box frames.
3. Install sub-frames.
4. Correct installation of brake and clutch pedals.
5. Make and install new brake lines.
6. Build drive shafts.
7. Improve handling and performance of street rods.
8. Know basics of motorcycle frame building.

CRT 2630

Detailing and Custom Painting

Credit hours: 2

For students pursuing a Diploma or an AAS degree in Collision Repair Technology or Custom Street Rod Technology or interested community members with a automotive painting background. Teaches custom painting and detailing for show cars. Emphasizes flames, scallops, shredding, checker boarding, air brush techniques, murals, fish scales, three stage paints, pearls, candies, and multi-colored changes.

Course Learning Outcomes

1. Demonstrate safe use of tools and equipment;
2. Detail an engine compartment;
3. Detail chassis;
4. Align doors, hoods & trunk for perfect gaps;
5. Align bolts and screw heads;
6. Straightening and polish stainless and aluminum;
7. Lay out a custom paint scheme on a car;
8. Paint a custom paint scheme on a car.

CRT 263L

Detailing and Custom Painting Lab

Credit hours: 1

Provides a laboratory experience for custom painting and detailing for show cars. Emphasizes flames, scallops, shredding, checker boarding, air brush techniques, murals, fish scales, three stage paints, pearls, candies, and multi-colored changes. Tool room fee of \$19 for equipment applies. Course Lab fee of \$73 for materials applies.

Course Learning Outcomes

1. Demonstrate safe use of tools and equipment;
2. Detail an engine compartment;
3. Detail chassis;
4. Align doors, hoods & trunk for perfect gaps;
5. Align bolts and screw heads;
6. Straightening and polish stainless and aluminum;
7. Lay out a custom paint scheme on a car;
8. Paint a custom paint scheme on a car.

CRT 2640

Panel Fabrication of Aluminum

Credit hours: 2

For students pursuing a diploma or an AAS degree in Collision Repair Technology with an emphasis in Custom Street Rod Technology or interested community members. Covers basic hand tools, such as: hammers, dollies, leather bags, and slappers. Use of specialty equipment, such as: English wheel, Pullmax, nibbler, power hammers, and bead rollers. Teaches making bucks, patterns and forms. Teaches panel fabrication of aluminum.

Course Learning Outcomes

Please see the department for information.

CRT 264L

Panel Fabrication of Aluminum Lab

Credit hours: 1

Provides laboratory experience for use of: hammers, dollies, leather bags, and slappers. Instructs in the use of specialty equipment, such as: English wheel, Pullmax, nibbler, power hammers, and bead rollers. Teaches making bucks, patterns and forms. Teaches panel fabrication of aluminum. Tool room fee of \$19 for equipment applies. Course Lab fee of \$60 for materials applies.

Course Learning Outcomes

1. Demonstrate safe use of tools and equipment.
2. Know differences between aluminum alloys.
3. Fabricate panels for cars, trucks, motorcycles, and airplanes.
4. Form compound curves from sheet aluminum.
5. Metal finish welds on aluminum.
6. Know how to build a buck.

CRT 2650
Automotive Interior Design

Credit hours: 2

Discusses automotive interior designs with emphasis on color coordination, and materials.
Identifies a variety of techniques used in alteration, sewing, layout, and attachment processes.

Course Learning Outcomes

Please see the department for information.

CRT 265L

Automotive Interior Design Lab

Credit hours: 1

Offers a laboratory experience for CRT 2650 lecture. Demonstrates interior design materials, color coordination, and stitching techniques. Teaches fabrication, design attachment, molding, layout and cutting. Tool room fee of \$19 for equipment applies. Course Lab fee of \$96 for materials applies.

Course Learning Outcomes

1. Choose correct Automotive interior materials, and colors design
2. Identify a variety of stitching techniques and methods
3. Demonstrate proper layout processes
4. Demonstrate proper installation techniques
5. Demonstrate a variety of attachment processes
6. Display proper safety work habits with materials and equipment

CS 1400

Fundamentals of Programming

Credit hours: 3

Introduces techniques and tools to formulate and solve problems where computer algorithms and programs are a core part of an effective, repeatable solution. Demonstrates algorithmic thinking using procedural programs composed of sequences of commands, functions, loops, conditionals, and basic data structures. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Design procedural solutions to programming problems.
2. Implement procedural solutions to problems with appropriate use of sequences of commands, functions, variables, conditionals, looping, files, lists and libraries.
3. Test programs to assure that solutions are correct and complete.
4. Design readable, maintainable code, using a good, consistent programming style.

CS 1410

Object Oriented Programming

Credit hours: 3

Teaches proper program structure using the core concepts of object-oriented programming: classes, objects, encapsulation, inheritance and polymorphism. Presents problems of increasing size and complexity requiring OOP techniques, standard libraries and other appropriate language constructs. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Implement object oriented solutions to problems of increasing size and complexity, which exhibit use of classes, objects, encapsulation, inheritance, and polymorphism.
2. Test programs to assure that solutions are correct and complete.
3. Design readable, maintainable code, using a good, consistent programming style.
4. Use algorithms and data structures from standard libraries to solve problems.

CS 2300

Discrete Mathematical Structures I

Credit hours: 3

Covers algebraic structures applied to computer programming. Includes logic, sets, elementary number theory, mathematical induction, recursion, algorithm complexity, combinatorics, relations, graphs, and trees. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Use symbolic logic to determine proper conditional clauses in a program
2. Prove theorems algebraically
3. Perform basic operations on sets
4. Determine the nature of the growth of a function or algorithm
5. Prove properties of recursive algorithms using mathematical induction
6. Use relations and functions in the design of algorithms and applications

CS 2370

C Plus Plus Programming WE

Credit hours: 3

Introduces C++ programming for students with prior programming experience. Covers language fundamentals, core standard library components, error handling, value semantics, pointers and memory management, object-oriented programming, and templates. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Solve small-to-medium-size problems using the C++ programming language
2. Distinguish between value and reference semantics
3. Use the core algorithms and containers in the standard C++ library when applicable
4. Manage memory via pointers
5. Compose comments that effectively explain algorithms and procedures in C++ programs.

CS 2420

Introduction to Algorithms and Data Structures

Credit hours: 3

Uses data abstraction to design and implement modular programs of medium size and complexity. Structures solutions to problems using common data structures and algorithms such as advanced arrays, lists, stacks, records, dynamic data structures, searching and sorting, vectors, trees, linked lists, and graphs. Evaluates alternative solutions to problems. Analyzes algorithmic complexity metrics in Big-O notation. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Develop algorithms and programs of medium size or complexity.
2. Design programs using good modular analysis and design principles.
3. Evaluate the design and implementation of programs using a methodical approach.
4. Implement linear and non-linear data structures, such as arrays, lists, stacks, queues, hashmaps, trees and graphs.
5. Select and use appropriate data structures for a particular task using algorithmic complexity metrics with Big-O notation.

CS 2450

Software Engineering

Credit hours: 3

Presents concepts, methodology and best-practices necessary to develop large scale software projects. Includes step-wise software requirements analysis, design, implementation, testing and release. Discusses software generation, reuse, scheduling, verification, and maintenance. Emphasizes current "real world" industry best-practices and tools. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

Please see the department for information.

CS 2550

Web Programming I

Credit hours: 3

Covers design and development of browser-based programs with an emphasis on single-page applications. Teaches generation and modification of HTML via JavaScript, debugging techniques, communicating with web servers, and use of XML and JSON. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Write JavaScript code to generate and manipulate HTML and CSS for web applications;
2. Explain the data communication protocols and other network concepts that are important for web applications;
3. Explain and use the Document Object Model (DOM) event-based programming in web browsers;
4. Address important security issues for web applications;
5. Explain XML and JSON and use them in web applications;
6. Design and implement client-side programs that can communicate with Internet servers;
7. Design and implement basic server-side programs that communicate with web applications running in browsers, debug client-side and server-side programs and communication;
8. Use various methods of storing and retrieving data in client- side and server-side programs.

CS 2600

Computer Networks I

Credit hours: 3

A rigorous introduction to computer networking theory and technologies for Computer Science and Information Technology majors. Includes theory of data communications protocols; theory and design of transmission systems; transmission media; and communication software. Emphasizes the lower layers of the Open Systems Interconnection model. Requires lab exercises to be completed outside of lecture. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain how computer networks are used;
2. Describe the primary models for network architectures and data communications standards;
3. Describe data transmission media and signaling;
4. Describe the principal error detection schemes;
5. Explain data link control protocols;
6. Describe the primary Local Area Network architectures;
7. Describe networking hardware;
8. Explain packet switching, Wide Area Network Architectures and Asynchronous Transfer Mode;
9. Discuss basic Internet Protocol (IP) and Transport Protocol (TCP and UDP) concepts.

CS 2690

Computer Networks II

Credit hours: 3

Continues CS 2600 Computer Networks I. Focuses on the upper layers of the OSI and Internet models. Covers Internet (TCP/IP) protocols, routing theory, transport protocols, network application interfaces, presentation formatting, information theory and compression, cryptography, and other emerging technologies as time permits. Requires lab exercises and programming assignments to be completed outside of lecture. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain how IP packets are routed through an internet;
2. Discuss Internet layer utility protocols (ARP, ICMP, DHCP);
3. Explain Transport layer protocols (TCP & UDP);
4. Explain Transport API's (Socket programming & RPCs);
5. Discuss Presentation layer protocols (presentation formatting & data compression);
6. Explain theory and applications of cryptography (symmetric key, public key, digital signatures, certificates, TLS);

CS 2700

Causal Inference

Credit hours: 3

Explores a variety of data generating processes of importance for causal inference with computer simulations. Includes stratified sampling, inverse probability weighting, matching, blocking, propensity, sensitivity, causal graphs, d-separation, identifiability, the causal Markov condition, and the back-door criterion for selecting an admissible set of covariates. Examines causal mechanisms, the Rubin causal model, and both deterministic and stochastic counterfactuals. Develops ethical A/B testing procedures.

Course Learning Outcomes

1. Simulate a variety of data generating processes using a computer program.
2. Quantify uncertainty in causal interpretations from observational studies, experiments, natural experiments, and quasi-experiments.
3. Assess whether causal inference is warranted using a variety of principles such as sensitivity analysis.
4. Apply ethical practices to the design of an A/B test.

CS 2810

Computer Organization and Architecture

Credit hours: 3

Uses assembly language to introduce basic concepts of computer organization. Includes number systems, CPU organization, instruction sets, programming in assembly, memory organization, debugging, program design, and documentation. Covers interrupts, vector tables, and disk I/O. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify the major hardware components in a processor and their respective functions.
2. Use transistors to construct logic gates, storage elements, combinational logic circuits, and sequential logic circuits.
3. Design structured assembly language programs.
4. Implement structured assembly language programs.

CS 305G

Global Social and Ethical Issues in Computing GI WE

Credit hours: 3

Examines how computers have affected global society and how they could further affect it in the future. Examines various ethical issues surrounding computer usage, particularly in differing societal contexts. Explores the responsibilities borne by software professionals, including how their actions can affect both society and individual people in their own and other cultural settings. Presents examples of the moral and professional issues that those who work with computers might expect to face. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the historical perspective of ethics as it relates to computing and technology.
2. Evaluate computing situations involving ethical issues in the real world.
3. Analyze global or intercultural issues.
4. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
5. Compose a variety of written texts appropriate to computing and technology.
6. Evaluate how one's own cultural values compare with those from different backgrounds.

CS 3060

Operating Systems Theory

Credit hours: 3

Introduces the Unix operating system. Presents the underlying theory and concepts of an operating system, and covers the following topics in depth: device management, processes, threads, synchronization, scheduling, deadlocks, memory management, virtual memory, and file systems. Provides practical experience in writing programs that use standard Unix system calls to interface directly with the operating system. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Demonstrate a working knowledge of a Unix based operating system.
2. Demonstrate a working knowledge of the standard Unix programming environment.
3. Describe the basic functions of an operating system.
4. Describe the basic components of an operating system, and explain what each of these components does.
5. Explain the basic algorithms for scheduling, memory management, device management, file management, and process management.
6. Write reasonably complex programs on a Unix-based operating system correctly using Unix system calls to access operating system functions.

CS 3100

Data Privacy and Security

Credit hours: 3

Covers the fundamental theory, concepts and practical applications of computer security. Includes networking fundamentals, cryptography, authentication and authorization, access control, malware, physical security, computing systems hardening, threat detection and response, secure code, and secure applications development. Emphasizes developing, deploying, and maintaining a secure computing infrastructure with a hands-on approach.

Course Learning Outcomes

1. Explain fundamental theories and concepts of cybersecurity.
2. Use modern tools to identify threats, assess risk and respond appropriately to harden systems.
3. Design cryptographic algorithms.
4. Implement cryptographic algorithms that meet specific design criteria.
5. Identify insecure code in a chosen programming language.
6. Fix insecure code in a chosen programming language.

CS 3110

Applied Cryptography

Credit hours: 3

Investigates advanced topics in cryptography. Provides an overview of the necessary background in algebra and number theory, private- and public-key cryptosystems, and basic signature schemes. Explores relevant number theory, basic Galois fields as applied to cryptography, the history of primality algorithms and the polynomial-time test of primality, discrete logarithm-based cryptosystems including those based on elliptic-curves and interactive protocols including the role of zero-knowledge proofs in the authentication.

Course Learning Outcomes

1. Describe how various cryptography algorithms and protocols work.
2. Critique other people's work based on rigorous principles.
3. Evaluate security mechanisms using rigorous approaches, including theoretical derivation, modeling, and simulations.
4. Formulate research problems in the computer security field.
5. Develop solutions to the formulated problems.

CS 3120

Ethical Hacking Tools Dev

Credit hours: 3

Develops the structured knowledge base needed to discover vulnerabilities and recommend solutions for tightening network security and protecting data from potential attackers. Emphasizes developing cutting-edge tools and techniques to hack vulnerable systems.

Course Learning Outcomes

1. Examine ethical and legal considerations of hacking.
2. Assess an environment/ system for vulnerability.
3. Develop customized hacking tools.
4. Apply the hacking techniques to hack vulnerabilities.
5. Evaluate best practices in security concepts to maintain confidentiality, integrity, and availability of computer systems.

CS 3240

Discrete Mathematical Structures II

Credit hours: 3

Presents concepts from discrete mathematics including formal languages, and automata, including Turing machines, regular expressions, grammars, and computability. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Use finite automata, regular expressions, and regular grammars to describe regular languages
2. Use pushdown automata, and context-free grammars to describe context-free languages
3. Use Turing Machines and unrestricted grammars to describe recursively enumerable languages
4. Apply finite automata, pushdown automata, and Turing Machines to computer programs
5. Explain the theoretical limits of automatic computation

CS 3270

Python Software Development

Credit hours: 3

Covers the features of the Python programming language. Includes scripting, dynamic typing, data types (sequences, sets, mappings, files, etc.), loops, iterators, generators, functions, coroutines, classes and objects, modules, packages and scope, runtime services, data wrangling, concurrent programming, etc. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply the scripting language paradigm;
2. Explain the advantages and drawbacks of dynamically typed programming languages;
3. Apply Python's built-in data structures to programming projects;
4. Apply the principles and techniques of the functional programming paradigm as supported by Python;
5. Apply the principles and techniques of the object-oriented programming paradigm as supported by Python;
6. Implement suitable software architectures using Python's module and package features;
7. Apply the core modules in the Python library to solutions to programming problems.

CS 3310

Analysis of Algorithms

Credit hours: 3

Develops and reinforces ability to write and mathematically analyze foundational computer algorithms. Includes formalizing NP-completeness, divide and conquer strategies, greedy algorithms, dynamic programming, backtracking, branch and bound, approximation algorithms and multicore parallelization. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Calculate the Big-O complexity of an algorithm.
2. Classify problems that embed strategies like divide and conquer, branch and bound, and parallelism according to Big-O complexity.
3. Summarize intractability and its impact on computation.
4. Write sequential and multicore parallel versions of algorithms.
5. Benchmark sequential and multicore parallel versions of algorithms.

CS 3380

JavaScript Software Development

Credit hours: 3

Covers modern JavaScript features of functional programming, not JavaScript programming limited to the browser. Topics include rest/spread operators, string interpolation, regular expressions, object property shorthand, computed properties, method properties, destructuring assignments using object and array matching, module export/import, classes & inheritance, promises, iterators, generators, map/set, reflection, localization & formatting. Introduces common idioms and design patterns. Emphasizes accepted software engineering practices. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. create command-line utilities
2. apply advanced features from ECMAScript version 6 through 9
3. transpile and polyfill modern JavaScript for use on older platforms
4. apply functional idioms and methodologies in software solutions

CS 3410

Human Factors in Software Development

Credit hours: 3

Explores the analysis, design, and implementation of User Interfaces. Delves into all aspects of the user experience while interacting with computer systems, including cognitive, social, and emotional aspects of the user experience and methodical interaction design. Teaches how to observe users, collect requirements, design user experiences, create prototypes for customers and how to evaluate the effectiveness of any user interface. Includes both individual and group work. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain how human cognition, social norms and emotion affect user interface design
2. Explain the elements of an effective user interface for a specified task
3. Create low-definition wireframe customer prototypes
4. Evaluate another team's work using standard criteria
5. Use modern tools to create effective user interfaces

CS 3450

Principles and Patterns of Software Design

Credit hours: 3

Gives students familiarity with modern principles and practices of software design. Emphasizes design patterns, including their motivation and the design principles on which they are based. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply the key principles that underly the design of quality software;
2. Identify which patterns support which design patterns;
3. Detect when design principles are violated and which patterns are needed to improve a design;
4. Comprehend the design patterns in common use in professional software development;
5. Produce designs that are orthogonal and reusable;
6. Discuss designs at a high level using patterns terminology;
7. Identify patterns that balance the forces in a given design problem.

CS 3520

Database Theory

Credit hours: 3

Introduces the underlying theories of Relational Database Management Systems (RDBMS) as well as their practical use retrieving data using both embedded SQL and relational algebra. Implements queries that start from simply joining, selecting, and projecting data, then progresses to more complex data retrieval techniques that require the use of set operations, sub-queries, and group by having clauses. Discusses entity-relationship (ER) modeling, creating a RDBMS from an ER model, B+ Trees, ACID transactions, normalization, locking, concurrency issues, and alternatives to an RDBMS. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Write RA queries that can solve problems that involve joining tables, selecting tuples, projecting attributes, and performing set theory operations
2. Write embedded SQL queries that can solve problems that involve joining tables, selecting tuples, projecting attributes, performing set theory operations, using aggregates, subqueries, and group by/having clauses
3. Create an ER diagram after reading a problem narrative
4. Convert an ER diagram into a working database using DDL

CS 3530

Data Management For Data Sciences

Credit hours: 3

Covers advanced relational databases and issues related to managing non-relational data sets. Has two major components: (1) advances knowledge in relational database and skills in using SQL and database indexing; and (2) introduces NoSQL databases such as a document-oriented database, key-value database, column-oriented database, graph database, and Hadoop system and data warehousing. Justifies the need for NoSQL databases, and shows how they are implemented in database systems. Presents criteria that decision makers should consider when choosing between relational and non-relational databases and techniques for selecting the NoSQL database that best addresses specific use cases.

Course Learning Outcomes

1. Install and run a program using Hadoop
2. Select a data model to suit the characteristics of your data
3. Model a problem into a graph database to perform analytical tasks over the graph in a scalable manner
4. Recognize different data elements in your own work and in everyday problems

CS 3660

Web Programming II

Credit hours: 3

Teaches how to design, implement, test, and debug medium sized web applications using both client and server side technologies. Includes web security, data markup languages, server side scripting technologies, web application interactions with databases, and web service architectures. Teaches how to develop a full web-site having sophisticated user interactions at a variety of security levels. Lab access fee of \$45 for computers applies. Software fee of \$18 applies.

Course Learning Outcomes

1. Develop complete, interactive, web sites using one or more server side technologies;
2. Use database systems to drive web application content;
3. Address security issues in web applications including authentication, authorization, and data security;
4. Use templates, dynamic page layout techniques, and content management systems to make web sites easily maintainable;
5. Incorporate various data presentation formats into web application designs;
6. Write applications that interact with existing internet services around the world;
7. Design and implement web services that provide dynamic content to various web applications.

CS 3670

Network Programming

Credit hours: 3

Covers concept and practical application of socket communication and network protocols. Presents design and implementation of networked applications. May be delivered online. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Write client and server programs that use sockets for network communication;
2. Design a basic application-level protocol;
3. Write multi-threaded programs that properly address issues of synchronization and deadlock;
4. Demonstrate understanding of basic design and security issues of network-based applications.

CS 3680

Mobile Device Programming

Credit hours: 3

Teaches software design and programming principles and practices for developing applications for mobile devices. Addresses issues such as application life-cycle, user interfaces on touch-screen devices, options for data storage and communication, power and performance, and using graphics and media. Examines hardware features common in mobile devices such as GPS, accelerometers, and cameras. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Use appropriate tools and programming techniques;
2. Implement the handling of application life-cycle events;
3. Implement a user interface;
4. Evaluate options for storing data on a device;
5. Implement network communication;
6. Explain performance and power issues;
7. Implement applications that make use of images, audio, 3D graphics, and video;
8. Use hardware features such as GPS, accelerometer, and camera;
9. Evaluate distribution options for different kinds of applications.

CS 3800

Data Science Through Statistical Reasoning

Credit hours: 3

Develops statistical reasoning and computational skills required to clean transform data, implement solutions to complex problems, explore and visualize data, develop and test hypotheses, use simulation to investigate stochastic processes and model real-world situations of interest. Presents cases that require various statistical methods, data technologies, developing algorithms and using powerful statistical and data science tools in a modern scripting language.

Course Learning Outcomes

1. Sanitize messy datasets for use by machine algorithms
2. Write programs that use statistical and data science libraries to solve problems
3. Use simulations to model real problems
4. Include visualizations and statistical methods in professional presentations about solutions to real problems

CS 3810

Applied Data Science

Credit hours: 3

Covers the entire life cycle of a data science project, from problem formulation to data science solutions. Starts with a data driven problem, identifying data sets needed, collecting data, selecting techniques to solve the problem, implementing algorithms and models, assessing performance, and communicating insights and recommendations through written reports and oral presentations. Features several individual projects and a semester long team project.

Course Learning Outcomes

1. Identify the phases of data science projects
2. Develop a project plan for small and medium sized projects
3. Develop solutions to real-world data science problems
4. Present project results and recommendations to stake holders

CS 3820

Visualization Analytics for Data Science

Credit hours: 3

Introduces visual analytics methods and techniques to support human reasoning and decision-making with data. Presents visualization as the primary tool for recognizing and communicating the significance, meaning and decision-making from massive, dynamic, often conflicting, data. Includes both theoretical foundations and application methods, which presents a comprehensive view of this emerging, multidisciplinary field beyond simply learning to use visualization tools. Includes choosing the right visualization for the questions being asked, the data and the target audience; translating numbers to images; showing data or statistics; showing uncertainty, time trends; presenting results of machine learning techniques; many variables; big data; and maps and networks. Covers pie charts, bar charts, histograms, simple metrics, scatterplots, maps.

Course Learning Outcomes

1. Choose the right visualization for the question being asked, the data given and the target audience, from among alternatives
2. Filter extraneous data from massive data sets
3. Filter extraneous visual information and interactions from a visualization
4. Create novel visualizations from scratch using a modern toolkit
5. Give a clear, science-based rationale for choices made in creating a visualization

CS 4200

Secure Computing Capstone

Credit hours: 3

Focuses on student's chosen field of the security domain. Solves a real-world computer security-related problem or dilemma. Brings all pieces of secure computing experience into a complete capstone project. Covers design, development, and deployment of all parts of the security domain.

Course Learning Outcomes

1. Analyze real-world security problems and challenges within the student's chosen field of the security domain.
2. Apply the security experience and tools to design a solution for a real-world security domain.
3. Implement a security solution for real-world problems.
4. Present and discuss solutions in a professional manner.

CS 4230

Software Testing and Quality Engineering

Credit hours: 3

Provides a comprehensive exploration of strategies for testing software systems. Includes unit testing, system testing, developing software testing organization, and establishing software Total Quality Management (TQM) programs. Students will conduct system tests of software packages. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the theory and practices of software testing
2. Test software using white box and black box techniques
3. Write and follow test plans
4. Write effective defect reports
5. Inspect code to find defects

CS 4380

Advanced High Performance Computer Architecture

Credit hours: 3

Presents theory and concepts of high-performance computer architectures. Includes digital logic, buses, registers, ALU's, control units, pipelining, parallelism, DASD's, SASD's, RAID, caching, instruction-sets, memory hierarchy, multiprocessing, interconnection via networks. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Summarize the history of computer architecture from the creation of a simplest von Neumann-based architecture to Quantum and DNA-based computers.
2. Explain the significance of pipelining and RISC-based architectures on the evolution of modern computer architecture.
3. Implement an assembler and a virtual machine.
4. Write assemble code for while-loops, if-then- else-statements, mathematical expression, and build the run-time stack for recursive function calls with no help from a macro.

CS 4400

Software Engineering II

Credit hours: 3

Covers principles and practices of early phases of software development life cycle. Studies software requirements elicitation, analysis, and design. Includes in-depth, practical study of at least one major software development approach as applied to a realistic organizational systems problem. Explores requirements definition, analysis including prototyping, functional and nonfunctional requirements specification, legacy systems, and architecture patterns. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Work in teams to produce software
2. Introspect about team processes and performance and suggest improvements
3. Design an appropriate software architecture for a system to be built
4. Develop software in an iterative process
5. Analyze and document user needs with use cases

CS 4450

Analysis of Programming Languages

Credit hours: 3

Offers the mature student an in-depth understanding of the design and implementation of programming languages. Explores criteria for evaluating programming languages as a context for comparing both traditional and current popular languages. Includes the evolution of programming languages, the concept of binding, type checking, static and dynamic scoping, control structures, subprograms and parameter passing methods, and concurrency. Explores the functional programming paradigm in-depth. Includes programming assignments in at least two different programming languages, at least one of which being a functional language such as LISP, Scheme, ML, or Haskell. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain different programming paradigms (especially the functional paradigm) in solving problems by computer programs.
2. Explain the classical development sequence from source to executable code.
3. Apply the process and timing of binding names to software entities.
4. Explain the role of types and the different kinds of type checking in programming languages.
5. Utilize the various forms of polymorphism.
6. Explain the various ways to manage computer memory.
7. Interpret common cost models of computation.

CS 4470

Artificial Intelligence

Credit hours: 3

Presents theory, organization, concepts, and principles of artificial intelligence methodologies including neural networks, expert systems, machine learning algorithms, and genetic algorithms. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Design systems that are able to do autonomous problem solving, rational reasoning, inference, decision-making and learning in the presence of varying degrees of uncertainty.
2. Explain the logical and probabilistic foundations of modern AI.
3. Implement models and algorithms that enable autonomous intelligent systems, such as uninformed search, heuristic search, adversarial search, constraint satisfaction, Bayesian Networks, Markov Models, Particle Filters, Reinforcement Learning and Neural Networks.
4. Discuss the philosophical issues associated with AI.

CS 4490

Compiler Construction

Credit hours: 3

Builds on software created in CS 4380. Presents concepts necessary to create a modern compiler. Reinforces theoretical and practical software development skills from previous courses through an immersive, expressive approach to compiler construction. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Design a compiler that conforms to specifications.
2. Implement a working compiler that conforms to a design.
3. Manage complexity by multilevel decomposition.
4. Solve programming problems using computer science theory.

CS 4550

Software Engineering III

Credit hours: 3

Senior-level, capstone project experience course. Requires operating as part of a high performance team. Includes completing the design and implementation of a large-scale software development project. Combines major milestone presentations to project clients, completing a portfolio of project-related artifacts, and offer an evaluation of the project and team experience. Requires students to take a program level assessment. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Develop a significant software solution in a team environment
2. Plan software development and manage the project
3. Execute the software development process from beginning to end
4. Work with customers to evaluate user needs and provide a solution
5. Write user documentation
6. Present project to end users and to other class members

CS 4690

Distributed Internet Application Development

Credit hours: 3

Constructs robust software solutions for large, heterogeneous software and hardware networks. Explores heterogeneous operating systems, data store architectures, and remote resource management. Focuses on the intricacies of remote services, data exchange mechanisms, and interactions among agents in peer-to-peer and client-server networks. Explores protocols and standards that ensure interoperability across diverse systems. Analyzes strategies to ensure confidentiality, availability, and data integrity in distributed applications. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Evaluate systems using key principles of distributed internet application design, including trade-offs, fault tolerance, and Brewer's theorem.
2. Implement distributed applications using contemporary frameworks and data strategies.
3. Deploy distributed applications on cloud platforms with containerization tools.
4. Ensure security, privacy and compliance standards in distributed internet applications.
5. Optimize the performance of distributed systems for enhanced throughput and user experience.

CS 4700

Machine Learning I

Credit hours: 3

Explores the philosophy, utility, mathematics and algorithms of machine learning in order to understand the basic concepts and issues at the heart of machine learning. Covers the implementation and use of machine learning algorithms to solve real-world problems or to pursue a graduate program. Includes feature selection and extraction, decision trees, neural networks, nearest-neighbors, support vector machines, naive Bayes classifier, clustering, ensembles, reinforcement learning and deep learning.

Course Learning Outcomes

1. Evaluate general machine learning theories
2. Choose appropriate learning algorithms among alternatives of potential interest
3. Create programs that use common machine learning libraries and implementations
4. Explain why an algorithm does not work when it does not work

CS 4710

Machine Learning II

Credit hours: 3

Applies Deep Learning models to problems in a variety of application domains that use massive data sets, such as recommender systems, novel text, image and music generation, sentiment analysis. Implements working models using algorithms such as recurrent neural nets, convolutional neural nets, deep belief nets, and deep reinforcement learning. Uses modern toolkits such as Tensorflow.

Course Learning Outcomes

1. Explain what deep learning is
2. Decide whether a deep learning approach is appropriate for a given problem domain
3. Create programs that implement and incorporate deep learning to solve real-world problems
4. Use modern toolkits, such as Keras and TensorFlow, or Hadoop, or SparkML to implement deep learning models

CS 4800

Data Science Capstone WE

Credit hours: 3

Solves a real-world data science problem or dilemma for an industry partner. Provides an opportunity to work in teams on a project from an industrial firm. Includes realistic industry evaluations such as teamwork, communication, individual initiative, and final product.

Course Learning Outcomes

1. Analyze real-world data science problems
2. Implement a data science solution for an industry partner
3. Present and discuss solutions in a professional manner
4. Apply practices of data science, such as modeling, statistics, and machine learning to design a solution for a real- world data science application
5. Compose a variety of disciplinary-appropriate texts within multiple situations and for multiple audiences

CS 4880

Cloud Computing

Credit hours: 3

Develops mastery of programming to cloud databases. Emphasizes real-world scenarios involving architecture, build, development, testing, and deployment on commercially available cloud databases. Covers concurrent programming, distributed programming, microservices, migration, and hybrid clouds. Lab access fee of \$45 for computers applies. Software fee of \$18 applies.

Course Learning Outcomes

1. Investigate the differences among the most common cloud vendors.
2. Build a serverless architecture using microservices and lambdas.
3. Create a private cloud on premise.
4. Design a strategy to migrate all or part of a serverless architecture to a public cloud and a private cloud.
5. Produce a dynamic scalable cluster.
6. Model a big data problem in a cloud.

CS 4900

Full Stack Web Senior Capstone

Credit hours: 3

Brings all pieces of full stack web development into a complete capstone project. Covers design, development and deployment of all parts of a web application. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Design a complete web application, including choice of technologies for the client, the server, and the data store
2. Implement all parts of a web application
3. Evaluate the quality of the web application implemented
4. Measure the performance of a web application
5. Compare at least two different architecture alternatives for a web application

CS 6150

Advanced Algorithms

Credit hours: 3

Explores applications and tradeoffs of state of the art algorithms in parallel/concurrent programming, data search, graphics, graph theory, data structures, mathematical programming, machine reasoning, machine learning, network flow, and other domains. Applies both theory and practice to various projects with a focus on concurrent/parallel programming.

Course Learning Outcomes

1. Evaluate the benefits, limitations, and drawbacks of various algorithms.
2. Analyze the hardware needed to support concurrent vs. parallel programming.
3. Compare the various software methodologies used to support concurrent/parallel programming.
4. Apply advanced algorithms to at least three of the following domains: parallel/concurrent programming, machine reasoning, machine learning, data search, graphics, dynamic data structures, linear/dynamic programming, network flow.

CS 6200

Cyberphysical Security

Credit hours: 3

Studies the principles, practices and algorithms related to securing computers and other network-visible devices. Analyzes the problems of security associated with computers and cyberphysical systems. Identifies threats, attacks, and actors. Applies cryptography and other techniques to address those problems.

Course Learning Outcomes

1. Identify and classify cybersecurity risks.
2. Implement reproducible secure algorithms to mitigate risks.
3. Perform penetration-testing on network-visible devices.
4. Defend against real-time cyberattacks.
5. Discuss current laws, regulations, and toolchains as they apply to attacking and defending cyberphysical systems.

CS 6300

Software Engineering Leadership

Credit hours: 3

Prepares students to be software project leaders. Evaluates modern software processes and project management. Identifies important roles in software projects and their contribution to project success. Explores interaction of business needs and project development.

Course Learning Outcomes

1. Apply project leadership skills to direct software projects.
2. Analyze the differences between business needs and technical issues and how to balance them.
3. Apply modern software development processes, such as agile processes, to software projects.
4. Produce complete software projects.
5. Evaluate the human aspects related to software development.

CS 6460

Artificial Intelligence

Credit hours: 3

Presents foundational AI algorithms. Explores state space search, local search, adversarial search, constraint satisfaction problems, logic and reasoning, expert systems, Markov Models, Bayesian networks, particle filters, planning, reinforcement learning, and multilayer perceptrons. Studies practical implementations of AI algorithms.

Course Learning Outcomes

1. Develop intelligent systems using foundational AI algorithms.
2. Automate processing of data to accelerate decision-making.
3. Evaluate the strengths, weaknesses, and limitations of various AI algorithms.
4. Solve real-world problems across diverse domains using artificial intelligence and machine learning.
5. Communicate AI solutions to various audiences.

CS 6470

Machine Learning

Credit hours: 3

Explores the theory and algorithms, concepts and issues of machine learning. Topics include feature selection, neural networks, decision trees, K-nearest neighbor, clustering, reinforcement learning, genetic algorithms, deep learning and data mining. Implements machine learning approaches in real-world applications.

Course Learning Outcomes

1. Evaluate general machine learning theories.
2. Analyze learning algorithms such as decision trees, Bayesian networks, and Q-learning, deep learning and other algorithms of interest.
3. Write programs that implement and incorporate machine learning algorithms to solve real-world problems.
4. Use modern toolkits to implement machine learning algorithms.

CS 6500

Software Architecture

Credit hours: 3

Evaluates software architecture and the high level design of large scale software systems. Explores common architectural styles and patterns. Teaches techniques of documenting and assessing software architectures. Teaches characteristics of software architecture evolution. Evaluates several large-scale software architectures.

Course Learning Outcomes

1. Design software architecture for large-scale software systems.
2. Evaluate major software architectural styles, design patterns, and frameworks.
3. Assess a software architecture using various documentation approaches and architectural description languages.
4. Develop architectural alternatives for a problem and select among them.
5. Apply well-understood paradigms for designing new systems.
6. Evaluate software architectures.

CS 6510

Design and Simulation of Operating Systems

Credit hours: 3

Analyzes current topics in operating systems design and simulation. Covers modern computer architecture; several types of memory management; current scheduling algorithms for multiple processes; disk management; virtual memory and interprocess communication.

Course Learning Outcomes

1. articulate the principles of modern operating systems design.
2. Design a modern operating system on a virtual machine environment.
3. Build a multi-tasking operating system from scratch that runs on a virtual machine.
4. Optimize modern operating system design using data and experiments.

CS 6600

Graduate Project I

Credit hours: 3

Teaches the design and development of a walking skeleton with students participating in all aspects of software development, including: requirements elicitation, architecture, design, implementation, testing, and deployment. First semester of a two-semester capstone course.

Course Learning Outcomes

1. analyze the system using feedback from customers and other stakeholders to create a set of requirements.
2. design a large software system.
3. create a walking skeleton of a large software system.
4. lead a software project.
5. create clear design (internal) documentation

CS 6610

Graduate Project II

Credit hours: 3

Guides through completion and delivery of the large-scale system started in CS 6600. Delivers appropriate system documentation. Teaches the writing and execution of system tests that ensure a high quality system. Must be taken immediately after CS 6600.

Course Learning Outcomes

1. analyze the system using feedback from customers and other stakeholders to create a set of requirements.
2. design a complete large software system.
3. create a complete large software system.
4. lead a software project.
5. create clear customer documentation

CS 6700

Advanced Mathematics for Computer Science

Credit hours: 3

Solves computer science problems using advanced mathematical models. Applies calculus functions of multiple variables, linear equations, matrix algebra, determinants, Gaussian elimination, eigenvalues, linear programming, and finite-state Markov chains.

Course Learning Outcomes

1. Formulate solutions to problems using multivariate calculus, matrix algebra, stochastic models, and systems of linear and non-linear equations.
2. Solve high-dimensional constrained optimization problems.
3. Solve computational problems using advanced mathematical models.
4. Translate mathematical models into computer programs.
5. Characterize the true nature of randomness.

CYBR 2700

Information Security Fundamentals

Credit hours: 3

Explores introductory information and cybersecurity concepts: security technologies, methodologies, and tools. Includes security models, risk assessment, threat analysis, attack types, encryption technologies, security implementation, access controls, business continuity, and security policies. Discusses current topics, trends, and career opportunities in information security. Includes lab assignments covering information security principles. Software fee of \$24 applies. Lab access fee of \$45 for computers applies. Canvas Course Mats \$49/Cengage applies.

Course Learning Outcomes

1. Describe information security threats and attacks.
2. Identify methods, tools, and techniques for securing information.
3. Describe good information security practices.
4. Discuss issues related to access control.
5. Describe the importance of information security policies.
6. Explain risk management concepts in the context of information security.
7. Discuss career opportunities and relevant credentials in the field of information security.

CYBR 2800

Computer Forensic Fundamentals

Credit hours: 3

Explores procedures for identification, preservation, and extraction of electronic evidence. Emphasizes auditing and investigation of network and host system intrusions, analysis and documentation of information gathered, and preparation of expert testimonial evidence. Examines forensic tools and resources for system administrators and information system security officers. Includes ethics, law, policy, and standards concerning digital evidence. Includes hands-on learning and a research paper or project. Lab access fee of \$45 for computers applies. Canvas Course Mats \$49/Cengage applies.

Course Learning Outcomes

1. Conduct a computer forensics investigation.
2. Secure and collect computer evidence at an incident scene.
3. Analyze disk and file structures of common operating systems.
4. Locate and recover hidden or damaged files.
5. Investigate Internet and e-mail crimes and violations.
6. Generate report findings with forensic software tools.

CYBR 3700

Ethical Hacking and Countermeasures

Credit hours: 3

Examines advanced information security concepts through an applied viewpoint. Extends the student's understanding of security issues through hands-on application of real-world techniques and use of current security software. Includes legal/ethical issues, use of security tools, network reconnaissance, password/brute-force attacks, firewall configuration, honeypot deployment, intrusion analysis/detection, server hardening, and penetration testing. Provides insight into current trends in advanced security issues. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the legal and ethical landscape confronting today's information security professional.
2. Classify basic, intermediate, and advanced attacks from a variety of vectors.
3. Analyze the strengths and weaknesses of a mid-size information infrastructure and deploy appropriate security mechanisms.
4. Differentiate, interpret, and remediate threats to the security of information.
5. Communicate clearly complex security concepts to a non-technical audience.

CYBR 4150

Data Security Analytics

Credit hours: 3

Introduces students to the concept of data analytics as applied to cyber security. Includes collection, aggregation, data mining, and analysis of various data sources. Utilizes data analytics tools that correlate data in order to identify security events that may go undiscovered by traditional detection and log analysis methods. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the role of data analytics in cyber security.
2. Describe common data sources and the types of information generated.
3. Explain how and why data sources are aggregated.
4. Describe the types of events that are of interest to cyber security professionals.
5. Explain how data mining can reveal previously unnoticed patterns.
6. Describe common tools used for cyber security data analytics.

CYBR 4250

Database Security and Auditing

Credit hours: 3

Utilizes theories, scenarios, and step-by-step examples. Provides a strong foundation in database security and auditing. Covers the following topics in depth: the importance of database security in contemporary business environments, security, profiles, password policies, privileges and roles, virtual private databases, auditing, SQL injection, and database management security issues. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify the fundamentals of security and how it relates to information systems
2. Identify assets in your organization and their values
3. Identify risks and vulnerabilities in operating systems from a database perspective
4. Describe good password policies and techniques to secure passwords in your organization
5. Explain the various database security models and their advantages or disadvantages
6. Implement a Virtual Private Database using views, roles, and application context
7. Utilize auditing fundamentals
8. Demonstrate the purpose and use of data dictionaries, encryption, SQL injection, and other database defenses and attacks

CYBR 4350

Web and Application Security

Credit hours: 3

Covers the security of web and mobile applications from offensive and defensive standpoints. Explores common vulnerabilities of web and mobile applications and various tools and techniques for identifying and mapping the attack surface of such applications. Explores various techniques and attack vectors for exploiting security flaws in web and mobile applications. Implements secure coding best practices, defensive architecture, and Content Security Policy to mitigate security flaws and protect the applications, the web client, the communication channel, and the server. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Demonstrate the use of various tools and techniques for mapping web and mobile applications.
2. Assess security flaws in web and mobile applications.
3. Perform common attacks on web and mobile applications.
4. Apply security concepts to design robust web applications against known and unknown attacks.
5. Implement secure coding practices and security standards to remediate security flaws in web and mobile applications.
6. Implement defensive countermeasures to enhance the security of web and mobile applications.
7. Explain the risk and cost to organizations if web and mobile applications are exploited.

CYBR 4550

Threat Hunting and Incident Response

Credit hours: 3

Provides students with knowledge and practical skills to hunt down threats within networks and end points and to identify, contain, and recover from intrusions and data breaches. Utilizes a combination of lectures, hands-on labs, and case studies to explain the tactics, techniques, and procedures that are employed by threat actors to achieve their goals. Covers the consumption and creation of Cyber Threat Intelligence (CTI) to enhance detection and response capabilities.

Course Learning Outcomes

1. Explain the tactics, techniques, and procedures that are employed by threat actors to achieve their adversarial goals.
2. Demonstrate the use of various tools and techniques for hunting down threats within networks and end points.
3. Demonstrate the use of various tools and techniques for identifying, containing, and recovering from intrusions and data breaches.
4. Describe common types of indicators of compromise and how they are used in threat hunting and incident response.
5. Generate Cyber Threat Intelligence (CTI) to enhance detection and response capabilities.

CYBR 4700

Enterprise Cybersecurity Management

Credit hours: 3

Provides perspective of key issues involved in IT activities across the organizational and technical security landscape. Examines management methodologies, staffing, and operational issues. Teaches use of financial analysis and decision-making methodologies to aid investment decisions at the operational, functional, and strategic levels. Illustrates use of risk assessment and contingency planning as applied to business continuity and disaster recovery strategies. Includes the use of Service Level Agreement for managing both internal and external relationships. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Demonstrate professional skills used in managing cybersecurity risks.
2. Apply risk management and cost benefit analysis techniques for efficient use of IT financial resources.
3. Compare and contrast the difference(s) between business continuity and disaster recovery.
4. Choose appropriate controls for remediation of threats to data loss.
5. Analyze controls required to comply with legal requirements and mandates.
6. Manage threats through selection of operational controls and development of a security framework.

CYBR 4750

Cybersecurity Capstone

Credit hours: 3

Senior-level, capstone experience course. Enhances student cybersecurity knowledge in a self-directed research or practical project that showcases student's mastery of cybersecurity topics. Provides an opportunity to conduct research and/or implement systems that incorporate topics from previous courses. Requires students to present their work at the end of the semester.

Course Learning Outcomes

1. Discuss current cybersecurity events, trends, challenges, and industry needs.
2. Analyze various cybersecurity problems and propose sound solutions.
3. Apply cybersecurity principles, tools, and techniques to real-world cybersecurity problems.
4. Develop a feasible cybersecurity project which incorporates technical writing standards.
5. Communicate complex cybersecurity issues and topics effectively, both orally and in writing.
6. Collaborate effectively on a team to complete tasks and achieve common goals.

DAGV 1200

3D Modeling Essentials

Credit hours: 3

Covers the 3D pipeline which includes pre-production (rough placeholder art), production (finished art), and post production (composite and effects). Instructs students to develop 3D models, UV maps, and 2D textures. Teaches how to integrate models into a realtime rendering engine. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Create proper polygonal geometry.
2. Optimize space on a UV grid.
3. Map and place UV islands.
4. Surface models using materials and channels.
5. Rig simple props and characters for animation.
6. Animate characters and props utilizing key to key principles.
7. Implement industry-standard file management systems.
8. Use Industry-standard software.

DAGV 2210

3D Modeling and Animation

Credit hours: 3

Addresses the basics of 3D modeling, texturing, animation, and rendering. Demonstrates how to utilize these techniques in a production pipeline for games and animation. Includes basic practices and theories common in the animation industry. Software fee of \$15 applies. Course fee of \$19 for equipment applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Develop 3D assets including props and characters.
2. Light sets and scenes.
3. Surface assets with physical based materials.
4. Render realtime surfaces and assets.

DAGV 2230

Animation I

Credit hours: 2

Explores and applies animation pipeline practices. Emphasizes the study of characters and objects in motion and the communication of key ideas in the development of second-year animation projects. Covers both aesthetic and technical processes. Lab access fee of \$45 for computers applies. Software fee of \$15 applies. Course fee of \$18 for software and plug-ins applies.

Course Learning Outcomes

1. Conduct motion research.
2. Apply 12 principles of animation to motion exercises.
3. Analyze animated motion.
4. Communicate principles-based criticism of motion projects.
5. Assemble an animation portfolio.

DAGV 223L

Animation I Lab

Credit hours: 1

Applies animation principles and software processes. Emphasizes the research and construction of character motion to communicate emotional impact. Covers both aesthetic and technical processes.

Course Learning Outcomes

1. Apply motion research to the animation of a simple character.
2. Use animation software to complete motion tests.
3. Make corrections to motion projects based on class criticism.
4. Produce performance oriented motion in an animated scene.

DAGV 2240

Character Development

Credit hours: 3

Teaches an in-depth study and application of character development practices for animation and interactive games. Includes research, design, construction, and testing of an original animated character. Requires the application of the Principles of Animation. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Implement a well designed character-driven storyboard.
2. Build animation assets used in various platforms for entertainment, corporate and educational venues.
3. Develop characters for various media platforms.
4. Design an original functioning animated character.
5. Complete a final project following industry production deadlines.

DAGV 2330

Introduction to Rigging

Credit hours: 2

Introduces fundamental rigging on typical 2D and/or 3D characters for simple performance motion in animated films and interactive games. Software fee of \$15 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Build an assets library.
2. Design IK & FK bones for a biped character.
3. Design IK & FK bones for a quadruped.
4. Test rig parameters.
5. Use professional etiquette during a rig critique.

DAGV 233L

Introduction To Rigging Lab

Credit hours: 1

Applies fundamental rigging processes on typical 2D and/or 3D characters for simple performance in animated films and interactive games.

Course Learning Outcomes

1. Build a full character rig using Inverse and Forward Kinematics.
2. Attach controls to IK and FK rigs.
3. Animate a rigged character using native motion.
4. Use deformations to adjust animation.

DAGV 3350

Animation and Game Production I

Credit hours: 2

Emphasizes industry title development processes. Covers lighting and rendering in an animation and/or game environment. Includes composition, technical lighting, layer-based rendering, and texture baking. Requires junior-level projects to be initiated and completed within the semester. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply virtual cinematography (set design and lighting) to a scene.
2. Manipulate lighting in an animation environment to affect tone and mood.
3. Customize lighting effects using embedded script.
4. Properly configure and use various rendering tools.
5. Embed scripting language to modify and customize rendering tools.

DAGV 335L

Animation and Game Lab I

Credit hours: 1

Emphasizes the application of title-development processes. Covers composition, lighting, texture, color, and rendering in the production of junior-level animation and game titles.

Course Learning Outcomes

1. Complete research on concept, character and story for a short animated production and/or interactive game.
2. Apply workflow processes found in a contemporary game/animation production setting.
3. Conduct Audience Analysis.
4. Complete an animatic of the proposed student project.
5. Apply workflow processes found in a contemporary game/animation production setting.

DAGV 3360

Advanced Character Rigging

Credit hours: 3

Studies the process of rigging, and the motion of characters and objects for animation and interactive games. Includes full character, muscle, facial, and dynamic rigs. Reinforces principles of animation. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Manipulate and edit a pre-built character rig.
2. Build a bipedal character rig.
3. Apply basic animation principles to a rigged model.
4. Conduct critical analysis of a rigged animated character and make modifications based on feedback.
5. Customize Rigs and polish the motion of a character using embedded scripting.

DAGV 3450

Animation and Game Production II

Credit hours: 2

Develops pre-production of a team project for animation and game development students. Includes research, writing, scripting, designing, storyboarding, and pre-visualization of an animated short film or an interactive game project. Software fee of \$15 applies. Course fee of \$19 for software and plug-ins applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Conduct audience analysis.
2. Develop the traits expected for personnel at a professional game/animation studio.
3. Complete research on concept, character, and story for a short animated production or an interactive game.
4. Lead a script/story session.
5. Critique stories for emotional impact, clarity, and scope.

DAGV 345L

Animation and Game Lab II

Credit hours: 1

Emphasizes the application of pre-production processes in the development of a multi-semester project for animation and game development projects. Includes research, writing, scripting, designing, storyboarding, and pre-visualization of a short title.

Course Learning Outcomes

1. Apply workflow processes found in a contemporary game/animation production setting.
2. Complete an animatic of the proposed student project.
3. Accept criticism with professional etiquette.
4. Analyze and make changes to projects based on classroom critique.

DAGV 3470

Animation Story Development WE

Credit hours: 3

Covers short themed script development for animated and interactive titles. Discusses specific scriptwriting subjects such as initiating the idea, researching, outlining, and rewriting. Includes weekly writing assignments that are read and analyzed according to structure and the execution of a goal. Requires the presentation of a completed animatic. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Create a finished script for an animated short film.
2. Write an adapted script for a film or an interactive game.
3. Operate in a team to write and board a title.
4. Digitize a storyboard and put it in motion.
5. Complete initial thematic design.

DAGV 490R

Senior Capstone

Credit hours: 3

Provides a capstone animation and game development experience for senior students. Develops individual and team real-world projects in consultation with a faculty advisor. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Complete an audience analysis.
2. Conduct a needs analysis.
3. Construct a formal design document defining a title's specifications.
4. Develop a production plan.
5. Produce title assets.
6. Assemble and deliver a finished title, including documentation.
7. Participate productively on a team.
8. Reflect and report on lessons learned from the title's production.

DANC 110R

Beginning Ballet

Credit hours: 1

For students without previous ballet experience. Introduces fundamental ballet technique to develop posture, alignment, and muscular control. Exposes students to musically informed artistic approaches to movement. Requires ballet attire. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Perform introductory-level ballet technique skills
2. Identify beginning ballet terminology
3. Recognize the structure and decorum of a ballet technique class
4. Explore movement as a form of expression

DANC 127R

Ballet Technique and Theory I

Credit hours: 3

For students at an advanced-beginner ballet technique skill level. Provides experience in barre and center work to increase strength and flexibility. Emphasizes body alignment and muscular control. Familiarizes students with musically informed artistic approaches to movement. Prepares students for a more intensive study in ballet. Requires ballet attire. May be repeated for a total of 18 credits towards graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Perform advanced-beginner ballet technique skills
2. Define advanced-beginner ballet terminology
3. Identify the structure and decorum of a ballet technique class
4. Explore ballet as a form of expression

DANC 143R

Modern/Contemporary Dance Technique and Theory I/Semester I

Credit hours: 3

Introduces Dance majors to modern/contemporary dance technique. Focuses on development of solid foundational skills in modern dance technique and theory that prepare the student for an intensive major program. Emphasizes the development of strength, flexibility, core support, coordination, kinesthetic awareness and memory, and movement expressiveness. Includes experience in improvisation and composition as a means of understanding and applying technical skills in performance settings. May be repeated for a total of six credits toward graduation.

Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Develop body connectivity that provides clear connection between core and distal edges.
2. Perform movement combinations with a efficiency and clarity.
3. Participate in daily class with full presence and commitment.
4. Develop flexibility, strength, coordination, endurance, and performance skills.
5. Demonstrate a basic level of core support and dynamic alignment.
6. Identify the elements of dance through movement.
7. Identify skills in self and peer observation and evaluation.

DANC 144R

Modern/Contemporary Dance Technique and Theory I/Semester II

Credit hours: 3

Focuses on development of solid foundational skills in modern dance/contemporary dance technique and theory that prepare the student for an intensive major program. Emphasizes the development of strength, flexibility, core support, coordination, kinesthetic awareness and memory, and movement expressiveness. Includes experience in improvisation and composition as a means of understanding and applying technical skills in performance settings. May be repeated for a total of six credits toward graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Manifest increased body connectivity that provides clear connection between core and distal edges.
2. Perform increasingly complex level I movement combinations with efficiency, clarity, and consistency.
3. Participate in daily class by taking personal responsibility for full presence and commitment.
4. Demonstrate increased basic level core support and dynamic alignment.
5. Identify the elements of dance through movement with consistency.
6. Develop skills in self and peer observation.

DANC 150R

Beginning Jazz Dance

Credit hours: 1

Gives students experience in jazz dance including rhythms, style, and jazz techniques. Includes basic jazz terminology. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Perform beginning jazz movement patterns with correct technique.
2. Display coordination, stamina, strength, and flexibility through appropriate principles of Jazz training.
3. Identify musicality and phrasing of jazz rhythms through movement combinations.
4. Describe with clarity and insight their expanding knowledge of dance.

DANC 161R

Dance Conditioning

Credit hours: 1

Introduces dance conditioning principles. Covers theory and practice. Emphasizes body balancing in strength, flexibility and endurance training supported by knowledge of basic principles of anatomy and biomechanics. Includes stress management, nutrition, body image, somatotypes, and body connectivity work. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Describe the importance of a balanced conditioning program for dancers in order to maximize efficiency and minimize the incidence of injury.
2. Identify key conditioning principles and implement them into a personal ongoing conditioning program.
3. Perform specific exercise sequences that strengthen core support and alignment.
4. Create a personalized training program that addresses unique individualized conditioning needs.
5. Identify proper nutrition habits to increase movement efficiency, maintain a healthy body, and develop a balanced self-image.
6. Show increased strength, flexibility, and muscular and cardiovascular endurance.

DANC 2110

Orientation to Dance FF

Credit hours: 3

For students interested in pursuing a career in dance. Introduces students to the discipline of dance as an academic as well as artistic field of study. Examines various dimensions of the discipline such as performance, teaching, choreography, dance science/medicine, movement analysis and fundamentals, dance criticism, interdisciplinary collaboration, and current issues. Includes lecture, readings, discussion, writing and participation. Prepares the student entering the Dance emphasis. Course lab fee of \$32 applies.

Course Learning Outcomes

1. Identify major domains of the discipline of dance and how each contributes to dance in higher education.
2. Write clearly and with impact about their own interest and experience as well as their expanding knowledge of the dance world.
3. Work collaboratively with other students in various assignments and settings.
4. Identify areas of commonality in various styles of dance.
5. Apply basic concepts of describing movement and its meaning.
6. Use critical and analytical thinking skills to sense and feel deeply and to integrate the information gleaned through these processes.
7. Develop an awareness of bodily intelligence that supports enhanced expressive and functional movement and opens possibilities for creativity in the improvisation and choreographic processes.
8. Determine how aesthetic principles and varied movement techniques are applied and emphasized within various dance genres.
9. Identify possible career paths in dance by the process of seeing, participating, analyzing, and making meaning in various dance genres.

DANC 225R

Character Dance I

Credit hours: 1

Teaches theatre dance based on ethnic styles within ballet performance context to students at an intermediate or higher skill level. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Perform basic character dances used in classical repertoire with correct technique.
2. Display coordination, stamina, strength, and flexibility through appropriate principles of ballet training.
3. Describe with clarity and insight their expanding knowledge of ethnic styles of Character Dance.
4. Identify musicality and phrasing through movement combinations.

DANC 2330

Improvisation

Credit hours: 1

For students interested in experiencing and developing skills in physical inventiveness and performance intuition and immediacy. Provides guided exploration in the elements of dance for the creative development of personal movement vocabulary, spontaneous group interaction, and the ability to recall and give form to movement generated improvisationally. Course lab fee of \$64 for Dance Accompanist applies.

Course Learning Outcomes

1. Demonstrate the ability to spontaneously create movement by following their inner impulse to move
2. Respond with sensitivity to other's imaginations, intelligence, style and energy when given improvisational structures
3. Demonstrate the ability to sustain concentrated focus while exploring and investigating a given movement structure
4. Break through patterns of thinking and moving that have limited them in the past
5. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Willingness to engage in the chaos of the creative process 2 - Appreciation for unique movement style and voice

DANC 2340

Composition

Credit hours: 2

For students interested in experiencing and developing skills in dance composition. Includes conceptual and practical exploration of the basic elements of dance in both solo and group forms. Investigates the relationship between choreographic intention, movement invention, content, and form/structure. Introduces choreographic devices and forms and encourages experimentation in the choreographic process. Emphasizes the process of creating and giving form to a personal movement vocabulary. Course lab fee of \$85 for Dance Accompanist applies.

Course Learning Outcomes

1. Create and give well-crafted form to movement vocabulary that conveys their personal sense of invention, exploration, and voice.
2. Self-assess movement explorations and compositional studies.
3. Respond verbally and in writing with sensitivity, clarity, and insight to choreographic works.
4. Create solo and small group compositions using the elements of dance, compositional principles, and compositional structures.
5. Identify ways in which they can draw inspiration from life experiences for choreographic works.
6. Identify the components of the creative process - sensing, feeling, transforming, and forming

DANC 243R

Modern/Contemporary Dance Technique and Theory Level II /Semester I

Credit hours: 3

Teaches fundamental body and performance technique. Emphasizes locomotor skills and movement progressions as well as elements of body, effort, shape, space, and time. May be repeated for 9 credits toward graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Exhibit level two flexibility, strength, endurance , balance, coordination, phrasing, and dance performance skills.
2. Embody kinesthetic awareness of body alignment.
3. Perform level II axial and locomotor movement progressions.
4. Utilize various combinations of the elements of body, effort, shape, space, and time.
5. Demonstrate professionalism by assimilating corrections into daily practice.

DANC 244R

Modern/Contemporary Dance Technique and Theory Level II/Semester II

Credit hours: 3

Focuses on development of technical and performance skills in modern/contemporary dance. Includes concepts of applied anatomy and kinesiology as well as Bartenieff Fundamentals. Emphasizes clarity of movement intent and interpretation in movement progressions. May be repeated for a maximum of 9 credits towards graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Exhibit level II flexibility, strength, endurance, balance, coordination, phrasing and dance performance skills with consistency.
2. Embody functional kinesthetic awareness of body alignment through axial and locomotor movement progressions of increasing complexity.
3. Perform level II axial and locomotor movement progressions with increased body connectivity.
4. Perform various combinations of the elements of body, shape, effort, space, and time with clarity and specificity.
5. Demonstrate professionalism by assimilating corrections into daily practice with consistency.

DANC 256G

Dance as a Cultural Practice I GI

Credit hours: 3

Explores the richness and beauty of various cultures from around the world through the medium of dance. Takes a critical cultural approach to the study of dance as a means of encoding cultural values. Analyzes issues of gender, identity, religion, power, art, semiotics, and media/technology in relation to dance. Teaches students a deeper knowledge of cultures through their dance forms by participation in movement classes, informal performances, and dance-related cultural events in class, on campus, and in the community. Serves to deepen the student's understanding of the profound relationship between dance and culture, and dance and human existence throughout time through readings, group discussions, interactive assignments, cultural research projects, concert attendance, writing, dancing, singing and playing music. Explores the evolution and dissemination of the various cultural dance forms studied in class. Course Lab fee of \$40 applies.

Course Learning Outcomes

1. Describe Dance as a strategy to interrelate skillfully, reflexively, responsibly, and respectfully with a society of increasing intercultural connections.
2. articulate orally, in writing and through performance an understanding of the cultural significance of the various dance traditions studied in class.
3. articulate orally, in writing and through performance the evolution of various dance forms, including stylistic nuances, organizing principles and foundational techniques of the various dance forms studied in class.
4. articulate orally, in writing and through performance the definition and importance of studying dance forms from a variety of cultures in order to show knowledge and recognition of complexities inherent in global and/or intercultural issues.
5. Analyze global or intercultural issues.
6. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
7. Evaluate how one's own cultural rules and biases compare and contrast with those from a different culture.
8. Inter-relate respectfully with individuals representing cultures and perspectives other than one's own.

DANC 265R

Fundamentals of Movement

Credit hours: 2

Explores methods of moving with greater ease, efficiency, and sense of connection in the body. Emphasizes body awareness and developmental human movement patterning. Makes application to the areas of dance, sport, theater, somatics, performance, and psychology. Includes Bartenieff Fundamentals and basic principles of Laban Movement Analysis. Develops integrated and harmonious movement patterns in the body. May be repeated for a maximum of 4 credits toward graduation.

Course Learning Outcomes

1. Embody fundamental developmental movement patterns and achieve greater movement efficiency and clarity.
2. Apply a framework for re-tooling your ways of experiencing, perceiving, sensing, and learning movement.
3. Identify the movement concepts of Bartenieff Fundamentals through movement experiences such as the Patterns of Total Body Connectivity, the Basic Six exercises, partner work, everyday movement, exploration through improvisation, and through observation, discussion, readings, writing, evocative imagery, and drawing for nonverbal processing.
4. Demonstrate awareness of the bodymind and the process of moving.
5. Develop expressivity to support basic body connections.
6. Explain basic functional anatomy including location of bony landmarks, muscles of core support and points of initiation of movement.

DANC 2670

Introduction to Laban Studies

Credit hours: 2

Introduces the basic principles of Laban Movement Analysis (LMA). Presents a comprehensive system for analyzing the complexity of human movement based on the theories of Rudolph Laban and Irmgard Bartenieff. Utilizes physical performance and observation methods. Emphasizes the process of perceiving and making meaning of human movement from a variety of contexts.

Course Learning Outcomes

1. Identify the core concepts and principles of LMA and apply them to various movement contexts.
2. Develop movement observation skills using the LMA model.
3. Demonstrate physical and theoretical knowledge of LMA.
4. Utilize LMA terminology and basic written motif symbology with accuracy.
5. Describe a movement event systematically using the categories of the LMA system.
6. Identify both a personal and professional application of LMA.

DANC 270R

American Social Dance II

Credit hours: 1

For students with Bronze level American Social Dance experience or equivalent. Teaches intermediate (Silver) level patterns of American Social Dance including Foxtrot, Waltz, Triple Swing, Viennese Waltz, West Coast Swing, and Cha Cha. Emphasizes, on an intermediate level, correct rhythm, poise, footwork, and foot positions, dance position, and etiquette. Successful completers will have a good general knowledge of Silver level curriculum. May be repeated for a maximum of 2 credits toward graduation. Course fee of \$15 for practical experience applies.

Course Learning Outcomes

1. Demonstrate the intermediate (Silver) level patterns of American Style Foxtrot, Waltz, Triple Swing, Viennese Waltz, West Coast Swing, and Cha Cha
2. Demonstrate correct rhythm, poise, footwork, feet positions, body alignments, dance position, and leading and following.
3. Analyze a ballroom dance performance.
4. Demonstrate understanding of the different areas of ballroom dance: recreational, competitive, and performance dance.

DANC 271R

International Ballroom Dance II

Credit hours: 1

For students with Bronze level International Ballroom Dance experience. Teaches the intermediate (Silver) level patterns of International Style Waltz, Quickstep, Tango, Foxtrot, and Viennese Waltz. Emphasizes, on an intermediate level, rhythm, poise, footwork, foot positions, dance position, alignment, rise and fall, body flight and correct leading and following. Successful completers will have a good general knowledge of Silver level curriculum. May be repeated for a total of two credits toward graduation. Course fee of \$15 for practical experience applies.

Course Learning Outcomes

1. Demonstrate the intermediate (Silver) level patterns of International Style Ballroom Waltz, Tango, Foxtrot, and Quickstep.
2. Demonstrate correct rhythm, poise, footwork, feet positions, body alignments, dance position, and leading and following.
3. Analyze a ballroom dance performance.
4. Demonstrate understanding of the different areas of ballroom dance including recreational, competitive, and performance dance.

DANC 272R

Latin Ballroom Dance II

Credit hours: 1

For students with Bronze level Latin Ballroom Dance experience or equivalent skill level. Teaches the intermediate (Silver) level patterns of International Style Rumba, Samba, Cha Cha, and Paso Doble. Emphasizes, on an intermediate level, rhythm, poise, footwork, foot positions, dance position, alignment, and correct leading and following. Successful completers will develop a good general knowledge of Silver level curriculum. May be repeated for a total of two credits toward graduation. Course fee of \$15 for practical experience applies.

Course Learning Outcomes

1. Demonstrate the intermediate (Silver) level patterns of International Style Latin Samba, Rumba, Paso Doble, and Cha Cha.
2. Demonstrate correct rhythm, poise, footwork, feet positions, body alignments, dance position, and leading and following.
3. Analyze a ballroom dance performance.
4. Demonstrate understanding of the different areas of ballroom dance including recreational, competitive, and performance dance.

DANC 3140

Dance Production and Lighting

Credit hours: 2

Introduces essential aspects of dance production. Focuses on theory and practice of lighting for dance. Includes consideration of costuming, set design, sound design, backstage organization, make-up for dance, promotion, and programming. Includes lecture and lab experience.

Course Learning Outcomes

1. Demonstrate knowledge of production techniques, equipment, and procedures involved in producing and directing a dance concert.
2. Create a lighting design for dance.
3. Demonstrate the ability to stage manage a dance concert including calling light cues.
4. Create a costume design for dance.
5. Create a poster and program design for dance.
6. Read and understand a light plot.

DANC 3160

Dance Accompaniment

Credit hours: 2

Designed for students interested in musical accompaniment for dance. Explores rhythmic structures and its components in music and dance, composing a percussion score for dance, and building percussion instruments. Emphasizes practical skills in performing simple and complex rhythmic patterns on drum. Includes participation, writing, lecture, and discussion.

Course Learning Outcomes

1. Identify the rhythmic structure in music and translate it into dance.
2. Describe the language of rhythm and its components in music and dance.
3. Demonstrate technical skills on the drum.
4. Demonstrate the ability to accompany dance.
5. Compose a percussion score for dance.

DANC 327R

Ballet Technique and Theory III

Credit hours: 3

For students at an advanced-intermediate ballet technique skill level. Provides experience in barre and center work to increase strength and flexibility. Includes experimentation with musicality as it relates to artistry. Requires ballet attire. May be repeated for a total of 18 credits toward graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Perform advanced ballet technique skills
2. Define advanced ballet terminology
3. Demonstrate decorum required for an advanced ballet technique class
4. Demonstrate advanced artistic interpretation of ballet technique

DANC 3330

Modern Dance Workshop

Credit hours: 2

A continuation of DANC 2330 and DANC 2340. Emphasizes the relationship between improvisation and composition in the choreographic process. Focuses on developing fluency in creating and developing content and creating appropriate form for that content. Explores established choreographic forms in both solo and small group settings. Requires some choreographic work outside of class.

Course Learning Outcomes

1. Demonstrate skill in the improvisational process.
2. Demonstrate the ability to recall movement material generated in the improvisational process.
3. Perform fully committed to the movement content in a clearly observable way.
4. Demonstrate skill in developing thematic material that has been generated through improvisation.
5. Create solo and small group compositions that demonstrate an understanding of how to give form to content.
6. Contribute insightful observations to class discussions concerning the choreographic process.

DANC 3340

Ballet Choreography

Credit hours: 2

For dance majors desiring ballet emphasis. Explores the choreographic process using ballet vocabulary as a framework. Includes the creation of student works. Examines plot, character, and theme as part of the creative process.

Course Learning Outcomes

1. Use ballet technique as a tool to express choreographic ideas
2. Define how plot, character, and pantomime are part of the creative process
3. Apply choreographic devices and forms
4. Create movement that aligns elements of the choreographic process (time, space, music, dynamics, and expression) with choreographic intent
5. Participate in analytical discussion with respect to choreographic concepts

DANC 3350

Choreography

Credit hours: 2

Provides in-depth experience in the choreographic process. Focuses on development of personal voice in choreography and the ability to generate choreographic form intrinsic to thematic content. Explores the use of choreographic forms and devices as means of developing thematic content. Requires intensive exploration of the creative process through imaginative thinking, creating, and crafting in movement.

Course Learning Outcomes

1. Skillfully create movement vocabulary that is unique to them.
2. Clearly identify their choreographic intent in both verbal and written formats.
3. Demonstrate understanding of the ability to skillfully use choreographic forms and devices in the creation of choreographic work.
4. Demonstrate the ability to choose music appropriate to their choreographic intent.
5. Demonstrate the ability to relate movement content to musical structure.
6. Demonstrate the ability to successfully integrate choreographic intent, thematic content, and choreographic structure.

DANC 3400

Dance in the Elementary School XF

Credit hours: 2

Introduces the philosophy, educational benefits, and teaching methods of dance for children. Teaches movement as an effective and motivational medium for building self awareness, expression, and discipline. Develops skills in the psychomotor, affective, and cognitive domains. Places emphasis on learning through problem-solving and on integrative learning. Addresses the Utah State Core Curriculum in Dance for the elementary school. Completion of a second course is required to satisfy the fine arts requirements (see Graduation section of catalog). Course fee of \$15 applies for materials.

Course Learning Outcomes

Please see the department for information.

DANC 341R

Modern/Contemporary Dance Technique and Theory Level III/ Semester I

Credit hours: 3

Builds technical, performance, and theoretical understanding and skills in modern/contemporary dance. Emphasizes body and performance techniques; axial and locomotor skills; total body connectivity movement progressions; increased spacial, rhythmical, and qualitative acuity; risk-taking; and movement commitment. Includes aspects of composition, improvisation, and performance as they relate to technique. May be repeated for up to 9 credits total toward graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Exhibit level III flexibility, strength, endurance, balance, coordination, phrasing, and dance performance skills.
2. Utilize kinesthetic awareness of body alignment in daily practice.
3. Perform axial and locomotor movement progressions with emerging artistry.
4. Perform movement combinations with accurate phrasing of body, effort, shape, space, and time.
5. Demonstrate professional behavioral standards by incorporating both general and specific feedback into daily practice.
6. Manifest emerging mastery of performance techniques such as concentration, focus, clarity of intent, kinesthetic awareness, fluidity in movement transitions, clarity of constellations of dance elements, and dynamic expressivity.
7. Embody an emerging sense of personal uniqueness and artistry.

DANC 342R

Modern/Contemporary Dance Technique and Theory Level III/ Semester II

Credit hours: 3

Builds technical, performance and theoretical understanding and skills in modern/contemporary dance. Expands on the skills and concepts introduced in DANC 341R. Emphasizes body and performance techniques, axial and locomotor skills, total body connectivity movement progressions; increased spacial, rhythmical, and qualitative acuity; risk-taking; and movement commitment. Includes aspects of composition, improvisation, and performance as they relate to technique. May be repeated for up to 9 credits total toward graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Exhibit level three flexibility, strength, endurance, balance, coordination, phrasing, and dance performance skills with consistency and nuance.
2. Utilize kinesthetic awareness of body alignment and transverse movement in daily practice.
3. Perform axial and locomotor movement progressions with emerging artistry, nuance, and consistency.
4. Perform movement combinations with accurate phrasing of body, effort, shape, space, and time consistently.
5. Demonstrate professional behavioral standards by consistently incorporating both general and specific feedback into daily practice.
6. Manifest increased mastery of performance techniques such as concentration, focus, clarity of intent, kinesthetic awareness, fluidity in transitions, clarity of constellations of dance elements, and dynamic expression.
7. Embody a perceptible sense of personal uniqueness and artistry.

DANC 3450

Modern/Contemporary Dance Teaching Methods

Credit hours: 3

Introduces methodologies, strategies, ideologies, and philosophies of dance pedagogy based on current research and practices. Emphasizes lesson plan writing using the Utah State Secondary Dance Core Curriculum and the National Dance Standards. Integrates theory and practice through lecture, discussion, writing, and classroom teaching experiences in the college and public school settings.

Course Learning Outcomes

1. Write a clear justification for dance in education.
2. Identify the Utah State Secondary Dance Core Curriculum and the National Dance Standards.
3. Write detailed and articulate lesson plans for the technical, creative, historical, and cultural areas of modern/contemporary dance taught in the educational setting.
4. Teach specialized and holistic lessons in the technical, creative, historical, and cultural areas of modern/contemporary dance using the best methodologies and strategies for the student and setting.
5. Assess self and students during a teaching session in order to elicit increased quality of work and performance.

DANC 346R

Synergy Dance Company

Credit hours: 3

Explores an advanced understanding of artistry through the process and performance of student, faculty, and guest choreography in a formal and informal performance settings. Combines participation in technique, performance, composition, and improvisation. May be repeated for a maximum of 24 credits toward graduation. Course Lab fee of \$74 for practical experience applies.

Course Learning Outcomes

1. Incorporate technical and performance skills in both formal and informal performance settings
2. Develop their own "movement voice" through compositional and improvement experiences
3. Perform with a sense of professionalism and commitment through regular and prompt attendance in class and in rehearsals
4. Explore the elements of dance (space, time, and force) through technique, composition, and improvisation
5. articulate a significant awareness of an appreciation for dance as an art form and of its primacy in communicating the human experience
6. Demonstrate appropriate behaviors and skills in technical and dress rehearsals

DANC 3630

Dance as a Cultural Practice II WE

Credit hours: 3

Continues the study of dance as a cultural practice. Takes a critical cultural approach to the study of dance as a means of encoding cultural values. Emphasizes critical theories of dance, representation, identity, view of the body through the application of Post-Modern Critical Theories/Frames of Analysis. Emphasizes the relationship of dance to Medieval, Renaissance, Baroque, Classical, Romantic, and Modern cultures. Explores keystone dance history concepts and the work of various recognized dance scholars. Introduces students to a wide range of publications in the field. Includes lecture and movement experiences. Emphasizes skills of critical analysis, synthesis, and interpretation in writing about dance.

Course Learning Outcomes

1. Identify frames of analysis for dance history.
2. Locate and effectively use a wide range of publications in the field of dance history.
3. Synthesize essential elements of dance history deemed important by leading scholars in the field.
4. Present thoughts and ideas concerning dance history in a scholarly written format that is well organized and articulated.
5. Create discipline-specific text that analyzes, synthesizes, and internalizes essential elements of dance history deemed important by leading scholars in the field.

DANC 3680

Dance Kinesiology

Credit hours: 4

Studies the neuromusculoskeletal system in practical application to dance. Analyzes demands placed on the dancer's body and identifies how to maximize efficiency and reduce injuries while maintaining requisite aesthetic elements. Includes lecture and lab experiences.

Course Learning Outcomes

1. Identify actions and roles of specific joints and muscle groups while moving and stationary;
2. Identify individual differences in body structure and function, and outline specific methods of working with those differences;
3. Identify and/or design appropriate preventative and corrective exercises/activities for specific conditioning needs;
4. Analyze body mechanics in common dance activities;
5. Outline procedures that will address bodily education through neuromusculoskeletal means;
6. Apply knowledge of above on a personal level;
7. Identify how various somatic practices lead to efficient and expressive movement practice.
8. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Appreciation for the importance of dance science and its relationship to the development of well trained dancers; 2 - Interest in and commitment to applying kinesiological principles to their personal conditioning needs; 3 - Awareness of the need to implement kinesiological sound practice in their own learning and in present and future teaching.

DANC 370R

American Social Dance III

Credit hours: 1

For students who have successfully completed Bronze and Silver American Social Dance courses and for members of the Ballroom Tour Team. Teaches the advanced (Gold) level patterns of American Style Foxtrot, Cha Cha, Waltz, Triple Swing, Viennese Waltz, and West Coast Swing. Emphasizes, on an advanced level, correct poise, style, rhythm. Also teaches correct footwork, foot position, alignments, rise and fall, partnering, correct leading and following, and etiquette. First semester successful completers will have a general knowledge of Gold level curriculum. Second semester successful completers will have an in-depth knowledge of Gold level curriculum. May be repeated for two credits toward graduation. Course fee of \$20 for practical experience applies.

Course Learning Outcomes

1. Demonstrate the advanced (Gold) level patterns of American Style Foxtrot, Cha Cha, Waltz, Triple Swing, West Coast Swing, Tango, Two Step, and Mambo
2. Demonstrate correct rhythm, poise, footwork, foot positions, posture, arm positions, hand holds, amounts of turn, rise and fall, and lead and follow
3. Critically analyze a ballroom dance performance and write a clear well organized paper describing the experience
4. Demonstrate understanding of Social Dance as a recreational activity, competitive dance, and performance art

DANC 371R

International Ballroom Dance III

Credit hours: 1

For students who have successfully completed Bronze and Silver International Ballroom Dance courses, and for members of the Ballroom Tour Team. Teaches the advanced (Gold) level patterns of International Style Waltz, Quickstep, Tango, Foxtrot, and Viennese Waltz. Emphasizes, on an advanced level, correct poise, style, rhythm. Also teaches correct footwork, foot positions, alignments, rise and fall, partnering, floor craft, and correct leading and following. First semester focuses on developing a general knowledge of Gold level curriculum. Second semester focuses on developing an in-depth knowledge of Gold level curriculum. May be repeated for a maximum of 4 credits toward graduation. Course fee of \$20 for practical experience applies.

Course Learning Outcomes

1. Demonstrate advanced (gold) level patterns of International Style Waltz, Quickstep, Foxtrot, and Tango
2. Demonstrate correct poise, posture, style, rhythm, footwork, foot positions, alignment, rise and fall, body flight, partnering, and lead and follow
3. Critically analyze a ballroom dance performance and write a clear well organized paper describing the experience
4. Identify, correctly explain, and demonstrate understanding of the proper technique for each figure of each dance
5. Demonstrate understanding of ballroom dance as a recreational activity, competitive sport, and performance art

DANC 372R

Latin Ballroom Dance III

Credit hours: 1

For students who have successfully completed Bronze and Silver Latin Ballroom Dance courses and for members of the Ballroom Tour Team. Teaches the advanced (Gold) level patterns of Latin Style Rumba, Samba, Cha Cha, Paso Doble, and Jive. Emphasizes, on an advanced level, correct poise, style, and rhythm. Also teaches correct footwork, foot position, alignments, rise and fall, partnering, correct leading and following, amounts of turn, Cuban action, and movement principles. First semester focuses on developing a general knowledge of Gold level curriculum. Second semester focuses on developing an in-depth knowledge of Gold level curriculum. May be repeated for a maximum of 4 credits toward graduation. Course fee of \$20 for practical experience applies.

Course Learning Outcomes

1. Perform with proficiency International Style Latin Dance at a gold (advanced) level.
2. Demonstrate advanced-level technique, including correct dance position, body alignment, balance, rhythm, footwork, leg and body action, hip action, and the ability to lead or follow.
3. Demonstrate understanding of the history and evolution of International Style Latin Dance.
4. Demonstrate understanding of principles of recreational Ballroom Dance, competitive Ballroom Dance, and Ballroom Dance as a performing art.
5. Critically analyze a live Ballroom Dance performance, and write clearly a well-organized critique.
6. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Enjoy Latin Ballroom Dance as a recreational activity, competitive Dancesport, and scholastic or professional pursuit.

DANC 3730

American Social Dance Teaching Methods

Credit hours: 2

Focuses primarily on Social Dance teaching techniques using Bronze level patterns. Emphasizes calling steps. Explores proper music selection and tempo. Includes actual teaching time of peers and a beginning class. Prepares students to adequately teach social dance in either a formal or informal setting.

Course Learning Outcomes

1. Teach with proficiency Social Dance at a bronze (beginning level), including leads, styling, and proper technique.
2. Describe Social Dance teaching methods, including visual, aural, and kinesthetic methods.
3. Demonstrate proper classroom management skills.
4. Analyze the Social Dance technique of others, including methods of assessment, providing correction and constructive criticism, and grading.
5. Plan ballroom dance activities.

DANC 3750

Studies in Ballroom Dance Styles

Credit hours: 2

Investigates and explores historical ballroom dance styles. Emphasizes the social and cultural context in which ballroom dance is created and performed. Includes career, life style, education, gender, moral and ethical concerns related to ballroom dance issues. Also covers ballroom dance history, evolution, and current trends. Identifies similarities and differences between ballroom dance and other dance forms. Involves discussion, lecture, research, student presentations and participation.

Course Learning Outcomes

1. Identify and explain cultural roots of ballroom dance styles and issues.
2. Identify significant events in ballroom dance history.
3. Identify similarities and differences between ballroom dance and other dance forms.
4. Participate in analytical discussion with respect to ballroom dance styles and trends.
5. Identify and explain the interrelatedness of competitive, performance and social ballroom dance.
6. Write and speak with clarity and insight of the cultural complexities inherent in the development and practice of social/ballroom dance.
7. Gauge one's strengths and weaknesses as they relate to current trends and concepts of ballroom dance.

DANC 424R

Partnering

Credit hours: 1

For dance majors and other students interested in developing their partnering technique. Emphasizes working in partnerships through experimentation in the partner and partnered roles. Explores pas de deux sequences from classical and contemporary repertoire. Requires ballet attire. May be repeated for a total of four credits toward graduation. Course Lab fee of \$126 applies.

Course Learning Outcomes

1. Demonstrate fundamental partnering skills
2. Execute partner and partnered roles
3. Develop artistic interpretation of repertoire
4. Explain proper body mechanics in partnering

DANC 4260

Ballet Pedagogy

Credit hours: 3

Introduces a variety of teaching methodologies to inform the instruction of ballet technique classes. Develops interpersonal skills as they relate to classroom management. Explores various styles of ballet to help students construct effective lesson plans and curricula. Course lab fee of \$61 applies

Course Learning Outcomes

1. articulate attributes of the various styles of ballet training
2. Select tempo, meter, and musical genre in the development of ballet combinations
3. Create lesson plans for a variety of ballet levels
4. Develop a personal teaching philosophy

DANC 4350

Senior Capstone I WE

Credit hours: 2

Prepares senior dance majors with the skills, resources, and portfolio/marketing materials needed to apply for graduate work or professional opportunities in dance. Emphasizes digital portfolio development and biographical writing, personal web page creation, audition and interview strategies, and dance resources. Includes writing, performance, research, video editing and multimedia work. Course fee of \$16 applies.

Course Learning Outcomes

1. Create a personal dance portfolio, including application materials to be used for seeking employment opportunities in students' areas of expertise: choreography, teaching, performing, etc.
2. Design and create a personal web page as a portfolio component and marketing tool.
3. Present themselves in a professional manner as a candidate for educational or professional opportunities.
4. Access information for educational and professional opportunities.
5. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

DANC 4360

Senior Capstone II

Credit hours: 2

Designed for senior dance students as the second course in a capstone sequence. Emphasizes through choreography, performance, and production a synthesis of the knowledge and skills developed in the B.S. and B.F.A. degrees in Dance. Includes writing, collaborative work, discussion, lecture, and intensive studio preparation of choreography. Course fee of \$66 applies.

Course Learning Outcomes

1. Create a substantial piece of choreography for performance, including directing rehearsals and coaching performance quality in dancers.
2. Organize and conduct auditions and choreographic showings.
3. Present an artistic choreographic work with clear intent, observable use of movement invention, skillful rendering of the elements of dance, and adept use of formal choreographic principles and choreographic structures.
4. Organize a dance concert, including processes of designing, marketing, producing, and directing.
5. Assimilate feedback on choreography and performances.

DANC 441R

Modern/Contemporary Dance Technique and Theory Level IV/Semester I

Credit hours: 3

Builds technical, performance, and theoretical understanding and skills in modern dance/contemporary dance. Emphasizes body and performance techniques, axial and locomotor skills, total body connectivity, movement progressions, increased spacial, rhythmical and qualitative acuity, risk-taking, and movement commitment. Includes aspects of composition, improvisation, and performance as they relate to technique. May be repeated for up to 9 credits total towards graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Demonstrate level four technical skills and knowledge of the body including flexibility, strength, endurance, balance, coordination, phrasing, agility, alignment, and dance performance skills.
2. Perform movement with a kinesthetic awareness of dynamic body alignment and periphery, articulation of the spine, clarity of movement initiation and sequencing, connectivity of movement, and the use of breath to integrate movement patterns with artistry.
3. Perform axial and locomotor movement progressions with spacial, rhythmic, and qualitative accuracy.
4. Perform longer movement combinations with accurate phrasing of body, effort, shape, space, and time consistently.
5. Demonstrate openness, willingness, persistence, respect, and cooperation, in trying new ideas, methods and approaches.
6. Demonstrate advanced mastery of performance techniques such as concentration and focus, intent of movement, kinesthetic awareness, fluidity in movement transitions, clarity of constellations of dance elements, and dynamic expressivity.

DANC 442R

Modern/Contemporary Dance Technique and Theory Level IV/ Semester II

Credit hours: 3

Builds rigorous technical, performance, and theoretical training. Emphasizes advanced performance sequences and progressions that utilize technical, kinesthetic, and expressive skills. Includes challenging spacial, rhythmical, and qualitative performance skills, risk-taking, and movement commitment. Includes aspects of composition, improvisation, and performance as they relate to technique. May be repeated for up to 9 credits total toward graduation. Course Lab fee of \$216 for support applies.

Course Learning Outcomes

1. Demonstrate mastery of level four technical skills and knowledge of the body including flexibility, strength, endurance, balance, coordination, phrasing, agility, alignment, and performance skills.
2. Perform movement with a mastery of kinesthetic awareness of dynamic body alignment and periphery, articulation of the spine, clarity of movement initiation and sequencing, connectivity of movement, and the use of breath to integrate movement patterns.
3. Perform axial and locomotor movement progressions with spacial, rhythmic, and qualitative accuracy consistently and with artistry.
4. Perform longer movement combinations with accurate phrasing of body, shape, time, effort, space, consistently and with nuance.
5. Exhibit level four dance techniques through movement combinations, improvisation, and composition.
6. Demonstrate increased openness, willingness, persistence, respect, cooperation, and risk taking in trying new ideas, methods and approaches.
7. Manifest mastery of level IV performance techniques such as concentration and focus, intent of movement, kinesthetic awareness, fluidity in movement transitions, clarity of the dance elements, expression, and artistry with consistency.

DANC 4430

Dance Teaching Practicum

Credit hours: 3

For secondary dance licensure majors or dance majors interested in dance pedagogy. Builds on the methodologies, strategies, ideologies and philosophies of dance pedagogy studied in DNCE 3430. Emphasizes lesson plan and unit development, instruction, and assessment based on the National and Utah State Dance Standards. Focuses on the integration of theory and practice during a practicum experience in the secondary public schools setting. Includes writing, reading, discussion, and participation.

Course Learning Outcomes

1. Motivate and inspire quality technical and creative skills in students using the best teaching strategies and practices.
2. Write clear and articulate dance lessons, sequential lesson units, and design a secondary dance program based on the Utah Secondary Dance Core Curriculum.
3. Use various assessment strategies for self and student work which demonstrate an understanding of the interconnected nature of curriculum and assessment.
4. Integrate a personal dance philosophy based on the art form of dance into teaching practices.
5. Access dance resources and demonstrate the ability to use them to enhance teaching and learning.

DANC 471R

International Ballroom Dance IV

Credit hours: 2

For students who have successfully completed Bronze, Silver and Gold International Ballroom Dance classes and for members of the Ballroom Tour Team. Prepares students to dance, choreograph and compete on a championship amateur level. Teaches the Advanced (Gold-Bar) level patterns of International style Waltz, Quickstep, Tango, Foxtrot, and Viennese Waltz. Emphasizes, on a pre-professional level, correct poise, style, and rhythm. Also teaches and enhances correct footwork, foot positions, alignments, rise and fall, partnering, floor craft, body flight, precedes and follows, and correct leading and following. First semester focuses on developing a general knowledge of Gold-Bar level curriculum. Second semester focuses on developing an in-depth knowledge of Gold-Bar level curriculum. May be repeated for a maximum of 8 credits toward graduation. Course fee of \$20 for practical experience applies.

Course Learning Outcomes

1. Perform Gold-Bar level routines choreographed during the semester.
2. Demonstrate an understanding of International Ballroom dance terminology and etiquette.
3. Demonstrate a knowledge of all International Ballroom dance styles, levels, and events.
4. Identify the opportunities of Ballroom dance as a performance medium, profession, recreational activity, and competitive Dancesport.
5. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Appreciation for Ballroom dance as performance discipline, recreational activity, professional pursuit, and competitive dance sport. 2 - Enjoyment of stage performance and personal dance skills. 3 - Increased confidence and success in competitive and performance arenas.

DANC 472R

Latin Ballroom Dance IV

Credit hours: 2

For students who have successfully completed Bronze, Silver and Gold International Ballroom Dance classes and for members of the Ballroom Tour Team. Includes preparation to dance, choreograph and compete on a championship amateur level. Teaches the advanced (Gold-Bar) level patterns of Latin style Rumba, Samba, Cha Cha, Paso Doble, and Jive. Emphasizes, on a pre-professional level, correct poise, style, and rhythm. Also teaches and enhances correct footwork, foot positions, Cuban action, alignments, rise and fall, partnering, floor craft, precedes and follows, and correct leading and following. First semester focuses on developing a general knowledge of Gold-Bar level curriculum. Second semester focuses on developing an in-depth knowledge of Gold-Bar level curriculum. May be repeated for a maximum of 8 credits toward graduation. Course fee of \$20 for practical experience applies.

Course Learning Outcomes

1. Perform routines choreographed during the semester.
2. Demonstrate an understanding of International Latin dance terminology and etiquette.
3. Demonstrate a knowledge of all International Latin dance styles, levels, and events.
4. Demonstrate and understand the opportunities of Latin Ballroom Dance as a performance medium, profession, recreational activity, and competitive Dancesport.

DANC 4740

International Ballroom and Latin Theory

Credit hours: 3

Covers technical and theoretical aspects of basic figures in Waltz, Tango, Foxtrot, Quickstep, Cha Cha, Samba, Rumba, Paso Doble, and Jive, such as footwork, amounts of turn and rhythm. Emphasizes correct teaching methods associated with each dance. Prepares students to obtain membership in the Imperial Society of Teachers of Ballroom Dance and to teach professionally.

Course Learning Outcomes

1. Identify the technical details of each dance, including feet positions, alignment, amount of turn, rise and fall, footwork, CBM, sway, and timing
2. Dance both parts in correct and well balanced solo demonstrations
3. Identify the musical requirements for each dance, including meter and tempo
4. Teach figures with a professional approach
5. Master the material with proficiency sufficient to pass the Associate exam for the Imperial Society of Teachers of Dancing

DANC 4880

Current Issues in Dance

Credit hours: 3

Introduces students to the issues and philosophical views that have influenced dance and other art forms. Examines current trends and issues in dance. Includes lecture, discussion, readings, video, guest artists, and collaborative projects.

Course Learning Outcomes

1. Interpret the philosophical, political, social, and cultural forces which drive, affect, and reside within the domain of dance.
2. articulate through discussion, writing, and presentations a personal and critical understanding of dance, particularly within the student's area of emphasis and/or career pursuit.
3. Develop strategies and a personal aesthetic for interpreting and analyzing the diverse spectrum of dance.
4. Compare trends in dance in relation to other art forms and disciplines.
5. Create a refined personal philosophy of dance that recognizes and respects the broad array of perspectives held within the dance field.

DAPR 1000

Intro to Digital Audio

Credit hours: 1

Provides a basic overview of the Digital Audio Program and career opportunities within the audio industry. Helps students decide which educational and career path to pursue.

Course Learning Outcomes

1. Explain the Digital Audio special programs, degrees and certification opportunities from the first to the fourth year.
2. Align audio industry career opportunities with Digital Audio program offerings.
3. Describe how technology integrates with creativity.
4. Explain the basic audio pre- production, production, and post-production workflow.

DAPR 1030

Digital Audio Workstation Training I

Credit hours: 3

Teaches proficiency in the use of a Digital Audio Workstation at the beginning level. Implements the first half of AVID Corporation's "ProTools User Level" certification, and successful completion of this course, together with its follow-on course, DAPR 1031, will earn students their AVID ProTools certification at the "User" level. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Interact with the professional recording functionality of a major Digital Audio Workstation to a level of competency commensurate with internship level industry engagement.
2. Facilitate the use of professional waveform editing functionality of a major Digital Audio Workstation to a level of competency commensurate with internship level industry engagement.
3. Test the requirements of industry-standard, third-party certification on the subject Digital Audio Workstation at their first available course level.
4. Describe vocabulary commonly used in a major Digital Audio Workstation.

DAPR 1031

Digital Audio Workstation Training II

Credit hours: 3

Teaches proficiency in the use of a Digital Audio Workstation at the intermediate level. Implements the second half of AVID Corporation's "ProTools User Level" certification, and successful completion of this course, together with its preceding course, DAPR 1030, will earn students their AVID ProTools certification at the "User" level. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Interact with the professional recording functionality of a major Digital Audio Workstation to a level of competency commensurate with student level job industry engagement.
2. Facilitate the use of professional waveform editing functionality of a major Digital Audio Workstation to a level of competency commensurate with student job industry engagement.
3. Test the requirements of industry-standard, third-party certification on the subject Digital Audio Workstations.
4. Describe vocabulary commonly used in a major Digital Audio Workstation.

DAPR 2000

Digital Audio Essentials

Credit hours: 3

Reviews basic sound principles, cable types, microphone types, and basic techniques of use. Teaches recording of basic sounds and musical instruments into a Digital Audio Workstation. Introduces multi-track audio, editing, EQing, mixing, and mastering a 3-minute piece with voice and music. Includes a final project consisting of a multi-track music project designed for use in film, commercial radio, or other multimedia applications. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain sound and hearing, frequency, amplitude, wavelength, basic acoustics, and the concept of the dB.
2. Describe the function of the recording studio, control room, good sound control techniques, job titles and job roles.
3. Classify the proper use of different cable types.
4. Interpret different microphone types, patterns and their applications.
5. Characterize stereo microphone techniques such as coincident XY, near-coincident and spaced pair.
6. Analyze signal processors and effects: EQ, compression, gating, reverb, and delay.
7. Explain the digital domain: bit depth, sample rate, and their effects on sound.
8. Mix, edit and master for final product release.

DAPR 2001

Audio Portfolio Prep

Credit hours: 2

Teaches how to get a job in the entertainment industry by examining the hiring process from the employer's point of view. Helps student develop a critical eye when creating their portfolio and gives them valuable networking strategies to ensure employment after graduation.

Course Learning Outcomes

1. Investigate the hiring process from the employer's point of view.
2. articulate career-oriented goals.
3. Demonstrate current networking best practices.
4. Demonstrate current personal branding best practices in portfolio materials.
5. Facilitate the learning and growth of lower- division students (Upper-division only).
6. Develop a discerning judgement of portfolio effectiveness by implementing professors' feedback on assignments.

DAPR 200L

Digital Audio Essentials Lab

Credit hours: 1

Lab component for DAPR 2000 Digital Audio Essentials. Allows students to apply the skills and principles learned in Digital Audio Essentials.

Course Learning Outcomes

1. Apply mixing and editing techniques in a digital audio workstation (DAW).
2. Apply mixing skills and signal processing skills in a multi-track digital audio project.
3. Distinguish among nuanced differences in audio processing.
4. Develop a discerning ear by implementing professors' feedback on assignments.

DAPR 2010

Core Recording

Credit hours: 3

Teaches how to work as a studio assistant in a high-end studio including studio etiquette. Examines studio operation and care, signal flow, proper mic use and care, DAW usage and tracking. Teaches project budgeting and artist/client relations. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course fee of \$95 for materials applies.

Course Learning Outcomes

1. Demonstrate professional skills in a studio setting such as efficiency and attention to detail.
2. Compare types, specifications, settings and uses for industry standard microphones.
3. Explain the layout and signal flow of recording consoles.
4. Describe the use and care of a basic recording studio.
5. Explain digital recording process from beginning to end.
6. Explain the voltage and impedance needed to use common amplifiers effectively.
7. Discuss studio practices and techniques when recording common instruments.
8. Describe the personal and financial considerations in running a studio.

DAPR 201L

Core Recording Lab

Credit hours: 1

Provides students hands-on experience in studio operation and care, signal flow, proper mic use and care, and DAW usage and tracking. Requires students to use studio etiquette.

Course Learning Outcomes

1. Demonstrate professional use and care of a recording studio.
2. Account for voltage and impedance when using studio gear.
3. Demonstrate the digital recording process from beginning to end.
4. Use the console proficiently.
5. Use industry standard microphones in a professional manner.

DAPR 2020

Core Mixing

Credit hours: 3

Teaches the science and art of audio mixing, centering on a broad range of musical and media post-production material. Covers initial plan, signal flow, and skills for all signal processors, including spectral, dynamic, time-based and distortion effects. Explores audio editing techniques. Also, teaches mix room acoustics, treatments and workarounds. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Identify potential acoustic problems within the mixing space.
2. Explain how to comp multiple takes into a cohesive performance.
3. Describe how to generate forward motion in an arrangement.
4. Investigate distracting timing and tuning problems in a mix.
5. Distinguish between professional and amateur signal flow and session organization.
6. Explain spectral, dynamic, distortion, and time-based effects in the mixing process.

DAPR 202L

Core Mixing Lab

Credit hours: 1

Provides students hands-on experience mixing music and media post-production projects. Prepares students with experience in signal flow and audio editing techniques. Provides practice using mix room acoustics, treatments, and workarounds.

Course Learning Outcomes

1. Comp multiple takes of an instrument into a cohesive performance.
2. Generate forward motion in the mix through a pleasing, cohesive, interesting arrangement.
3. Repair distracting timing and tuning problems in a mix.
4. Demonstrate professional signal flow and organization of the mix session.
5. Use different types of spectral, dynamic, distortion, and time-based effects in the mixing process.

DAPR 2080

Podcast and Radio Production

Credit hours: 3

Teaches the history of radio, the structure of typical radio stations, from management to music programming and sales, and production and promotion. Covers methods of producing radio promos, radio shows, commercials, underwriting and news segments, as well as features and interviews. Examines the use of Digital Audio Workstations to produce several radio segments of the student's choosing. Includes lectures, demonstrations, and guest lecturers from radio stations in the community. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Produce podcast or radio recording sessions.
2. Direct talent to achieve the desired performance in recording sessions.
3. Edit recorded content using basic techniques.
4. Mix podcasts or radio projects using professional techniques and specification standards.
5. Demonstrate effective use of sound effects and music in audio stories, commercials, and other segments of show clocks.
6. Demonstrate the podcast or radio production process by planning a show clock to delivering the final mix.
7. Identify successful traits of top-level podcasts or radio shows.

DAPR 2110

Production Sound for Cinema

Credit hours: 3

Teaches location film sound and general on-the-set etiquette, techniques, and best practices. Covers the proper use of industry standard gear such as boom microphones, wireless systems, portable recorders, and lavalier microphones. Examines how to capture clear, consistent, and intelligible audio in less-than-ideal conditions. Teaches how to work as a part of a larger film crew.

Course Learning Outcomes

1. Apply industry-standard audio workflow practices throughout the filmmaking process.
2. Demonstrate on-the-set etiquette.
3. articulate how different decibel scales relate to each other in a properly calibrated system in film sound.
4. Use broad microphone knowledge base and skills to capture, clean, consistent, intelligible sound on the set.
5. Identify the challenges, benefits, and usage of wireless systems on the set.
6. Demonstrate usage and signal flow of audio gear used on the set.
7. Synchronize devices and media on the set.

DAPR 2170

Sound Design for Visual Media I

Credit hours: 3

Examines how to create original sound design, tell stories with sound and analyze critically audio intended to support visual stories. Teaches techniques for manipulating sound to tell impactful stories.

Course Learning Outcomes

1. Demonstrate how to record suitable sounds to support moments of a story in a powerful way.
2. Classify sounds as pieces of a whole.
3. Make situation-appropriate audio choices from audio libraries.
4. Manipulate sounds to support character and story using tools like pitch shift, time stretch, reverse, EQ, compression, reverb, etc.
5. Distinguish what constitutes a useful or effective sound or sound design.
6. Determine the synchronicity of audio in relation to visual media.
7. Adapt sound to enhance story and character.

DAPR 2171

Sound Design for Visual Media II

Credit hours: 3

Continues the student's exploration of sound design by creating performable sound design instruments, recording sound effects in the field, learning about different types of synthesis, and creating assets that can be used in films, games or sound effects libraries.

Course Learning Outcomes

1. Construct performable digital, analog, electrical or acoustic sound effects instruments.
2. Find, create, record, edit and organize sounds for use in films, games or sound libraries.
3. Use different audio synthesis types (additive, subtractive, FM, wavetable, granular, etc.) and techniques in sound design.
4. Use common signal processors (pitch shift, EQ, compression, distortion, modulation, etc.) to manipulate and mold audio to suit a creative purpose.
5. Use MIDI controllers creatively to aid in the sound design process.
6. Create audio assets to be used in films, games and sound effects libraries including multiple versions to avoid repetition and for common types of characters, weapons, vehicles, etc.
7. Manage assets to be used in films, games and sound effects libraries including multiple versions to avoid repetition and for common types of characters, weapons, vehicles, etc.
8. Manipulate the metadata of audio files using industry standard organizational schemas such as the Universal Category System (UCS).

DAPR 2240

Digital Audio Restoration

Credit hours: 3

Teaches tools to restore, preserve, and archive audio from a variety of sources, such as cylinders, vinyl records, tapes, and film soundtracks. Teaches the removal of ambient, impulsive, periodic, and random noise. Explores audio forensics. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify the issues and problems in audio that give rise to the need for professional, digital restoration.
2. Apply basic signal processing tools for audio restoration procedures.
3. Detail proper workflow and ordering in digital audio restoration.
4. Operate high-end algorithms for audio restoration.
5. Demonstrate low to intermediate-level audio restoration.
6. Distinguish among nuanced differences in audio processing artifacts.
7. Develop a discerning ear by implementing feedback on assignments.
8. Identify career opportunities in the audio restoration industry.

DAPR 2250

Audio Hardware Basics

Credit hours: 3

Teaches students to understand the fundamental system of the studio, the wiring. Covers the connections, and proper techniques in wiring, building cables, electrical safety, soldering, basic electronic connections soldering electrical components and terminology for proper studio wiring and building techniques. Teaches the history, current trends and future of audio connection. Includes DANTE level 1 certification.

Course Learning Outcomes

1. Investigate the purpose of the wiring and setup of a recording studio.
2. Explore the potential dangers and hazards associated with electricity and grounding.
3. Explore historic and modern context of signal flow, patch bays and AOIP systems.
4. Design a patch bay and wiring construct for the current state of the recording studio.
5. Solder basic electronic connections.
6. Apply De- soldering skills.
7. Apply basic knowledge of circuit boards and electrical components.
8. Create a DI box from a kit.
9. Create DB25 and EDAC-based connections.

DAPR 2255

Audio Hardware I

Credit hours: 3

Emphasizes electronic equipment and circuits used with electrical safety in media hardware. Includes basic DC/AC theory such as voltage, current, resistance, power dissipation, batteries, and solar cells. Introduces the basic construction and theory of operation of circuits used in media containing electronic components, resistors, capacitors, inductors, diodes, transistors, and operational amplifiers. Designed for Digital Media students. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Demonstrate how to work safely with electrical circuits, and describe conditions causing physical harm to humans.
2. Apply electronic schematic symbols and diagrams and distinguish the various circuit components.
3. Explain basic AC & DC circuits and their components.
4. Apply breadboarding tools and techniques to build electronic circuits.
5. Describe semiconductor circuits and components.
6. Calculate current, voltage and power in DC circuits.
7. Define the importance of electronics in the Digital Audio field.
8. Discern whether circuits are parallel or series.
9. Identify all components and units in an electrical circuit.

DAPR 2300

Sound for Games I

Credit hours: 3

Introduces the techniques and methodologies most commonly used in implementing sound and music assets into an electronic game environment. Covers the basic principles of sound implementation as part of the game development structure, project workflow, and common middleware tools. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course fee of \$170 for materials applies.

Course Learning Outcomes

1. Apply provided or original assets to a game level using a commonly available level editing tool.
2. Construct nonrepetitive designs using randomization and layered re-combinations.
3. Demonstrate interactive mixing including prioritization, base mixes, ducking, and snapshot mixes.
4. Use middleware tools to add engaging behavior to audio in the game engine.
5. Employ basic scripting for audio implementation into the game engine.
6. Apply asset tracking, task tracking, source control, and other tools and processes common to the game development process.

DAPR 2345

Spatial Audio I

Credit hours: 3

Teaches the basic concepts and techniques behind producing audio for virtual reality, augmented reality, mixed reality and extended reality applications. Teaches students to edit and mix linear projects in a variety of formats including binaural, ambisonic, channel-based and object-based. Familiarizes students with the major concepts necessary to understand and produce spatial audio content for linear applications.

Course Learning Outcomes

1. Use current software tools to create spatial audio for linear applications.
2. Mix audio for a variety of formats, including stereo, 5.1, binaural, ambisonic, and object-oriented delivery.
3. Communicate meaning through the use of spatial psychoacoustic principles.
4. Create deliverable assets for immersive audio formats.

DAPR 3010

Advanced Recording

Credit hours: 3

Delves deeper into the use of the recording studio space. Reviews the etiquette of a professional recording studio. Teaches advanced recording techniques. Prepares students for a successful audio career by providing greater experience with audio software and hardware. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course fee of \$95 for materials applies.

Course Learning Outcomes

1. Explain professional studio etiquette.
2. articulate how different decibel scales relate to each other in a properly calibrated system.
3. articulate how to record content by using advanced techniques.
4. Describe advanced stereo and spatial audio recording techniques and formats.
5. Analyze basic acoustic concerns, considerations, and solutions for standard studio spaces.
6. Plan how to use personnel and assets for professional-level recording projects.

DAPR 301L

Advanced Recording Lab

Credit hours: 1

Is a practical companion course to DAPR 3010 and gives students hands-on experience in advanced recording techniques, proper microphone use, console operation, DAW use, outboard gear operation, patch bay use and audio monitoring system setup and use.

Course Learning Outcomes

1. Demonstrate attention to detail, professionalism, and efficiency in a studio setting.
2. Calibrate an audio system.
3. Record content by using advanced techniques.
4. Use advanced stereo and spatial audio recording techniques.
5. Generate solutions for acoustic concerns and considerations within studio spaces.
6. Organize personnel and assets to create one or more professional-level recording projects.

DAPR 301R

Digital Lecture Series

Credit hours: 1

Uses guest speakers who lecture on current topics in digital media. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Explain various digital media disciplines.
2. Collaborate with industry professionals.
3. Analyze contemporary career opportunities within chosen fields.
4. Set personal career goals by interacting with industry professionals.

DAPR 3020

Advanced Mixing

Credit hours: 3

Teaches in greater depth audio engineering principles and techniques including signal processing, professional-grade equipment operation, and challenges in mixing audio. Covers in-depth theory and application of mixing consoles, signal processors, and mixing workflows. Addresses problems that arise in complex mixes. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course fee of \$95 for materials applies.

Course Learning Outcomes

1. articulate the audio techniques necessary to generate the ideal mix.
2. Identify the sonic attributes of various genres.
3. Identify strengths, weaknesses, and innovative techniques in peers' and professional mixes.
4. articulate how to mix for precise re-creation outside the mix space.
5. Explain proper application of all relevant signal processors including equalization, compression, reverb, delay algorithms, other time-based effects.
6. Discuss mastery of audio editing, automation, and rendering techniques at an industry-standard level.

DAPR 302L

Advanced Mixing Lab

Credit hours: 1

Is a practical companion course for the DAPR 3020 Advanced Mixing class. Provides hands-on experience for working directly with industry-standard and cutting-edge equipment in mixing audio.

Course Learning Outcomes

1. Create the ideal audio mix by applying appropriate mixing techniques.
2. Use mixing techniques and workflows appropriate for each genre.
3. Apply the elements discussed in peer and professional critiques to the next project iteration.
4. Mix at a level that allows for precise re-creation outside the mix space.
5. Demonstrate proper application of all relevant signal processors, such as equalization, compression, reverb, delay algorithms, and other time-based effects.
6. Demonstrate mastery of audio editing, automation, and rendering techniques at an industry-standard level.

DAPR 3170

Post-Production Sound for Cinema I

Credit hours: 3

Provides an overview of the responsibilities, skills, tools and methods required to work at an audio post-production studio that focuses on sound for feature films and television. Covers many of the responsibilities of film sound professionals like Assistant Sound Editors, Dialog Editors, ADR Mixers, Foley Mixers and artists, Sound Effects Editors and Re-recording Mixers. Applies the basics of each of these positions and post-production film sound in general.

Course Learning Outcomes

1. Identify the different positions and duties involved in post-production film sound.
2. Demonstrate different asset delivery methods and file formats and how to use them.
3. Demonstrate common recording practices used for post-production sound. Primarily Foley and ADR recording.
4. Demonstrate sound editing for post-production. Specifically, dialog editing, sound effects editing and the subcategories of each.
5. Identify how to effectively organize recording, editing and mixing sessions.
6. Determine how to work together as an audio team both socially and organizationally.
7. Identify common distance recording practices and tools such as ISDN, phone patch and their modern equivalents.
8. Recall terminology common to the post-production and filmmaking world.

DAPR 3171

Post-Production Sound for Cinema II

Credit hours: 3

Trains students in the responsibilities, skills, tools and methods required to work at an audio post-production studio that focuses on sound for feature films and television. Covers many of the responsibilities of film sound professionals like Assistant Sound Editors, Dialog Editors, ADR Mixers, Foley Mixers and artists, Sound Effects Editors and Re-recording Mixers. Culminating in the final mix deliverables for a short film.

Course Learning Outcomes

1. Recall terminology related to mix delivery formats for film and television including mono, stereo, 5.1, Atmos, B-format, Binaural and so forth.
2. Construct a mix template based on different genres and delivery formats.
3. Synchronize multiple DAW systems and video systems using timecode (SMPTE and/or MTC) provided by a master clock and video satellite.
4. Use control surfaces to control a DAW without the assistance of a mouse or keyboard.
5. Identify proper calibration of speakers for Stereo, 5.1, 7.1 and object-oriented dub stages.
6. Recall terminology common to the post-production and filmmaking world such as layback, sync check, video offset, stem recorder, LtRt, bass management, etc.
7. Demonstrate when and how to use common mixing techniques for film and television.
8. Deliver a mix that meets common specifications such as LUFS and True Peak measurements.

DAPR 3230

Audio Plugin Development I

Credit hours: 3

Teaches the student from beginner to early intermediate level as a developer of audio plugins. Examines creating a simple audio plugin from day one. Focuses on gain control, audio compression, and auto-panning, plugins. Requires students to have a laptop computer with a Digital Audio Workstation application installed.

Course Learning Outcomes

1. Apply basic tools of the course's Integrated Development Environment ("IDE") with its processing and interface components to create working audio plugins.
2. Produce working audio processing plugins of various types.
3. Analyze and contrast the pros and cons of two different approaches to a given audio plugin.
4. Analyze uncompiled code of audio plugins to identify bugs and design flaws / inefficiencies.
5. Demonstrate through testing instruments a basic competency in the language and logic structures of audio plugin development.

DAPR 3235

Audio Plugin Development II

Credit hours: 3

Teaches the student from early intermediate to late intermediate level as a developer of audio plugins. Examines creating plugins ranging from full-featured equalization to time-based effects such as delay, reverb, phase, and flange. Requires students to have a laptop computer with a Digital Audio Workstation application installed.

Course Learning Outcomes

1. Apply tools of the course's Integrated Development Environment ("IDE") with its processing and interface components to create working audio plugins.
2. Produce working audio processing plugins of various types.
3. Analyze and contrast the pros and cons of two different approaches to a given audio plugin.
4. Analyze uncompiled code of audio plugins to identify bugs and design flaws / inefficiencies.
5. Demonstrate through testing instruments an intermediate competency in the language and logic structures of audio plugin development.

DAPR 3255

Audio Hardware II

Credit hours: 3

Emphasizes active audio electronic circuits. Includes review of basic DC/AC theory such as voltage, current, resistance, and power calculations. Continues the basic construction and theory-of-operation of transistor power amplifier circuits, and more advanced operational amplifier based circuits including basic filters, parametric EQs, frequency and component scaling of filters. Designed for Digital Audio students.

Course Learning Outcomes

1. Apply safe work practices with electrical circuits current, voltage, power and resistors.
2. Employ electronic schematic symbols.
3. Explain basic AC & DC circuits and their components.
4. Describe semiconductor circuits and components including transistors and Op-Amps.
5. Demonstrate basic transistor biasing and amplification technology.
6. Use industry standard breadboarding tools and techniques.
7. Demonstrate basic op-amp technology and build small demo circuits of EQs and amplifiers.

DAPR 3280

Signal Processing for Audio

Credit hours: 3

Examines primarily the Fourier Transform and its applications. Demonstrates how to transform between the time domain and frequency domain for use in designing EQ's, solving complex circuits, matching Frequency Responses of various audio equipment to each other (transforms), and constructing complex signals such as square waves.

Course Learning Outcomes

1. Reproduce the logic behind Fourier's statement: all periodic sounds can be made from a series of harmonic sine waves.
2. Construct a square wave out of sine waves.
3. Code a plugin using Fourier Transform.
4. Construct a function to transfer one device's frequency response into another.
5. Picture graphically what Fourier Transform pairs look like.
6. Investigate Impulse Responses and how to apply them to reverbs.
7. Formulate a simple equation to express complex circuits to make hard problems simple.

DAPR 3300

Sound for Games II

Credit hours: 3

Is a continuation of Sound for Games I. Teaches students how to work with audio inside the game engine and create their own audio game. Also teaches students to work on game development teams using industry standard software for project management, version control and asset management. Guides students to be able to confidently design and build responsive audio systems within the game engine and work well with a game development team.

Course Learning Outcomes

1. Use team, project, and asset management software and techniques.
2. Create an industry appropriate sound design document and a final product based on that document.
3. Construct a simple game using an industry-standard video game engine and basic scripting with sound implemented into the game.
4. Use industry standard middleware in conjunction with the game engine.
5. Evaluate the success of game releases through post-mortem analysis from the perspective of successful play mechanics.
6. Define elements related to game strategy, theory and game play.
7. Cast and manage voice talent and direct a dialog recording session demonstrating an awareness of performance, character, narrative arc and location.
8. Mix in an interactive environment using base mixes, ducking, and snapshot mixes.

DAPR 3345

Spatial Audio II

Credit hours: 3

Teaches the basic concepts and techniques behind producing audio for virtual reality, augmented reality, mixed reality and extended reality applications. Teaches students to create audio systems for interactive projects in a game engine using industry standard software tools. Familiarizes students with the major concepts necessary to understand and produce spatial audio content for interactive applications.

Course Learning Outcomes

1. Examine current software tools used to create spatial audio for interactive applications.
2. Apply asset tracking, task tracking, source control and other tools and processes common to the game development.
3. Apply provided or original assets to a game level using commonly available level editing tools.
4. Construct nonrepetitive design strategies including randomization in time, pitch, volume, envelope, and sample start points, together with pseudo- granular approaches and variation through layered re-combinations.
5. Employ sound prioritization.
6. Create an immersive mix using middleware and game engine software.
7. Employ basic scripting for audio implementation into the game engine.
8. Communicate meaning through the use of spatial psychoacoustic principles.

DAPR 4085

Writing for Digital Audio WE

Credit hours: 3

Teaches the role of the written word in the digital audio arena, and helps students build competency in areas of expository, technical, persuasive, analytical, and research writing.

Course Learning Outcomes

1. Compose a variety of discipline-appropriate texts within multiple situations and for multiple audiences.
2. Write critiques, essays, and position papers related to digital audio.
3. Write project outlines and assessments.
4. Write grants, proposals, and scholarly papers for peer reviewed journals.
5. Compose pitches, radio advertising, multimedia scripts, and blog features related to digital audio.
6. Produce audio product or software documentation.

DAPR 4220

Audio Mastering

Credit hours: 3

Teaches mastering, the final step in audio production. Briefly discusses vinyl pre-mastering. Covers the art of final EQ and compression. Examines analog and digital signal processors and the use in the mastering process. Explores the issues of bit depth, sampling rates, dither, jitter, EQ techniques, and dynamic range manipulation. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course fee of \$95 for materials applies.

Course Learning Outcomes

1. Explain the historic use of compression in modern studios.
2. Evaluate standards and practices implemented by governing bodies of law.
3. Apply industry-standard monitoring techniques and expectations to the listening environment.
4. Analyze differences in hardware and software plug-ins.
5. Evaluate differences in compression styles such as voltage control amplifier (VCA), field effect transistor (FET), optical (OPTO) and tube.
6. Apply common mastering techniques including dynamic processing, equalization, spatial manipulation, and mid-side processing.
7. Create masters of existing mixes in a variety of genres.

DAPR 490R

Senior Capstone

Credit hours: 3

Provides a capstone audio experience for senior students. Develops individual and team real-world projects in consultation with a faculty advisor. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Develop a digital media project by identifying a client with a need for a digital media solution.
2. Create a productive, credible relationship with the client.
3. Define the project need, goals, and requirements in a project proposal.
4. Design a solution to address the client's needs and communicate it in a design document.

DARP 2000

Digital Audio Essentials

Credit hours: 3

Reviews basic sound principles, cable types, microphone types, and basic techniques of use. Teaches recording of basic sounds and musical instruments into a Digital Audio Workstation. Introduces multi-track audio, editing, EQing, mixing, and mastering a 3-minute piece with voice and music. Includes a final project consisting of a multi-track music project designed for use in film, commercial radio, or other multimedia applications.

Software fee of \$15 applies.

Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain sound and hearing, frequency, amplitude, wavelength, basic acoustics, and the concept of the dB.
2. Explain the function of the recording studio, control room, good sound control techniques, people and job roles.
3. Describe the proper use of different cable types.
4. Explain microphone types and patterns and their applications.
5. Explain stereo microphone techniques such as coincident, near-coincident and spaced pair.
6. Use a Digital Audio Workstation for editing, mixing, and effects.
7. Use signal processors and effects: EQ, compression, gating, reverb, and delay.
8. Explain the digital domain: bit depth, sample rate, and their affects on sound.
9. Execute mixing and mastering for final product release.

DARP 2010

Core Recording Principles

Credit hours: 3

Teaches mic choice and placement, acoustic positioning, in-line signal processing, level matching, impedance matching, phase error elimination, pre-mixing and recorded stems, DAWs, Pro-Tools intermediate skills, project budgeting, and artist and client relations.

Software fee of \$15 applies.

Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe and adequately recreate an ideal recording environment.
2. Implement optimal microphone choice and placement for each unique subject, including physical positioning of the subject in the recording space, and acoustic phase error elimination.
3. Implement appropriate in-line signal processing during the recording process.
4. Match level, impedance, and power characteristics of various balanced and unbalanced lines.
5. Use premixing and recorded stems for specific industry applications.
6. Demonstrate proficiency on ProTools and other leading Digital Audio Workstations ("DAW"s).
7. Budget realistically for projects, and show competency in artist and client relations.

DARP 2020

Core Mixing Principles

Credit hours: 3

Teaches the science and art of audio mixing, centering on a broad range of musical and media post-production material. Covers initial mix plan, signal flow, and fix, fit and feature skills for all signal processors, including equalization, compression, limiting, delay, reverb, distortion, doubling, phase, flange, chorus, other modulation effects, characteristics of algorithms (digital, solid state, transformers, rectifiers, tube, electro-optical, convolution). Also, teaches mix room acoustics, treatments and workarounds.

Lab access fee of \$45 applies.

Course Learning Outcomes

1. Create a strong initial mix plan, with a mature, success-oriented creative concept.
2. Understand signal flow and full flow architecture of their Digital Audio Workstation ("DAW").
3. Show mastery of equalization tools, including their use for fix, fit, and feature in the whole program.
4. Demonstrate mastery of compression and audio limiting tools, including their use for fix, fit, and feature in the whole program.
5. Show mastery of delay and reverb tools, including their use for fix, fit, and feature in the whole program.
6. Demonstrate mastery of distortion tools, including their use for fix, fit, and feature in the whole program.
7. Show mastery of modulation and miscellaneous tools, including their use for fix, fit, and feature in the whole program.
8. Know and access leading signal processing software, including the sources for the same, and the strengths and weaknesses of each.
9. Analyze good mix room acoustic and monitoring characteristics, and show proficiency in bringing a less optimal environment into satisfactory compliance.

DARP 2080

Radio Production

Credit hours: 3

Teaches the history of radio, and the structure of typical radio stations, from management to programming and sales, and production and promotion. Covers method of producing radio promos, radio shows, commercials and news segments, as well as features and interviews. Examines the use of Digital Audio Workstations to produce several radio segments of the student's choosing. Includes lectures, demonstrations, and guest lecturers from radio stations in the community.

Software fee of \$15 applies.

Course Learning Outcomes

Please contact the department for information.

DARP 2240

Digital Audio Restoration

Credit hours: 3

Teaches the value and use of various tools to restore, preserve, and archive audio from a variety of sources, including vinyl records, tapes, film soundtracks, etc. Additional topics include removal of ambient noise (fans, AC, etc) from class film projects, impulsive noise (clicks and pops), periodic noise (hum and buzz), and random noise (spectral subtraction of ambient noise). In addition, some attention will be given to the subject of audio forensics, or restoring audio for intelligence or law enforcement applications.

Software fee of \$15 applies.

Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify the issues and problems in audio that give rise to the need for professional, digital restoration.
2. Properly apply the use of basic signal processing tools for rudimentary restoration procedures.
3. Follow proper workflow and ordering in digital audio restoration.
4. Operate high-end algorithms for audio restoration and their purposes.
5. Acquire experience performing low to intermediate-level audio restoration.
6. Comprehend the various aspects of the audio restoration industry and how to compete in it.

DENT 1010

Dental Hygiene I

Credit hours: 3

For students accepted into the Dental Hygiene Program. Introduces basic principles and skills used in the practice of dental hygiene, including infection control, patient assessment and treatment. Requires practicing on dental mannequins and student patients. Teaches all skills to clinical competence. Builds on basic and dental sciences and is foundational for the ensuing Dental Hygiene II, III, and IV courses. Course fee of \$3175 for practical experience applies.

Course Learning Outcomes

1. Identify instruments and supplies that will be used in the clinical setting (at a foundational skill level)
2. Explain the importance and rationale for taking a comprehensive medical and dental histories by accurately taking medical and dental history of their patients (at a foundational skill level)
3. Demonstrate the correct method of taking the four vital signs after practicing on each other. (at a foundational skill level)
4. Demonstrate the proper use of the dental hygiene instruments while practicing on a dental typodont. (at a foundational skill level)
5. Discuss the proper protocol of infection control such as by placing barriers and setting up the dental operatory before and after treating patients (at a foundational skill level)
6. Demonstrate body mechanics and positioning when treating a fellow student in the dental chair that are ergonomically correct (at a foundational skill level)
7. Demonstrate the proper method of conducting extraoral and intraoral examination on their peers (At a foundational skill level)
8. Demonstrate the proper use of the dental probe when assessing the periodontal condition on a typodont and live (at a foundational skill level)
9. Demonstrate the proper use of the dental probe when assessing the periodontal condition on a typodont and live (at a foundational skill level)

DENT 1015

Dental Hygiene I Preclinical lab

Credit hours: 2

For students accepted into the Dental Hygiene Program. Introduces basic principles and skills used in the clinical practice of dental hygiene, including infection control, patient assessment and treatment. Skills are practiced in a preclinical setting on dental mannequins and student patients; all skills are taught to clinical competence. Builds on basic and dental sciences and prepares for clinical dental hygiene practice on community patients. Course Lab fee of \$73 applies.

Course Learning Outcomes

1. Identify instruments and supplies that will be used in the clinical setting (at a foundational skill level)
2. Explain the importance and rationale for taking a comprehensive medical and dental histories by accurately taking medical and dental history of their patients (at a foundational skill level)
3. Demonstrate the correct method of taking the four vital signs after practicing on each other. (at a foundational skill level)
4. Demonstrate the proper use of the dental hygiene instruments while practicing on a dental typodont. (at a foundational skill level)
5. Apply proper protocol of infection control such as by placing barriers and setting up the dental operatory before and after treating patients (at a foundational skill level)
6. Demonstrate body mechanics and positioning when treating a fellow student in the dental chair that are ergonomically correct (at a foundational skill level)
7. Demonstrate the proper method of conducting extraoral and intraoral examination on their patients (At a foundational skill level)
8. Demonstrate the proper use of the dental probe when assessing the periodontal condition on both a typodont and live patients (at a foundational skill level)
9. Chart the dental dentition accurately: provide selective polishing and apply the proper fluoride on their patients (at a foundational skill level)

DENT 1020

Oral Anatomy and Physiology

Credit hours: 4

For students in the Dental Hygiene Program. Focuses on study of the normal development, structure, and function of the orofacial region. Provides microscopic and macroscopic study of oral structures in a laboratory setting. Builds on basic sciences and prepares for the study of the dental sciences and clinical dental hygiene.

Course Learning Outcomes

1. Describe the concepts of prenatal orofacial development and tooth eruption.
2. Define dental anatomy and tooth morphology.
3. Integrate the concepts of the histology of dental tissues to the related clinical considerations.
4. Discuss anatomical considerations of the dentition.
5. Identify the nerves innervating each of the muscles of the head and neck.

DENT 1030

Dental Materials

Credit hours: 2

Presents the history, composition, chemical, and physical properties and use of materials commonly utilized in the dental laboratory and dental operatory. Builds on dental sciences. Provides laboratory experience in performing common dental laboratory procedures and prepares for the clinical practice of expanded functions. Course Lab fee of \$75 applies.

Course Learning Outcomes

1. Evaluate the safety and efficacy of oral health products and treatments.
2. Identify services and agencies that promote oral health and prevent oral disease and related conditions.
3. Classify dental materials according to their composition, type and group.
4. Apply all steps associated with dental impressions, study models and bleach trays.
5. Describe the physical and chemical properties of common dental materials.

DENT 1040

Dental Hygiene II

Credit hours: 3

Provides advanced dental hygiene modalities, including oral health education, practice management, patient assessment and treatment. Emphasizes treatment planning and emergency preparedness. Builds on basic and dental sciences and prepares for clinical dental hygiene practice. Course fee of \$3175 for practical experience applies.

Course Learning Outcomes

1. Discuss and utilize the general principles of instruction for oral health education on patient populations of various ages.
2. Discuss and utilize dental hygiene treatment planning as part of a comprehensive dental care plan.
3. Discuss advanced patient evaluation and treatment procedures based on assessment data.
4. Discuss the use of ultrasonic instrumentation based on patient difficulty.
5. Recall the basic knowledge about medical risk assessment and identify specific dental emergencies that may occur in the dental setting.
6. Identify the special needs and modifications when treating a pediatric patient.
7. Identify the special needs when treating a pregnant patient.
8. Identify the special needs when treating pre-adolescent and post-menopausal patient.
9. Identify the special needs and modifications when treating a geriatric patient.

DENT 1045

Dental Hygiene II Clinical

Credit hours: 3

Provides for developing clinical dental hygiene skills, practiced on patients in a clinical setting, including oral health education, practice management, patient assessment and treatment. Emphasizes treatment planning and emergency preparedness. All skills are taught to clinical competence. Builds on basic and dental sciences and prepares for clinical dental hygiene practice. Course Lab fee of \$85 applies.

Course Learning Outcomes

1. Apply learning theories when working with adults in the clinical setting
2. Create, apply, and evaluate a lesson plan in oral health education for elementary school children which can be used both in the clinical setting and classroom setting
3. Create and discuss with patients a comprehensive treatment plan based on the assessment data obtained.
4. Apply and integrate previous clinical assessment to provide an increasingly advanced dental hygiene treatment plan on periodontally involved patients.
5. Demonstrate the proper use of instrumentation when debriding periodontally involved patients.
6. Demonstrate the proper placement of occlusal sealants on pediatric patients based on their clinical assessment.
7. Develop and demonstrate an understanding of the pediatric patient and identify the special needs that must be considered when dental care is provided in a clinical setting
8. Develop and demonstrate an understanding of the geriatric patient and identify the special needs that must be considered when dental care is provided in a clinical setting.
9. Evaluate the effectiveness of dental products that the student will be recommending for patients in the clinic based on their individual needs

DENT 1050

Clinical Dental Radiography

Credit hours: 1

Focuses on radiation physics, biology, protection and quality dental techniques. Prepares competency in film processing, mounting, interpretation of errors, recognition of anatomical landmarks, and evidence of pathologies. Builds on basic and dental sciences and prepares for clinical dental hygiene practice.

Course Learning Outcomes

1. Describe the basic concepts of radiation physics, history, radiation biology, radiation safety and proper use of equipment
2. State the proper techniques for film processing, mounting, and viewing of radiographs
3. Identify the anatomical landmarks of the mandible and maxilla as seen on dental radiographs
4. Apply the proper techniques and indications for bisecting the angle, paralleling, bite wing and occlusal films
5. Outline the proper techniques and indications for panoramic and digital techniques
6. Discuss infection control, patient education and professionalism relating to dental radiology
7. Identify errors in exposure, placement and development, to include special needs as well as the general patient
8. Identify caries, periodontal disease and other results outside of normal limits, and pathologies, through the use of dental radiology
9. Discuss legal and regulatory issues concerning dental radiology

DENT 1055

Clinical Dental Radiography Lab

Credit hours: 1

Focuses on clinical application of radiation physics, biology, protection and quality dental techniques. Prepares students for competency of film processing and mounting, interpretation of errors, recognition of anatomical landmarks, and evidence of pathologies. Practices skills on radiographic mannequins in a laboratory setting. Builds on basic and dental sciences and prepares for clinical dental hygiene practice. Course Lab fee of \$74 applies.

Course Learning Outcomes

1. Apply the basic concepts of radiation physics, history, radiation biology and safety, and appropriate use of equipment when taking dental radiographs
2. Discuss proper techniques for film processing, mounting, viewing of radiographs
3. Identify errors in processing, exposure, and placement techniques
4. Recall oral anatomy and relate and apply to proper techniques
5. Apply infection control and legal issues in dental radiology
6. Demonstrate appropriate placement, exposure and self evaluative techniques for successful bite wings, periapicals, full mouth series, occlusals and panoramic radiology
7. Demonstrate appropriate placement, exposure and self evaluative techniques for digital dental radiology
8. Demonstrate proper bisecting the angle and paralleling techniques
9. Identify caries, aspects of periodontal disease and anomalies that can be seen on radiographs

DENT 1060

General and Oral Pathology

Credit hours: 2

Focuses on the study of commonly encountered systemic and oral diseases; etiology, presentation, treatment and effect on dental treatment, including associated emergency procedures. Emphasizes the principles of inflammation, immunology, healing, and repair. Builds on basic and dental sciences and prepares for clinical dental hygiene practice.

Course Learning Outcomes

1. Create a base of knowledge about pathologic processes and specific disease entities.
2. Solve problems and make decisions on oral lesions based on accepted scientific principles.
3. Communicate professional knowledge verbally and in writing to patients, colleagues, and other professionals.
4. Perform an extra-oral and intraoral examination and accurately record the findings.
5. Determine the need for referral to the appropriate health professional.
6. Identify periodontal conditions that compromise periodontal health and function.

DENT 1070

Medical Emergencies in the Dental Office

Credit hours: 2

Introduces the basic principles and management of medical emergencies that could occur in a dental office, including the care and clinical management of medically compromised patients.

Course Learning Outcomes

1. Analyze information on the medical history to identify any risks or conditions to take proper safety precautions in preventing a medical emergency.
2. Perform a comprehensive assessment utilizing the medical history to guide in evidence-based decision making for care planning and treatment for the patient.
3. Recognize signs and symptoms of emergency situations.
4. Determine basic life support measures for management of medical emergencies in the practice of dental hygiene.
5. Identify drug therapy medications (prescription and nonprescription), drug's side effects, drug interactions, and clinical considerations.
6. Recognize relevant follow-up questions to ask in gaining additional patient information during the health history interview.
7. Incorporate treatment modifications in providing oral care to patients with various health conditions.

DENT 2020

Dental Pharmacology

Credit hours: 3

Focuses on pharmacology as it affects the clinical practice of dentistry. Emphasizes drugs commonly used in dentistry, for treatment of common systemic and oral diseases, and for emergency treatment: effects, administration, and toxicology. Builds on basic and dental sciences and prepares for clinical dental hygiene practice.

Course Learning Outcomes

1. Select appropriate resources for careful review and cross-reference of patient medications.
2. Explain the proper use of medications commonly administered, prescribed, or recommended in dental treatment.
3. Distinguish safe versus unsafe medication options for patients.
4. Record medications administered, prescribed, or recommended in dental treatment.
5. Evaluate new and existing drugs and agents for their safety and appropriateness in dental treatment.
6. Administer necessary medications as prescribed by a dentist.
7. Identify common medical emergencies encountered in the dental office.

DENT 206G

Oral Public Health GI

Credit hours: 3

Examines the principles of community health, including assessment, planning, implementation, and evaluation of health care, with an emphasis on oral health. Builds on knowledge of ethics, basic and dental sciences, and clinical dental hygiene practice. Provides the knowledge and skills necessary to function in a community health setting and includes learning experiences in community health agencies. Analyzes and evaluates global or intercultural issues. Evaluates cultural rules and biases. Explores stereotypical cultural conceptions.

Course Learning Outcomes

1. Describe social and health care systems and determinants of health and their impact on the oral health of the individual and population.
2. Demonstrate the ability to access and describe the use of population-based health data for health promotion, patient care, and quality improvement.
3. Identify the principles of public health as it relates to oral health and the dental professional.
4. Describe the public health and dental public health achievements in the US and globally.
5. Describe the oral health status and needs of the US population, including various age groups, underserved, and minority populations.
6. Demonstrate the APIE model of patient care in a community-based program.
7. Identify determinants associated with health care access and utilization of dental care services.
8. Identify the roles of public, private, professional and voluntary organizations in promoting oral health, and the delivery of dental health care services.
9. Describe different oral health workforce models.

DENT 3010

Pain Management

Credit hours: 3

Focuses on pain control including local and topical oral anesthesia, nitrous oxide conscious sedation and other means of pain control, which is accepted as standard of care. Applies gained knowledge for direct clinical application on patients in the clinical setting. Demonstrates preclinical competence in the laboratory setting. Builds on basic and dental sciences and prepares the student for clinical dental hygiene practice and prepares students for regional anesthesia board exams. Course fee of \$3175 for practical experience applies.

Course Learning Outcomes

1. Identify relevant anatomy and physiology and basic principles of pain control
2. Demonstrate the correct techniques of 10 intra oral injections, nitrous oxide conscious sedation, and use of topical oral anesthesia to the standard of care
3. Apply the indication and possible contraindications to local anesthesia and other pain control modalities
4. Demonstrate emergency protocols with both local and systemic complications associated with pain control
5. Implement safety and infection control procedures during pain control for the dental patient
6. Apply pharmacology using proper dosing of drugs
7. Describe principles and use of electrical anesthesia and other new trends in pain control
8. Explain the various armenatarium and the proper assembly, use and disassembly of the various parts, as well as problems from misuse
9. Demonstrate safe techniques in administering local anesthesia and pain control

DENT 3015

Dental Hygiene III Clinical

Credit hours: 4

Introduces skills involving oral anesthesia (pain control) and supportive periodontal treatment. Utilizes advanced skills of dental hygiene practice, including assessment and treatment on patients of all ages in a clinical setting, with emphasis on planning and comprehensive treatment. Requires demonstration of clinical competence unless otherwise noted in the course outline. Includes more rigorous skill and patient difficulty levels than the first year clinical experiences. Builds on basic and dental sciences and foundational skills to include DENT3010, and prepares the student for clinical dental hygiene practice. Course Lab fee of \$63 applies.

Course Learning Outcomes

1. Apply relevant anatomy and basic principles of pain control and transmission.
2. Apply and demonstrate theory and clinical competency in 10 intra oral injections, nitrous oxide conscious sedation, and use of oraqix to the standard of care.
3. Demonstrate proper safety and infection control standards and procedures
4. Perform proper assesement of patient to include history, intra/extra oral, soft and hard tissue
5. Formulate an appropriate treatment plan, hygiene diagnosis, home care regime, by analyzing the data
6. Demonstrate appropriate communication skills with patients and faculty in a professional manner
7. Demonstrate proper debridement techniques with the appropriate instruments on increasingly challenging patients to include those with heavy deposits, advanced perio disease, implants bridges, etc,
8. Analyze each patient as an individual using problem solving and critical thinking when treating and communicating with patient
9. Demonstrate ability to produce radiographs of proper quality on a variety of patients

DENT 3030

Periodontology

Credit hours: 3

Focuses on the study of the healthy periodontal tissues, and the factors, recognition, and classes of periodontal disease. Provides background knowledge of nonsurgical and surgical treatment of periodontal disease. Builds on basic and dental sciences and prepares for clinical dental hygiene practice.

Course Learning Outcomes

1. Describe all functions of a dental hygienist in non-surgical periodontal treatment
2. Describe the difference between health and disease in dental hygiene.
3. Identify the disease classifications for oral health.
4. Distinguish the role of the dental hygienist with code diagnosis.

DENT 3040

Dental Hygiene IV

Credit hours: 2

Provides comprehensive didactic experience in all phases of dental hygiene practice for patients, regardless of special needs. Introduces nutritional and tobacco cessation counseling. Builds on basic and dental sciences and prepares for various practice settings in clinical dental hygiene. Course fee of \$3175 for practical experience applies.

Course Learning Outcomes

1. Explain the importance of the role of nutritional counseling in a dental hygiene treatment plan
2. Create a nutritional plan for two patients having disabilities such as diabetes, high blood pressure etc.
3. Identify the important considerations when advising a patient for tobacco cessation whether planning to have Implants or not
4. Identify the proper procedures for a presentation of a periodontal case for a patient being treated in the dental hygiene practice
5. Describe appropriate treatment modifications and considerations for medically compromised patient in the dental hygiene practice
6. Describe the appropriate treatment modifications and considerations for a physically compromised patient
7. Describe the appropriate treatment modifications and considerations for a mentally impaired patient in dental hygiene
8. Explain the appropriate considerations and modifications employed when treating culturally diverse patient in dental hygiene practice.
9. Identify the appropriate treatment considerations and modifications to be made when treating Class IV patients.

DENT 3045

Dental Hygiene IV Clinical

Credit hours: 4

Provides comprehensive clinical experience in all phases of dental hygiene practice for patients, to include special needs. Teaches to clinical competence. Introduces nutritional and tobacco cessation counseling. Builds on basic and dental sciences and prepares for various practice settings in clinical dental hygiene. Course Lab fee of \$63 applies.

Course Learning Outcomes

1. Construct nutritional plans for clinical patients
2. Evaluate need for tobacco cessation
3. Provide treatment for special needs and culturally diverse patients
4. Develop treatment plan for complex hygiene patients

DENT 3050

Ethics and Practice Management

Credit hours: 1

Explores topics relevant to contemporary practice of dental hygiene, including professional roles, career and stress management, ethical and legal aspects, and the role of the dental hygienist in the dental specialty practices. Builds on clinical practice and prepares for entry into the many aspects of the profession of dental hygiene. Includes observation of various dental specialty practices.

Course Learning Outcomes

1. Define the term ethics.
2. Compare a right with a privilege.
3. Discuss moral reasoning with scenarios and ethical dilemmas.
4. Describe how HIPPA protects patient confidentiality.

DENT 3060

Advanced Dental Hygiene Public Health

Credit hours: 3

Examines current and future issues in oral public health. Investigates barriers and solutions to health concerns. Analyzes and evaluates community needs and oral health issues. Incorporates elements of public health into practice of dental hygiene. Prepares students to design a business/practice model for public health dental hygienists. Builds on community health theories and models learned in the associate-level community dental health course.

Course Learning Outcomes

1. Identify current and possible future needs in public oral health.
2. Recognize social and cultural considerations contributing to current oral health issues and disparities in the community.
3. Recognize the criteria for effective community practice development.
4. Design a dental hygiene public health practice model that will provide access to oral health services and education to underserved populations.
5. Construct outcome objectives for the chosen population and alternative practice setting.
6. Identify the importance of evaluation in creating an educational project.
7. Display cultural competence and cultural sensitivity.

DENT 3200

Teaching the Dental Hygiene Patient WE

Credit hours: 3

Addresses areas such as learning theories, teaching strategies, societal-cultural considerations, and evaluation and applies them specifically to the needs of the dental hygienist when teaching his/her patients and the community at large.

Course Learning Outcomes

1. Define various developmental, behavioral and learning theories and their role in teaching the dental patient.
2. Identify key strategies for choosing the right teaching methods on the dental patient.
3. Construct effective lesson plans for teaching the dental patient.
4. Evaluate the teaching methods used on the patient as to their effectiveness.
5. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

DENT 4200

Teaching the Dental Hygiene Student

Credit hours: 3

Prepares the dental hygienist to become a successful educator in a dental hygiene program by addressing areas such as: learning theories, teaching strategies, learning objectives, lesson plans, syllabi, curriculum design evaluation tools, and roles of an educator. May be delivered online.

Course Learning Outcomes

1. Define various teaching strategies used in modern day teaching of a student.
2. Identify strategies for choosing teaching methods for DH students.
3. Construct lesson plans for the teaching of a DH student.
4. Evaluate the effectiveness of teaching methods used on the DH student.

DENT 4300
Dental Hygiene Capstone

Credit hours: 1

Requires the student to integrate several main areas of study in the BS program and create a paper or project that reflects comprehensive knowledge and ability to reflect, connect and then produce a work based on their learning experiences throughout the BS program.

Course Learning Outcomes

Please see the department for information.

DGM 1061

Digital Cinema Editing I

Credit hours: 3

Introduces the interface, tools, techniques, and operations of a variety of Non-Linear Editing (NLE) software programs. Introduces standard editing concepts and practices necessary for the creation and completion of Digital Cinema projects made for various distribution channels. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Use a variety of Non-Linear Editing software and understand their application in the post-production process.
2. Apply the tools and workflows of Non-Linear Editing software and how they differ from program to program.
3. Set-up, organize, and output an editing project for a variety of different platforms.
4. Create beginning level edits using traditional storytelling techniques.

DGM 1110

Digital Media Essentials I

Credit hours: 4

Beginning course designed to give students an in-depth introduction and well-grounded understanding of the digital media way of thinking, opportunities in the field, various tools, and introduction to development techniques. Topics include: audience assessment, digital imaging, compression algorithms, ethical dilemmas, message design through text, audio, images, animation, and digital video. May be delivered online. Software fee of \$15 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

Please see the department for information.

DGM 1500

Intro to Digital Cinema

Credit hours: 1

Offers an overview of the Digital Cinema major and industry. Teaches students the expectations and timetables required of them as they progress through the major. Develops a broad understanding of the various aspects of the filmmaking process and how training for these various aspects is conducted at UVU. Emphasizes industry standards of safety and professionalism. Should be taken in the first semester of classes in the program. Lab access fee of \$45 applies.

Course Learning Outcomes

1. articulate the basic pre-production, production and post-production workflow of the motion picture and media content creation industry.
2. Identify career opportunities and different job titles and specializations within the motion picture and media content creation industry.
3. Explain industry expectations and curriculum that provides a path to meeting those expectations.
4. Identify the Digital Cinema curriculum, special programs, degrees and certification opportunities from the first to the fourth year.
5. articulate how technology integrates with creativity.

DGM 1510

Film Production Analysis

Credit hours: 3

Film Production Analysis is a foundation class for those interested in the digital media and motion picture business. Analyzes the various technologies and production techniques that make up motion picture communication. Involves viewing a motion picture each week of class and analyzing how the producer and director incorporated production and structural techniques to produce a compelling story. Covers the eight sequence structural elements of motion picture storytelling, how each crew member of the production team contributes to the overall impact, how scripting is used to direct the team to create a strong cinematic effect, and how the three act eight sequence structure guides the entire team through the pre-production, production and post-production process. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Show professionalism in viewing and evaluating films from the point of view of a professional filmmaker as opposed to a consumer.
2. Demonstrate an understanding of the elements of cinematic communication and how it differs from other media.
3. Restate the three basic dramatic classes and how they impact filmmaking.
4. Demonstrate understanding of the various types of characters and they way they function in cinematic storytelling.
5. Explain the cinematic story structure in three acts and eight sequences.

DGM 1520

Digital Cinema Production I

Credit hours: 3

Introduces professional video production techniques used for non-narrative digital cinema projects. Covers production processes such as working with clients, storytelling, camera techniques, basic lighting techniques, production management and basic non-linear editing techniques. Requires participation in a high-quality semester project that will take a non-narrative project through the entire pre-production, production and post-production process. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course lab fee of \$60 for equipment applies.

Course Learning Outcomes

1. Explain the digital cinema workflow including pre-production, production, and post-production
2. Prepare a project proposal for a short non-narrative video
3. Create a script, budget, shooting schedule for a short non-narrative video
4. Operate a digital cinema camera, basic lighting, and sound equipment

DGM 1645

Mixed Reality Essentials

Credit hours: 2

Introduces virtual reality using browser technology, mobile apps, head mounted displays and other emerging platforms. Course fee of \$300 for materials applies.

Course Learning Outcomes

1. Explain the history behind virtual reality experiences and the current terms related to this emerging field
2. Capture images, video, and sounds necessary to create a mixed reality experience
3. Build simple mixed reality experience
4. Publish simple mixed reality experience

DGM 2110

Digital Cinema Production II

Credit hours: 3

Presents professional digital cinema production techniques used in narrative filmmaking. Addresses problem-solving issues related to pre-production, production and post-production. Serves as a Production Assistant Certification course recognized by the Utah Film Commission. Course fee of \$10 for equipment applies. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Produce a short narrative film
2. Develop a short script for production
3. Identify the function and responsibility of each major crew member on a traditional film set
4. Manage a film production crew in the pre-production, production and post-production processes

DGM 2320

Digital Photography and Compositing I

Credit hours: 3

Introduces digital image acquisition and manipulation. Teaches the mechanics of the digital camera, and introduces lighting, white balance, color temperature, digital ISO and electronic image stabilization. Discusses image compositing, EXIF data analysis and archiving. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Introduction to cameras, controls and features of typical Digital SLR camera.
2. Understand and apply digital imaging techniques (exposure, lens selection, shot framing)
3. Manipulate images and created graphics in Photoshop (compositing)
4. Introduction to the basic elements and principles of design.
5. Deliver images in proper format for digital output in various mediums.
6. Understand file types and uses.

DGM 2440

Sound for Film and Television

Credit hours: 3

Teaches the basics of gathering sound for use in film and video productions. Covers proper boom miking and wireless mic techniques, and acoustics preparation to record dialogue and sound effects on location and on sound stages. Examines the processes utilized in editing audio of multimedia productions, including the balancing of artistic relationships, mixing and mastering of music, sound effects tracks and Foley. Offers practical experience in audio-only productions as well as audio-video relationships. Culminates in a digital cinema mixing session. Primarily a lab class, may couple with another video class to gather the sound for a cohesive project. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Demonstrate knowledge, comprehension, and application of production sound, including location recording, booming, mixing, equipment, and synchronization, all as demonstrated by test answers and an in-class practicum project.
2. Demonstrate knowledge, comprehension, and application of postproduction film sound design for effects, Foley, dialogue treatment and replacement, and application of underscore and featured music to a film or video project, and mixing and mastering principles and practices, all as demonstrated by test answers and a group- realized audio postproduction project.
3. Analyze and evaluate professional and other students' audio production and postproduction projects, by identifying, evaluating, and accurately criticizing the audio elements in the project, as demonstrated by class discussion and individual evaluation of the groups projects.

DGM 2540

Cinematography I

Credit hours: 3

Introduces the basic concepts of lighting, grip/electric work, and beginning cinematography. Teaches a full understanding of lighting instruments, power distribution, lighting support, rigging, dollies, and production equipment. Teaches how to work as a member of a team/department applying on-set protocols to meet the needs of production objectives. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course fee of \$46 for equipment applies.

Course Learning Outcomes

1. Contribute safely and confidently to a professional film set.
2. Use cinematography equipment and tools competently.
3. Perform the positions of Gaffer and Grip on beginning level digital cinema sets.
4. Analyze proper power loads to properly troubleshoot power distribution problems and correct them.

DGM 2661

Visualization for Digital Cinema-Pre-Directing

Credit hours: 3

Introduces concepts of visualizing filmed media content during the pre-production process from storyboarding and shot design to production design. Focuses on the role of the director to communicate lighting, character movement, camera movement, camera angles and framing to key motion picture production departments to enhance and support cinematic story. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Communicate the visual language of film and how it furthers cinematic story structure
2. Breakdown a written script into a visual treatment
3. Use principles of composition to clearly stage a scene
4. Produce a functional storyboard

DGM 302R

Digital Cinema Production Lecture Series-CineSkype

Credit hours: 1

Presents a series of feature-length films and the opportunity to discuss the challenges that went into their creation with the individual filmmaker(s). Introduces participants to directors, screenwriters, producers, and editors currently working in the industry. May be repeated for a maximum of 3 credits toward graduation. (Note: Some films screened may be considered controversial and carry an "R" rating.) Course fee of \$40 for filmmaker sessions applies.

Course Learning Outcomes

1. Illustrate the struggles presented to filmmakers as they mount a feature-length project
2. Evaluate career choices based on solicited advice from current industry professionals
3. Describe the role of the writer, director, editor, producer (and other roles) in the creation of a feature-length motion picture
4. Analyze concepts they have learned through writing and group discussion

DGM 3110

Corporate Issues in Digital Media WE

Credit hours: 3

Covers business and legal issues in multimedia. Reviews good business practices for the multimedia industry. Studies universal marketing and sales principles and mastery, as well as e-commerce fundamentals. Includes copyright laws and procedures, obtaining permissions, creating and using contracts, protecting corporate assets, standards, security and privacy issues, and other legal issues regarding multimedia communication. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify the initial keys to getting a job, internship, or new client, and how to write a cover letter;
2. Describe litigation, its nature and procedure, how cases are won or lost, what gives rise to litigation and how to avoid it by good prior thoughts and actions;
3. Analyze intellectual property laws and how they relate to digital media; know how to protect original work and avoid infringing the IP rights of others;
4. Comprehend the nature and substance of contracts, their sections, provisions, and how contract flaws give rise to litigation; be practiced at identifying (and in some cases correcting) contract flaws to promote profitable business and avoid litigation;
5. Recognize entity choices, their liability and tax ramifications, and behaviors that nullify entity benefits;
6. Apply universal principles of marketing and how each relate to digital media; have experience creating marketing media;
7. Explain the universal principles of sales and how they relate to digital media; have experience creating sales media;
8. Compose expository, technical, and persuasive writing commensurate with the level of the professional digital media industry.

DGM 312G

Digital Media for Intercultural Communication GI

Credit hours: 3

Explores issues, concepts, and practices for making digital media accessible to people from diverse cultures and people with disabilities. Covers design considerations and techniques for the Web and other digital technologies. Presents methods for understanding and comparing different cultures and ways of approaching and enhancing intercultural interactions. Addresses accessibility standards, guidelines, and laws important for digital media developers to know and implement. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Develop an understanding and awareness of people from other cultures and people with disabilities;
2. Identify major issues, concepts, and laws related to intercultural communication and accessibility;
3. Identify the needs of specific cultures or people with specific types disabilities when using digital media;
4. Identify tools, technology, and development practices that enable accessibility to digital materials;
5. Prepare digital media materials that meet the needs of different cultures and people with disabilities audience;
6. Demonstrate knowledge and recognition of complexities inherent in global and/or intercultural issues;
7. Interrelate knowledgably, reflectively, responsibly, and respectfully with a society of increasingly interdependent intercultural connections.

DGM 3220

Digital Media Project Management

Credit hours: 3

Teaches the foundational management principles that contribute to both the quality and profitability of digital media products. Introduces technical project management skills to help with budgeting and scheduling as well as critical soft skills, such as how to manage product design, make good decisions, communicate effectively, and build productive work relationships. Also, teaches about different types of project documents that enable and support effective, successful projects. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Recognize and use important project management terms, practices, skills, and principles;
2. Prepare and analyze budgets and schedules by using network charts, cost grids and Gantt charts;
3. Produce a set of common project documents for a team project;
4. Apply project management skills and practices by completing team activities and projects;
5. Work effectively with others on team tasks and projects.

DGM 3530

Digital Cinema Production Management

Credit hours: 3

Teaches the foundational principles which contribute to both quality and profitability in digital cinema projects that range from micro to mega budgets. Reviews team dynamics such as the relationship between producer and other production team members. Introduces industry standard budgeting and scheduling software tools, which can be used as management tools to guide multiple projects. Focuses on video/film workflow, from development and budgeting to pre-production, production and post-production. Requires the submission of an industry standard production book at the end of the semester. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Use industry standard production management terms, practices and skills.
2. Create digital cinema budgets and schedules by using industry standard software.
3. Produce an industry standard set of project management documents and reports from industry standard forms and software.
4. Apply project management skills and practices by completing a production book with all schedules, reports, releases, and call sheets.

DGM 3540

Cinematography II

Credit hours: 3

A "hands-on" class that covers the role of the Director of Photography (DP) and Gaffer in drama-based broadcast television and digital cinematography. Teaches continuity of lighting, visual story telling, implied script subtext through light quality and color, continuity in direction, use of lenses and shot blocking for fixed and moving camera. Covers advanced grip and lighting equipment use and setups. Covers working with a producer, director, production designer, set decorator, boom operator and editor and on-set protocol. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course fee of \$46 for equipment applies.

Course Learning Outcomes

1. Work safely, in a professional manner and efficiently, on set;
2. Use and select the right tool for job;
3. Demonstrate competencies in the positions of DP, Gaffer, camera operator and camera asnts;
4. Place the camera, frame a camera shot to fit the feeling and requirements of the shot, scene and whole project;
5. Plan an approach to lighting a set/scene per goals of director/script/story;
6. Determine the proper exposure for a scene and light around that exposure;
7. Select proper lens for scene and drama.

DGM 3550

Producing I

Credit hours: 3

Examines the process of motion picture development and distribution with focus on the role of the producer in identifying, evaluating, developing, financing and securing distribution. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course fee of \$20 for materials applies.

Course Learning Outcomes

1. Diagram the motion picture distribution process from script acquisition to distribution.
2. Summarize, in-depth, all the distribution markets.
3. Demonstrate the critical part Sales Agents and Producer Reps play in distribution strategy.
4. Practice distribution cycles.
5. Demonstrate film valuations, cash flow and revenue expectations.
6. Explain Media Rights.
7. Demonstrate Acquisition and Distribution Agreements.

DGM 3560

Digital Cinema Editing II

Credit hours: 3

Develops an understanding of how editing can shape cinematic storytelling using content from a variety of media and in various styles. Provides further practice in hands-on application on a variety of professional Non-Linear Editing platforms. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Edit in a variety of filmed media content styles and genres.
2. Explain how editing can shape cinematic storytelling.
3. Identify the structure, workflow, and tools available in a variety of NLE programs.
4. Use professional editing techniques to engage an audience and to elicit a desired emotional response.

DGM 3570

Storytelling for Digital Media II WE

Credit hours: 3

Teaches advanced writing for cinema, television and emerging media. Includes writing assignments each week that will be read and analyzed according to the structure and execution of a goal. Discusses a specific scriptwriting subject each week such as finding the idea, researching, outlining and rewriting. Course fee of \$13 for software and plug-ins applies. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Create compelling characters with strong story arcs suitable for cinematic media.
2. Write cinematically in the digital cinema discipline using cinematic elements of character, location, costuming, audio, etc.
3. Identify and analyze problems with characters and scenes and solve the problems through the rewriting process.
4. Implement appropriate changes and edits to motion picture or television scripts according to industry standards.

DGM 3580

Digital Cinema Directing Workshop I

Credit hours: 3

Offers an advanced workshop format class structure. Utilizes project-based opportunities to apply and hone skills in digital cinema direction, editing scripts, casting, rehearsing and performing a scene. Includes polishing concept for shooting, then shooting and editing for presentation and critique. Course fee of \$13 for software and plug-ins applies. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Analyze a scene in terms of spine, acting beats, directors beats, fulcrum and subtext.
2. Cast a scene effectively using professional techniques and protocol.
3. Demonstrate how to work with actors in a setting that culminates in a truthful performance.
4. Work with the crew and director of photography to shoot a project in terms of composition, lighting, camera movement and coverage.

DGM 4310

Senior Capstone I

Credit hours: 3

For senior Digital Media students. Provides a capstone experience working in digital media. Develops individual real world projects in consultation with a faculty advisor. Encourages team work. Course fee of \$10 for equipment applies. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Initiate a digital media project by identifying a client with a need for a digital media solution;
2. Create a productive, credible relationship with the client;
3. Define the project need, goals, and requirements in a project proposal;
4. Design a solution to address the client's needs and communicate it in a design document;
5. Create a project plan.

DGM 4410

Senior Capstone II

Credit hours: 3

Conclusion of DGM 4310. Concludes the capstone experience for digital media students. Addresses post production issues such as testing, packaging, and documentation. Offers the opportunity to present projects to students, faculty, sponsors, and potential employers or clients. Course fee of \$10 for equipment applies. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Produce or acquire project assets for the final project;
2. Deliver the final tested product including final project documentation.
3. Participate productively on a team;
4. Manage time effectively in order to complete tasks on time;
5. Report on lessons learned from the project.

DGM 481R

Internship

Credit hours: 1 to 8

For Digital Media majors only. Provides a transition from school to-work where learned theory is applied to actual practice through a meaningful on-the-job experience. Includes student, employer and coordinator evaluations, on-site work visits, and written assignments. Completers should obtain experience in establishing and accomplishing individualized work objectives that improve work performance. Internship is intended for senior DGM students who are working at that level. Credit is determined by the number of hours a student works during the semester and completion of individually set goals. May be repeated for a maximum of 16 credits towards graduation. May be graded credit/no-credit.

Course Learning Outcomes

1. Apply academic skills to a practical professional setting;
2. Reflect on how classroom experience applies to a professional setting;
3. Develop and maintain professional relationships with coworkers, supervisors, and clients;
4. Recognize and refine personal career interests relative to their internship experiences;
5. Further explore career opportunities in XXXX.

DMT 1005

Basic Shop and Safety Skills

Credit hours: 2

Covers the selection and usage of basic occupational hand tools. Presents fastener types and applications. Provides practice on proper drill and tap skills. Includes experience learning correct measuring skills. Addresses manufacturers electronic service literature and search engines. Classifies and employs shop measuring tools with their specific functions. Covers recognition of fundamental heavy truck/equipment engine, power-train and chassis components. Emphasizes shop safety guidelines and proper handling of hazardous materials. Requires safety certification.

Course Learning Outcomes

1. Employ proper shop safety practices.
2. Identify fastener types and applications including bolt grade, size, and TPI.
3. Sharpen a drill bit.
4. Drill, extract and tap damaged fastener(s).
5. Explain the basic functions of major vehicle components.
6. Determine the correct hand tool for simple servicing and maintenance.
7. Explain HAZMAT and MSDS information and the appropriate responses in outlined situations.
8. Examine engine components.
9. Locate vehicle service information using manufacturers' and third party electronic search engines/data bases.

DMT 1110

Diesel Engine Overhaul

Credit hours: 4

Introduces diesel engine operating principles, factors affecting performance, design variations, and identification of components. Focuses on disassembly and reassembly of diesel engines following industry standard overhaul procedures. Includes the identification, inspection, and measuring of parts to determine condition for reuse. Uses failed components to assist in teaching troubleshooting skills. Provides theory of engine tune-up processes on various engines used by industry. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Define safe working practices required in a heavy duty engine environment.
2. Identify standard and metric fasteners & fittings used on a diesel engine.
3. Identify the basic parts and systems found on a diesel engine.
4. Explain the written service procedures, and specialized service tools used to disassemble and reassemble a diesel engine.
5. Describe the systematic approaches to troubleshooting engine component failures.
6. Accurately measure engine components using both standard and metric micrometers and calipers.
7. Determine re-usability of worn engine components from measurements taken

DMT 111L

Diesel Engine Overhaul Lab

Credit hours: 2

Provides hands on experience in diesel engine operating principles, factors affecting performance, design variations, and identification of components. Includes disassembly and reassembly of diesel engines following industry standard overhaul procedures. Focuses the identification, inspection, and measuring of parts to determine condition for reuse. Utilizes failed components to assist in teaching troubleshooting skills. Tool room fee of \$19 for equipment applies. Course Lab fee of \$22 for materials applies.

Course Learning Outcomes

1. Identify the basic parts and systems found on a diesel engine.
2. Identify standard and metric fasteners and fittings used on a diesel engine.
3. Safely and properly remove broken fasteners and restore threads to industry standards.
4. Follow written service procedures and use basic hand tools and specialized service tools to disassemble and reassemble a diesel engine.
5. Follow written service procedures and use metric and standard micrometers, dial indicators etc. to measure components for reuse, correct fit or tolerances.
6. Identify which troubleshooting tree to follow for given engine component failures.

DMT 1120

Diesel Engine Operation Tune Up

Credit hours: 4

Covers diesel engine components, controls, operating systems, and performance factors. Addresses engine component replacement, tune-up adjustments, and the requirements for engine dynamo-meter testing. Emphasizes basic engine operating factors and troubleshooting complaints such as: low power, smoke conditions, and engine faults. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Follow written service procedures.
2. Identify basic hand tools and specialized service tools used to replace components and perform tune-ups on various diesel engines.
3. Explain timing and tune-up procedures.
4. Determine the correct systematic approach to troubleshooting engine problems.
5. Identify factors affecting engine performance and emissions.
6. Describe the relationship between engine horsepower and torque.

DMT 112L

Diesel Engine Operation Tune up Lab

Credit hours: 2

Examines diesel engine components, operating systems, and performance factors. Provides opportunity to perform hands on component replacement and tune-up adjustments. Provides the opportunity to run an engine under load in a dynamometer test cell. Troubleshoots common engine operating complaints, such as low power, smoke conditions, engine faults, etc. Tool room fee of \$19 for equipment applies. Course Lab fee of \$27 for materials applies.

Course Learning Outcomes

1. Use basic hand tools and specialized service tools to replace components.
2. Perform tune-up procedures on various engines, including Caterpillar, Cummins and Detroit engines.
3. Complete procedures on Caterpillar, Cummins and Detroit engines.
4. Describe factors that can affect engine performance, or emissions.
5. Explain the relationships between engine horsepower and torque.
6. Demonstrate correct procedural cooling systems service.
7. Demonstrate correct procedural air intake systems service.
8. Demonstrate correct procedural fuel supply systems service.
9. Demonstrate correct procedural engine lubrication systems service.

DMT 1510

Electrical Systems I

Credit hours: 4

Teaches the definition of electricity: voltage, current, and resistance as well as the electrical rules of Ohm's law, Watt's law, Kirchhoff's circuit laws. Provides examples of the application of the above laws in both series and parallel circuits. Includes instruction on the proper use of DVOM's and their function in diagnosing and troubleshooting electrical circuitry on heavy trucks and equipment. Teaches electrical components and symbols. Teaches correct repair procedures for wiring, fuses, and connectors. Addresses starting and charging system operation and testing. Emphasizes all safety procedures practices. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Demonstrate safe shop working habits and procedures.
2. Explain the differences between series and parallel circuitry including their governing rules.
3. Calculate voltage, amperage and voltage requirements of electrical circuits using ohm's law.
4. Explain basic electrical components and their operation.
5. Explain the different processes used in heavy equipment to generate and store electrical power.
6. Explain the basic components in a charging system and their operation.
7. Explain the basic components in a starting system and their operation.

DMT 151L

Electrical Systems I Lab

Credit hours: 2

Provides hands-on experience using a DVOM on series and parallel circuits. Identifies electrical components and examines their functions. Describes testing batteries, starting systems, and charging systems. Identifies the correct repairs on these systems and when applicable. Provides practice in electrical safety and preventative maintenance. Covers basic electrical repair techniques. Tool room fee of \$19 for equipment applies. Course Lab fee of \$30 for materials applies.

Course Learning Outcomes

1. Determine battery condition using the appropriate test(s) open circuit voltage tests, specific gravity, load testing and parasitic drain from a vehicle.
2. Service batteries.
3. Service an alternator and a heavy duty starter.
4. Troubleshoot a vehicle charging system including testing alternator output.
5. Perform voltage drop tests on a vehicles electrical system.
6. Demonstrate the proper procedure to make a good solder connection.
7. Diagnose components such as solenoids, switches, relays, rheostats, lights, gauges, sending units, and glow plugs.
8. Build simple series, parallel, and series parallel circuits using training boards.
9. Troubleshoot a starting system on a vehicle.

DMT 1520

Electrical Systems II

Credit hours: 2

Covers heavy and medium duty vehicle electrical systems including lighting, climate control, computer controls and accessories. Emphasizes DOT lighting regulations for vehicles and trailers. Introduces fundamentals of electrical circuitry and schematics. Examines the computer controls on modern vehicle electrical systems. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Explain DOT rules and regulation, operation, and troubleshooting procedures for tractor and trailer lighting systems.
2. Identify the major electrical systems on a heavy/medium duty vehicle.
3. Explain the operation of the major electrical systems on a heavy/medium duty vehicle.
4. Interpret the electrical circuitry in a schematic on heavy/medium vehicles.
5. Troubleshoot the electrical circuitry on heavy/medium vehicles.
6. Explain the purpose and function of the CAN bus array used on modern vehicle electrical systems.

DMT 152L

Electrical Systems Lab II

Credit hours: 1

Focuses on lab work for the troubleshooting and repair of heavy/medium duty electrical systems and electronic engine management. Includes vehicle and trailer lighting, monitoring, and control systems. Emphasizes DOT safety regulations requirements. Tool room fee of \$19 for equipment applies. Course Lab fee of \$25 for materials applies.

Course Learning Outcomes

1. Schematically draw heavy duty electrical systems.
2. Troubleshoot heavy duty electrical systems.
3. Identify all components and circuits relevant to a particular computerized system.
4. Repair heavy duty lighting, monitoring, and control circuitry in accordance to DOT standards.
5. Troubleshoot vehicle electrical systems through computer based diagnostic tools.

DMT 2230

Heating Ventilation Air Conditioning and Refrigeration Theory

Credit hours: 2

Teaches the principles of heat transfer using refrigerant as the medium. Emphasizes the identification and operation of individual system components. Discusses the different types of refrigerants used in the mobile industry as well as recovery, recycling, storage, handling, and disposal. Also covers the theory and operation of auxiliary power units used on highway trucks. Software fee of \$10 applies. Course fee of \$10 for materials applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Explain the fundamentals of heat transfer including the terms: latent heat, sensible heat, boiling, and evaporation and condensation.
2. Describe the operation of a TXV and a FOT AC system and its components.
3. Explain proper handling refrigerant and the laws regulating the recovery, recycling, storage and disposal of refrigerant.
4. Describe the operation of the APU unit including its electrical and HVAC components.
5. Explain section 609 of the Clean Air Act relative to recovery and recycling of refrigerants.

DMT 223L

Heating Ventilation Air Conditioning and Refrigeration Lab

Credit hours: 1

Teaches correct use of modern HVACR testing and repair equipment. Provides hands-on opportunity to troubleshoot and service modern HVACR systems. Examines and practices EPA approved handling of current refrigerants used in current vehicles and equipment. Provides hands-on opportunity to locate, identify, test, service, and troubleshoot different types of mobile AC systems using EPA approved equipment & procedures. Also provides hands-on experience with auxiliary power units used on highway trucks. Tool room fee of \$19 for equipment applies. Course Lab fee of \$19 for materials applies.

Course Learning Outcomes

1. Evaluate the condition of a HVACR system
2. Identify all components in FOT and TXV systems
3. Troubleshoot failures in present HVACR systems for mobile applications
4. Use EPA approved HVACR test and recovery equipment for vehicles and APU units

DMT 2310

Fluid Power I Theory

Credit hours: 4

Outlines the fundamental principles of fluid power (hydraulics). Emphasizes the relationship between pressure, force, area, and resistance. Covers Bernoulli's principle in connection with hydraulic: flow, horsepower torque and the conservation of energy. Illustrates the application and operation of all of the essential components and valving found in in a hydraulic system. Identifies types of circuit designs and schematic symbols. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Identify the correct hydraulic fittings, hoses, seals, and related sealing components for the proper applications.
2. Identify leakage problems due to incorrect usage of hydraulic fittings, hoses, seals, and related sealing components for the proper applications.
3. Solve hydraulic math problems using pascals law, formulas for flow, horsepower, fluid velocity, and torque.
4. Identify the parts of a hydraulic cylinder and assess the conditions of a cylinder that leaks internally or externally.
5. Explain the operation of gear, vane, and piston type pumps and motors, as well as related cavitation and aeration problems associated with these components.
6. Describe the operation of reservoirs, coolers, filters, and accumulators used in a hydraulic system.
7. Describe the appropriate maintenance of reservoirs, coolers, filters, and accumulators used in a hydraulic system.
8. Explain the operation and function of, pressure, flow, and directional valves in a hydraulic circuit.
9. Identify hydraulic components by their associated ANSI schematic symbols.

DMT 231L

Fluid Power I Lab

Credit hours: 2

Provides practical lab experience for the identification, operation, and repair of basic hydraulic system components and circuits. Utilizes various lab equipment and machinery to highlight basic system designs and use of schematics. Emphasizes the safe and proper usage of hydraulic diagnostic equipment or tools necessary for component and system testing. Tool room fee of \$19 for equipment applies. Course Lab fee of \$17 for materials applies.

Course Learning Outcomes

1. Practice all necessary and required safety procedures as it applies to the diagnosis and repairs of hydraulic related machinery
2. Demonstrate proper selection and usage of hydraulic connectors, conduits, and routing requirements
3. Identify accurately hydraulic ANSI symbols on any schematic drawing
4. Trace fluid flow on any machine as well as on the corresponding hydraulic schematic
5. Describe the operation of pressure, flow, and directional control valving
6. Bench test any gear, vane or piston pump to derive the pumps efficiency
7. Build hydraulic circuits and linear actuators
8. Test the operation of the power steering system on a medium/heavy truck to determine proper and safe parameters
9. Describe the proper maintenance procedures for a hydraulic systems filters, reservoirs, accumulators and other auxiliary valving

DMT 2320

Fluid Power II Theory

Credit hours: 4

Covers the design and operation of variable displacement pumps and motors, emphasizing those that are load sensing and pressure compensating. Focuses on the electronic controls of fluid power systems including open and closed loop circuits. Analyzes corresponding electronic controls on hydraulic schematics. Presents the theory and operation of hydrostatic and automatic transmissions used with heavy equipment and medium/heavy duty trucks. Emphasizes component operation, maintenance, repair, testing, and troubleshooting. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Describe the operation of a variable displacement pump or motor and their applications
2. Describe how load sensing and pressure compensation function in a hydraulic circuit
3. Explain the operation of electronically controlled hydraulic systems, including electronic proportional valving
4. Describe proper troubleshooting steps to diagnose both conventional and electronically controlled hydraulic systems
5. Explain the theory of operation for a hydrostatic transmission system
6. Describe the operation and purpose of a torque converter
7. Explain the role of hydraulics in an automatic transmission
8. List the electrical inputs and outputs associated with the electronic controls for both a hydrostatic and an automatic transmission
9. Explain maintenance procedures and inspections for hydrostatic and automatic transmissions

DMT 232L

Fluid Power II Lab

Credit hours: 2

Focuses on the use of hydraulic test equipment to diagnose and troubleshoot systems using electronic, proportional or load sensing components. Covers the testing and correct adjustment of load sensing/pressure compensated pumps. Provides for the disassembly, inspection, reassembly and testing of hydrostatic transmissions. Provides experience to build and troubleshoot electronically controlled hydraulic circuits, troubleshoot electronically controlled hydrostatic transmissions as well as Allison transmissions. Emphasizes the use of diagnostic tools and service manuals. Tool room fee of \$19 for equipment applies.

Course Learning Outcomes

1. Demonstrate proper safety and maintenance procedures proprietary to hydraulics and hydraulic systems
2. Flow test, pressure test, and/or micro-leak test any given hydraulic circuit or system component
3. Bench test any gear, vane or piston motor to determine for proper operation and efficiency
4. Interpret hydraulic schematics that include electric and electronically controlled valving, actuators or other components
5. Explain the operation of a hydrostatic transmission and its sub components
6. Set to neutral the swash plate of the pump on a hydrostatic transmission
7. Explain the operation of all components on a electronically governed Allison transmission
8. Troubleshoot a hydrostatic and an Allison transmission using diagnostic codes and vehicle interface tools

DMT 2410

Chassis Theory

Credit hours: 4

Provides theory on maintenance and repair of heavy duty chassis systems. Covers air brake systems, ABS systems, suspension systems, steering geometry, front end and tandem alignment, and frame maintenance. Emphasizes Department of Transportation highway safety requirements, and preventative maintenance. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Draw a dual circuit air system for a straight truck and tractor/trailer.
2. Explain the troubleshooting process for typical air brake system failures.
3. Explain ABS principles of operation & troubleshooting.
4. Explain principles of operation & maintenance of S cam, wedge and disc foundation brakes.
5. Demonstrate in a written test, an understanding of principles of front end and tandem maintenance and alignment.
6. Demonstrate in a written test, an understanding of steering and load carrying suspension operation and maintenance.
7. Demonstrate in a written test, an understanding of frame maintenance & repair.
8. Define Department of Transportation safety requirements for Heavy and Medium duty transportation vehicles.

DMT 241L

Chassis Lab

Credit hours: 2

Covers troubleshooting and repair skills for heavy and medium duty trucks for air brake systems and ABS brake systems. Discusses alignment fundamentals. Uses hands on exercises to develop these skills. Focuses on proper maintenance and adjustment to foundation brakes and wheel ends. Requires performance tasks on various suspension designs and frame maintenance. Tool room fee of \$19 for equipment applies. Course Lab fee of \$22 for materials applies.

Course Learning Outcomes

1. Adjust foundation brakes of major manufacturers
2. Troubleshoot and repair leakage in an air brake system
3. Follow FMC procedures and properly adjust wheel bearings
4. Align heavy and/or medium duty truck steering systems
5. Identify all major air brake and ABS system components
6. Describe the operation of all major air brake and ABS system components
7. Determine safety compliance of heavy and medium duty trucks using DOT safety regulation guidelines.

DMT 2420

Power Train Theory

Credit hours: 4

Provides theory in maintenance and repair of heavy duty power trains systems. Teaches clutches, single and multiple counter shaft transmission, computer controlled transmissions, drive line geometry, differentials and Department of Transportation safety requirements. Emphasizes troubleshooting, highway safety, and preventative maintenance. Software fee of \$10 applies. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Explain operation and maintenance of typical truck and equipment clutches.
2. Explain operation and maintenance of single and twin countershaft transmissions.
3. Demonstrate troubleshooting and repair of transmission air shift controls.
4. Calculate transmission ratios and vehicle performance factors.
5. Explain theory of drive line geometry, drive line maintenance and repair.
6. Demonstrate failure analysis for clutches, transmissions and differentials.
7. Demonstrate differential and power divider operation, maintenance and troubleshooting.
8. Demonstrate preventative maintenance programs and record keeping.
9. Demonstrate operation and troubleshooting of computer controlled manual transmissions.

DMT 242L

Power Train Lab

Credit hours: 2

Provides hands-on experience in maintenance and repair of heavy duty power train systems. Applies tasks for clutches, single and multiple counter shaft transmission, computer controlled transmissions, drive line geometry, differentials and DOT safety requirements. Emphasizes troubleshooting, highway safety, and preventative maintenance. Tool room fee of \$19 for equipment applies. Course Lab fee of \$22 for materials applies.

Course Learning Outcomes

1. Install, adjust and troubleshoot heavy duty clutches.
2. Disassemble and reassemble heavy duty manual transmissions.
3. Troubleshoot and repair typical transmission mechanical and air control failures.
4. Calculate transmission ratios and vehicle performance factors on actual components and vehicles.
5. Adjust driveline geometry on any vehicle.
6. Perform accurate failure analysis on clutches, drivelines, transmissions and differentials.
7. Disassemble and reassemble heavy duty power dividers and differentials.
8. Perform preventative maintenance on any vehicle.

DMT 2530

Electronic Engine Management

Credit hours: 2

Covers electronic fuel systems: parts, component ID, usage and operation. Includes instruction for electronic governors, set up, operation and diagnosis. Analyses advanced electronic fuel injectors and injection systems. Includes examination of sensor types, function and testing. Teaches the operation and component identification of current emission equipment as well as the present EPA emission standards. Lab access fee of \$15 for computers applies.

Course Learning Outcomes

1. Explain the theory of operation for electronically controlled fuel injectors, including those used in Detroit Diesel, Cummins, and CAT fuel systems.
2. Explain the operation of current electronically controlled fuel systems for CAT, Cummins and Detroit Diesel engines.
3. Describe all of the engine sensors required for proper electronic fuel management, including their theory of operation.
4. Explain how electronically controlled governors function and describe proper methods of calibrations for correct emission standards.
5. Explain the operation of all EPA emission components required on today's heavy/medium duty vehicles and equipment.

DMT 253L

Electronic Engine Management Lab

Credit hours: 1

Covers the identification, location and function of all electronically controlled fuel system components, including sensors, governors, injectors, pumps, valving, and conductors. Explains the usage of computer based diagnostic equipment for troubleshooting and electronic engine management. Covers the identification, location and function of all emission system related components. Focusses on the proper maintenance and service of these systems.

Course Learning Outcomes

1. Locate and test engine management sensor using a DMM.
2. Manually note fuel pressures of various electronically controlled engines.
3. Connect an electronic and/or PC based diagnostic service tool to the ECM to retrieve fault codes, to monitor sensor readings and to monitor fuel system pressures.
4. Explain Tier 4 EPA emission standards and their appropriate application to heavy/medium duty vehicle and equipment.
5. Perform status checks on the DPF, SCR, and catalytic converter units as well as the EGR valve using an electronic and/or PC based diagnostic service tool.
6. Follow the manufacturers guidelines to troubleshoot a given diagnostic code from the engine ECM.

DWDD 1400

Digital Design Essentials

Credit hours: 3

Teaches fundamentals of digital layout for web development and how to properly create engaging interfaces for digital media. Addresses technical challenges for digital mediums to deliver effective digital experiences. Introduces basic content creation and sprint thinking independent of software platforms. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Explain the basic elements and principles of digital product development.
2. Use digital type, imagery, and content to create digital products.
3. Communicate basic digital messages through the use of ideation and iteration.
4. Utilize content, images, and color libraries to create basic digital projects.

DWDD 1410

Interaction Design Essentials

Credit hours: 3

Implements creative development layouts into interactive designs. Focuses on integration with industry development tools. Introduces basic overview of product development, pattern libraries, layout and development standards using interaction and industry practices for digital experiences. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Implement advanced compositional principles of digital layout and development.
2. Use patterns, alignment, repetition, and color to lay out digital projects.
3. Refine the use of digital development concepts to deliver nuanced messages inside of digital projects.
4. Utilize images, type, and other generated content to create a complex digital project from start to finish using industry accepted tools.

DWDD 1420

Communicating Digital Design WE

Credit hours: 3

Focuses on the development of highly creative and visual design documentation; how to communicate both written and visual information in meaningful ways in a highly technical field. Covers why communicating a particular design challenge is just as important as the design itself, and why writing, layout, and visual clarity is critical to mastering UX and Digital Product Design. Sets the foundation for all documentation assignments in the Web Design and Development degree. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Develop information to communicate in a clear and concise manner.
2. Produce highly visual design documentation based upon product or service specifications.
3. Communicate in written and visual form to lead teams in the development of a product or service.
4. Utilize images, diagrams, charts, and screen captures to communicate complex and highly detailed information.

DWDD 1430

Principles of Digital Design

Credit hours: 3

Teaches principles of visual design, how to properly create engaging interfaces for digital media, and practice good integration with industry development tools. Addresses the complexity of designing rich media experiences around digital devices ranging from computer screens to personal information devices. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Apply the elements and principles of digital product development to projects.
2. Use digital type, imagery, and content to create digital products.
3. Communicate complex digital messages through the use of ideation and iteration.
4. Use frameworks and design systems to create digital experiences.

DWDD 1600

Web Essentials

Credit hours: 3

Provides the fundamentals necessary to plan, design, develop, deploy, and critique a web site which includes images, sound, video, forms, and separates content from presentation. Focuses on the fundamentals of web programming languages. Examines various ways to build an accessible web page. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify a variety of roles within a web development team.
2. Prepare a site plan to include goals, audience, wireframes, color scheme, and site structure.
3. Practice uploading web pages using ftp protocol.
4. Hand-code and validate HTML5 and CSS pages.
5. Demonstrate the proper use of css selectors for design and layout.
6. Embed images, videos, and audio into a web page properly.
7. Design a web form to collect user information.
8. Validate web form entries using input attributes to insure values have been inserted.

DWDD 1720

Scripting for Internet Technologies

Credit hours: 3

Introduces the fundamentals of computer programming and problem solving using the current industry standard scripting languages. Emphasizes the fundamentals of structured and object-oriented programming, syntax, semantics, control structures, arrays, file I/O, testing/debugging, implementation, and the construction of graphical user interfaces. Applies these concepts to manipulate digital images, sound, movies, text, and web pages that are heavily used as digital media. Laptop Required. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify the syntax and semantics of procedural programming: assignment, sequential operations, iteration, conditionals, functions and arrays.
2. Use object-oriented design to build a simple program.
3. Implement proper design, debugging and testing for simple programs.
4. Explain data structures, algorithms, and program efficiency.
5. Explain how digital media is represented and manipulated.

DWDD 2410

Interaction Design

Credit hours: 3

Focuses on strategies and principles used in digital media development to enhance the user experience. Teaches how to understand stakeholder goals, identify and specify user needs and requirements through user research and design documentation, engage in interactions with target audiences through interviews, observation, and discussion, as well as create and test prototypes. Deals with solving real-world problems faced by consumers using products in the market. Software fee of \$15 applies. Lab access fee of \$45 for computers applies. Course Lab fee of \$30 applies.

Course Learning Outcomes

1. Utilize important interaction design terms, practices, and principles.
2. Justify the need for interaction design in the development of digital products.
3. Describe current issues and trends in interaction design.
4. Conduct a simple usability study.
5. Evaluate the quality of other's designs, prototypes, and documents.
6. Conduct a needs assessment and prepare a proposal to define design requirements.
7. Prepare a design document to propose a solution for an interaction need.

DWDD 241R

Interaction Design Practicum

Credit hours: 2

Instructs in the design and production of a fully-featured digital media project, including concept, design, content creation and acquisition, testing, revision, mastering, and publication with hands-on guidance. May be repeated for a maximum of 4 credits toward graduation. Lab access fee of \$45 applies. Course Lab fee of \$30 for equipment applies. Software fee of \$15 applies.

Course Learning Outcomes

1. Participate in a flexible team environment with direction from mentors and team leads.
2. Execute effectively on stakeholder specifications for design projects.
3. Communicate effectively with team members and project stakeholders.
4. Utilize images, video, and generated content to create a complex digital project from start to finish.

DWDD 2420

Media Formats and Outputs

Credit hours: 3

Focuses on the digital workflow and management of still images, video, audio and digital effects media assets. Addresses use of codecs and format types for use in mobile media use scenarios. Introduces the proper handling of assets in various development platforms and user experience design best practices when using assets on touch-based devices. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Execute the duties of the digital media technologist.
2. Utilize compressed media assets in a digital media-centric production process.
3. Catalog digital media assets within industry-level systems to effectively control workflow.
4. Select compression methods for Internet and mobile device use and distribution based upon sound reason and goals.
5. Apply final media assets within development tools to test effectiveness of output.

DWDD 2510

Interactive Media Production

Credit hours: 3

Focuses on the use of digital visual effects in mobile publishing environments. Includes multi-layer effects in known mobile layouts, creation of digital mattes and parallax for unique visual user engagement, as well as integration techniques according to development platforms. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the historical setting for rich Digital Effects in multimedia, technical aspects of the various technologies involved in development, standards and media limitations, and criteria for delivery in various publishing platforms.
2. Assess the utility of the various tools used in the production of Digital Effects for digital publication development.
3. Use storyboarding, template design, and implementation strategies to effectively create unified visual experiences within a Rapid Prototype development process.
4. Implement well thought out overlays or layered visuals, advertisements, and interactive media elements to engage an audience.
5. Implement HTML, CSS, and Javascript into a digital production project.
6. Produce highly engaging Digital Effects for use in Rich Media Applications at the intermediate level.
7. Describe the characteristics of well designed digital effects and the impact of using such in digital publications.

DWDD 2520

Digital Product Experiences I

Credit hours: 3

Focuses on the development of engaging mobile apps for distribution on a myriad of devices. Teaches the fundamental building blocks of publishing digital media experiences of all types and may include interactive guide, catalogs, brochures, training manuals, kiosks, and exhibits. Covers the development of apps for touchscreen 'native' content and feature real-time updates. Laptop & Device Required. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Establish an historical setting for Rich Media Apps, technical aspects of the various technologies involved in development, standards and media limitations, and criteria for delivery.
2. Recognize the various tools used in the production of Rich Media App development.
3. Use storyboarding, template design, and implementation strategies to effectively create unified visual experiences within a Rapid Prototype development process.
4. Employ sound navigation and gesture-based logic when developing Rich Media Apps.
5. Implement well thought out overlay elements to engage an audience.
6. Discover programming capabilities and appropriate use as it pertains to implementing HTML, CSS, and Javascript into properly conceived projects.
7. Produce an interactive Rich Media App at the intermediate level.
8. Prepare a Rich Media-based App for distribution.

DWDD 2590

Portfolio Workshop

Credit hours: 3

Teaches students how to prepare a portfolio that includes case studies, resume, cover letter, and links to their work. Provides experience doing presentations, client pitches, and mock interviews.

Course Learning Outcomes

1. Create case studies to accompany featured projects.
2. Give presentations and client pitches.
3. Create a personal portfolio.
4. Create accounts on appropriate professional associations.

DWDD 2610

Principles of Web Languages

Credit hours: 3

Focuses on solving various Web design and coding problems using current Internet technologies. Emphasizes solving unique coding problems using HTML, CSS, and jQuery that arise when implementing a Web design. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Demonstrate the appropriate way to implement features of a CSS Preprocessor.
2. Build a web form using industry best practices for design and validation.
3. Implement a variety of ways to build and deploy responsive images.
4. Build web pages using Flexbox, Grids and other modern layout technologies.
5. Demonstrate multiple ways to deploy navigation for a variety of screen widths.

DWDD 2620

Web Tools and Frameworks I

Credit hours: 3

Introduces the necessary frameworks and tools needed to build structured, maintainable, and scalable web pages common in the industry. Incorporates project-based learning to help students gain solid web development experience through hands-on programming and problem solving a real world project. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Use the drawing tools, masks, and the timeline to create animations.
2. Code web applications which include text, images, audio, and video.
3. Use latest web technologies and programming languages to create mobile web interfaces.
4. Apply appropriate mobile user interface design techniques and standards to create responsive and touch friendly user interfaces.
5. Use the appropriate development technologies, tools, and frameworks for mobile web development.

DWDD 2720

Web Languages I

Credit hours: 3

Examines client-side languages that allow viewers to interact with the content of Web pages. Extensively uses methods for creating highly interactive web sites without the use of authoring tools. Teaches how to make the static content within a typical webpage more dynamic, interesting, and most importantly, useful. Culminates with a final project to design and create materials for use in a well-designed interactive web site. Software fee of \$15 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Demonstrate the proper use of a client-side language to build a project that includes loops, variables, and switch statements in a real world project.
2. Demonstrate the appropriate use literal objects with properties and functions.
3. Demonstrate how to access and display JSON data using AJAX in a real world project.
4. Demonstrate the appropriate use of append, get and set in a real world project.

DWDD 301R

Digital Lecture Series

Credit hours: 1

Uses guest speakers who lecture on current topics in digital media. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Explain various digital media disciplines.
2. Collaborate with industry professionals.
3. Analyze contemporary career opportunities within chosen fields.
4. Set personal career goals by interacting with industry professionals.

DWDD 3410

Interaction Design Colloquium

Credit hours: 3

Provides advanced students with unique and current industry perspectives on interaction design through seminar discussions, workshops, and industry on-site experiences. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Research good and bad examples of industry products that implement user interactions.
2. Create projects that demonstrate proper use of Interaction Design principles to solve a problem.
3. Identify design problems to be solved, propose solutions, and implement outcomes.
4. Present newly acquired information by presenting findings.

DWDD 3430

Adaptive Media Experiences

Credit hours: 3

Investigates methods to capture, create, use, and adapt digital content in appropriate and meaningful ways. Examines distribution channels for media such as desktop, mobile, smart appliances, and automobile markets. Laptop Required. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the historical setting for digital devices, their technical aspects and platform technologies, and criteria for delivery and integration of downloadable Audiobook and Podcast subscription-based Rich Media.
2. Compare authoring packages for developing Rich Media experiences, or the need to hand-code to expand development options.
3. Implement proper design and development principles and guidelines within a Rapid Prototype development process.
4. Apply information design paradigms when working with metadata to create favorable conditions that lead to meaningful adaptive media experiences worthy of repeating.
5. Apply interactive design paradigms when working with various Player Apps to recognize their ability to either enhance or detract from experiences.
6. Employ various media types to effectively deliver media elements in a mobile environment and platform specifications.
7. Use Internet distribution platforms to markup and script RSS feeds to meet industry standards.
8. Use remote servers to transfer media to mobile apps.
9. Research emerging technologies within the Rich Media and digital device market to predict future use.

DWDD 3520

Digital Product Experiences II

Credit hours: 3

Focuses on the development of engaging mobile apps for distribution on a myriad of devices. Covers advanced development of publishing digital media experiences of all types and includes techniques for coding immersive experiences beyond standard practices. Prepares students to develop for touchscreen 'native' content and feature real-time updates. Laptop and Device Required. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe ways an interactive app can grab a participants attention and enhance Rich Media experiences.
2. Determine criteria and strategies for creating highly interactive Rich Media Apps based upon intense study of currently available products.
3. Identify the unique characteristics of gesture-based navigation and interaction affordances used in Rich Media Apps.
4. Implement advanced overlay elements within a Rich Media-based App.
5. Implement advanced HTML, CSS, and Javascript functionality into a design to increase interaction and presentation of content within a Rich Media App.
6. Implement a testing cycle within the Rapid Prototyping Model to delivery an error free product.
7. Employ Rich App distribution methodology using a specific workflow associated with chosen tool.

DWDD 3620

Web Tools and Frameworks II

Credit hours: 3

Investigates advanced techniques for delivering exceptional Internet applications using existing frameworks. Teaches advanced scripting fundamentals, how to deliver content through server-side database connectivity, and engaging the audience through highly interactive experiences.

Course Learning Outcomes

1. Compare the web tools and frameworks available to developers.
2. Install current web tools and frameworks to their computer.
3. Develop a web application using current web tools and frameworks.
4. Deploy a web application to a hosted server.

DWDD 3720

Web Languages II

Credit hours: 3

Covers server-side web development and database interaction. Offers the skills and knowledge necessary to produce web sites in a professional environment. Covers current technology and design standards for websites that are database driven using current languages and platforms. Demonstrates how database interaction can enhance a multimedia website. Includes lectures, demonstrations, and weekly projects.

Course Learning Outcomes

1. Solve real-world web problems using Server Side Languages.
2. Write code that connects web content to a database for both sending and retrieving information.
3. Build an advanced web application that is secure and contains loops, functions, variables, and arrays.
4. Write object oriented code for a variety of web applications.

DWDD 3770

Rich Internet Application Development I

Credit hours: 3

Describes various Rich Internet Application development technologies. Investigates RIA development and delivery technologies such as JavaScript frameworks, API usage, and developer productivity tools with a special emphasis on the integration of Digital Media into Internet applications. Teaches the design and development workflow for interactive, media-rich applications delivered via networked browser, computer desktops, and mobile devices. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Design the user interface and interactions for a basic Rich Internet Application.
2. Integrate a variety of digital media into a Rich Internet Application.
3. Utilize a variety of effects, transitions, and styles in an RIA.
4. Implement data binding and remote communication within a web project.
5. Deploy rich applications to the browser, desktop, and mobile devices.

DWDD 3780

Rich Internet Application Development II

Credit hours: 3

Describes various Rich Internet Application development technologies with a focus on utilizing server-side resources. Investigates a wide variety of RIA technologies including cloud services, API development, and dynamic data stores. Teaches how to design and develop RIAs using a variety of tools, code frameworks, and delivery clients. Requires creation of interactive and useful media-rich web experiences for end users. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe how Rich Internet Applications are being used to improve access to online services.
2. Identify major RIA platforms, virtual machines, and players.
3. Create an RIA user interface using flexible layout components, patterns, and constraints.
4. Code event handlers for a variety of UI, system, and network events.
5. Create custom components using declarative and scripting languages.
6. Develop multiple methods for application navigation.
7. Create data models for both declarative and scripting data types.
8. Create server-side code for a Rich Internet Application client.
9. Access web services, remote objects, and databases from the RIA client.

DWDD 4240

Experience Design Process

Credit hours: 3

Focuses on advanced strategies and principles used in digital product development to enhance the user experience. Focuses on strategy and research methodologies for production-level digital product design through advanced user research, and engages in product interactions with target audiences. Software fee of \$15 applies. Course Lab fee of \$30 applies for computers.

Course Learning Outcomes

1. Explain advanced interaction design terms, practices, and principles.
2. Evaluate the quality of others' designs, prototypes, and documents.
3. Apply advanced user experience design methodologies to digital product design projects.
4. Evaluate digital design projects using web heretics to propose design solutions.
5. Use advanced test methods on digital product solutions to validate product design decisions.
6. Complete an advanced usability study on a digital product or prototype.

DWDD 4430

Adaptive Media II

Credit hours: 3

Focuses on the advanced application of media technologies that possess the ability to create adaptable content media experiences. Focuses primarily on the ability to curate and realign rich content assets through Internet-based Apps. Teaches principles of distribution that can be applied to desktop, mobile, and advancing technologies in the home or automobile markets with a specific focus on dynamic retrieval and adaptation of content. Laptop Initiative Requirement. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Review the historical setting for digital subscription and curated based Rich Media and expanding market opportunities.
2. Implement proper design and development principles and guidelines within a Rapid Prototype development process.
3. Apply information design paradigms when working with metadata to create favorable conditions that lead to meaningful adaptive media experiences worthy of repeating.
4. Apply interactive design paradigms when working with various Reader Apps and recognize their ability to either enhance or detract from experiences.
5. Employ various media types (MP3, M4a, .M4v formats) to effectively deliver media elements in a mobile environment and platform specifications.
6. Discover effective markup and scripting capabilities when using Internet distribution platforms, their appropriate use as it pertains to implementing RSS feeds, and applying corresponding standards.
7. Establish proper connectivity between mobile media Apps and remote servers to transfer media.
8. Examine emerging technologies and directions within the Rich Media market and digital devices and its potential impact relating to future uses.

DWDD 4520

Digital Product Design Studio

Credit hours: 3

Covers advanced development techniques of Product Design fused with User Experience Design / User Interface Design. Highlights problem solving and effective communication. Focuses heavily on how digital designers can influence the user experience, and participatory outcomes of such experiences, through well-planned interactions, digital layout, and adaptation to the physical hardware. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Analyze UI specifications for a variety of devices and plan design decisions accordingly.
2. Create UI mockups, wireframes, comps, and working prototypes for various device platforms.
3. Design advanced UI development practices according to platform development procedures and technologies.
4. Test UI designs on target platforms.
5. Establish design standards for creating cohesive and meaningful media experiences.

DWDD 4630

Web Content Management

Credit hours: 3

Instructs students on how to create a site that is content rich, dynamic, and meaningful to site visitors. Teaches participants how to effectively plan, develop, and arrange content through the use of information design principles, content management systems, and analysis tools. Culminates with students building a live site for a real-world client where students must solve real design, development, and delivery issues. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Administer web hosting from a commercial provider.
2. Complete all the steps to install a Content Management System.
3. Create users with a variety of permission settings.
4. Add a variety of pages with various content types.
5. Configure the CMS menus to display content in a variety of formats (blogs, lists, links).
6. Extend the functionality of a CMS by adding and configuring various plugins.
7. Build a custom theme for a CMS.
8. Build several different websites using a CMS.

DWDD 490R

Senior Capstone

Credit hours: 3

Provides a capstone experience working in digital media. Develops individual real-world projects in consultation with a faculty advisor. May be repeated for a maximum of 6 credits toward graduation. Course Lab fee of \$30 applies. Software fee of \$15 applies.

Course Learning Outcomes

1. Initiate a digital media project by identifying a client with a need for a digital media solution.
2. Define the project need, goals, and requirements in a project proposal.
3. Design a solution to address the client's needs and communicate it in a design document.
4. Create a project plan.
5. Produce or acquire project assets for a project.
6. Deliver the final tested product including final project documentation.
7. Function as a productive and contributing team member.
8. Report on lessons learned from the project.

ECE 1000

Introduction to Electrical and Computer Engineering

Credit hours: 3

Introduces engineering-problem-solving techniques, design processes, modeling and analysis of simple electrical and computer circuits using MATLAB and LabVIEW software packages. Emphasizes engineering design procedures by incorporating group projects and presentations. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Define working aspects of the Engineering Profession.
2. Explain the engineering design process.
3. Identify the steps that engineers follow when designing and presenting their products and services.
4. Explain basic electrical quantities including charge, current, voltage, energy, power, various sources of electricity, and resistance.
5. Apply circuit theory and techniques to resistive circuits.
6. Use MATLAB as a tool to solve engineering problems.
7. Use LabVIEW as a tool to solve engineering problems.

ECE 2250

Circuit Theory

Credit hours: 3

Develops linear circuit theory and its application in the analysis and design of RLC active circuits. Covers DC, AC, and transient analysis utilizing node and mesh analysis. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Explain basic electrical quantities including charge, current, voltage, energy and power
2. Explain basic electrical components including independent and dependent voltage and current sources, resistors, capacitors, and inductors
3. Explain op-amps
4. Apply basic circuit theory and analysis techniques
5. Analyze electrical circuits for time and frequency behavior

ECE 2255

Circuit Theory Lab

Credit hours: 1

Laboratory for ECE 2250 develops linear circuit theory and its application in the analysis and design of RLC active circuits. Covers DC, AC, and transient analysis utilizing node and mesh analysis. Introduces the use of CAD tools. Software fee of \$50 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Demonstrate the use of laboratory instruments including digital multimeter, function generator, power supply, and oscilloscope
2. Analyze the results of laboratory experiments
3. Follow procedures in the lab
4. Apply the lab safety procedures
5. Utilize modern CAD tools
6. Construct with electrical circuits in teams

ECE 2700

Digital Design I

Credit hours: 3

Studies the design and application of combinational and sequential logic circuits with discrete and programmable logic devices. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Solve problems using Boolean Algebra
2. Utilize techniques for minimizing logic functions
3. Design combinational circuits such as decoders, multiplexers and adders
4. Explain hazards in combinational circuits
5. Define programmable logic devices (PLAs, CPLD, FPGA)
- 6.

Design sequential circuits such as counters and registers

ECE 2705

Digital Design I Lab

Credit hours: 1

Designed to accompany ECE 2700. Covers design of digital systems with discrete and programmable logic devices. Includes the use of CAD tools for system design and verification. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Demonstrate an understanding of the procedures and equipment used in conducting laboratory experiments in Digital Design.
2. Demonstrate understanding of HDL and CAD tools.
3. Design Combinational Circuits.
4. Design Sequential Circuits.
5. Analyze and understand the results of the Digital Design laboratory experiments.

ECE 2750

Engineering Analysis

Credit hours: 3

Studies Linear systems, abstract vector spaces, matrices through eigenvalues and eigenvectors, solution of ordinary differential equations, Laplace transforms, first order systems, and complex numbers. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Solve First-Order Differential Equations
2. Explain Mathematical Modeling
3. Explain Linear Algebra Concepts
4. Explain Laplace Transform Methods
5. Explain Complex Numbers
6. Solve Higher-Order Linear Differential Equations
7. Solve Linear Systems of Differential Equations

ECE 3250

Energy Conversion

Credit hours: 3

Presents fundamental concepts of energy conversion including torque and power in singly/doubly excited electromagnetic systems, single and three-phase transformers, single and three-phase induction motors including speed control, three-phase synchronous generators and DC machines. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Explain three-phase systems and three-phase power measurements
2. Explain energy conversion principles of electromagnetic systems
3. Analyze single-and three phase power transformers
4. Analyze single-and three phase induction motors
5. Analyze the operation of three-phase synchronous generators
6. Analyze the operation and control of dc motors

ECE 3350

Control Systems

Credit hours: 3

Introduces the theory and practice of control systems engineering. Covers modeling in the frequency and time domains, analog and discrete transfer function models, reduction of multiple subsystems, system response specifications, control system characteristics, root locus analysis and design, frequency response analysis and design. Emphasizes computer-aided analysis. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Explain control system application, design process, and history
2. Model a system in the frequency domain
3. Model a system using state-space methods
4. Demonstrate reduction of multiple subsystems
5. Determine system parameters to yield stability
6. Design system parameters to meet steady-state error performance specifications
7. Use the root locus to design a parameter value to meet a transient response specification for systems of order 2 and higher
8. Design a system using frequency response and state-space

ECE 3450

Electromagnetics and Transmission Lines

Credit hours: 3

Introduces the fundamentals of electromagnetic field theory and application: vector analysis, electric and magnetic fields, potential theory, dielectric and magnetic material properties, conductance, capacitance, and inductance, Maxwell's equations and circuit concepts. Explains transmission lines as a bridge to understanding electromagnetic field theory. Covers basic principles of radiation and propagation in waveguides and antennas. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Define electric and magnetic fields
2. Calculate electric and magnetic fields from stationary and dynamic charge and current distributions
3. Solve simple electrostatic boundary problems
4. Describe simple models for electromagnetic interaction with media
5. Solve problems analytically and numerically
6. Analyze electromagnetic wave propagation in free-space
7. Analyze transmission lines
8. Collaborate in a team environment

ECE 3710

Applied Probability and Statistics for Engineers and Scientists

Credit hours: 3

Explores probability and statistical theory with an emphasis on engineering and computer science applications. Covers descriptive statistics, discrete and continuous random variables, probability distributions, hypothesis testing, expectation, estimation, ANOVA testing, and regression analysis. Includes computer analysis of data and simulation. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Apply the basic concepts of probability theory and statistics to engineering problems.
2. Demonstrate the skills needed for extracting information from data in real-world decision situations.
3. Apply methods of probability modeling and data analysis.
4. Demonstrate familiarity with current software used for statistical inference and data analysis.
5. Analyze an event with random outcomes and make informative decisions based on the event's statistical behavior.
6. Identify various probability distributions, calculate and /or estimate associated parameters.
7. Compare several different outcomes of a particular series of experiments and make informed judgment using hypothesis testing and/or ANOVA testing.

ECE 3730

Embedded Systems I

Credit hours: 3

Presents an introduction to the basic building-blocks and the underlying scientific principles of embedded systems. Covers both the hardware and software aspects of embedded processor architectures and assembly language programming. Develops the theory and technology necessary for the interconnection of devices and systems to microcontrollers by using hardware and software examples and students' projects. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Describe applications of embedded systems.
2. Program in assembly language.
3. Describe the functional hardware components of a microcontroller.
4. Interface a variety of external devices with microcontrollers.
5. Display debugging techniques.
6. Describe the basic architecture of a typical microcontroller.
7. Perform interrupt programming.

ECE 3740

Digital Design II

Credit hours: 3

Covers the design and verification of digital systems. Emphasizes hierarchal design principles and the use of programmable logic devices (PLDs). Utilizes modern CAD tools and design languages (VERILOG). Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Explain the architecture of various programmable logic devices
2. Design combinational logic circuits using programmable logic devices
3. Design sequential logic circuits using programmable logic devices
4. Design a modern digital system using a hardware description language such as VERILOG
5. Verify correct operation of digital systems using simulation and verification tools
6. Conduct professional design reviews
7. Prepare a technical presentation

ECE 3760

Electronic Systems

Credit hours: 3

Introduces semiconductor theory and the fundamentals of diode and transistor operation. Covers the use of discrete and integrated active devices in linear amplifier and switching applications. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Explain the operation of electronic devices and circuits
 2. Analyze simple electronic circuits
3. Use CAD package to analyze complicated electronic circuits
4. Design amplifiers and filters to meet gain, power, and frequency specifications
5. Select appropriate analog integrated circuits for specific applications
6. Explain the operation of transistor switches used in digital logic devices
7. Design basic logic gates using transistor switches
8. Explain the design process for digital integrated circuits
9. Use electronic test equipment

ECE 3765

Electronic Systems Lab

Credit hours: 1

Designed to accompany ECE 3760. Covers electronic analog circuit design, simulation, construction, debugging and measurement of circuit performance quantities using advanced instrumentation techniques. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Demonstrate an understanding of the procedures and equipment used in conducting laboratory experiments in Electronic Systems.
2. Analyze and understand the results of the Electronic Systems laboratory experiments.
3. Using the design tools.
4. Designing electronic circuits.
5. Explain the operation of electronic devices and circuits.

ECE 3770

Signals and Systems

Credit hours: 3

Examines the time and frequency domain analysis of continuous-time systems subjected to periodic and non-periodic input signals. Introduces signal and transform theory and the application of Laplace and Fourier transforms. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Explain system concepts such as linearity, stability, etc
2. Model systems using differential equations
3. Determine system response using convolution integral
4. Explain Fourier series and signal representation using Fourier series
5. Compute the Fourier transform of common signals
6. Convert differential equations to Laplace transform representations
7. Explain the properties of transforms and their use in solving systems problems
8. Explain transfer functions, including frequency response and pole/zero placement
9. Design analog filters

ECE 3780

Communication Systems and Circuits

Credit hours: 3

Introduces the fundamentals of electronic communication systems and circuits. Covers pulse code modulation, line coding, information rate, equalization, amplitude modulation, angle modulation, and noise in communication systems. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Compute the Fourier transform and the energy/power spectral density of communication signals
2. Evaluate the performance level (Signal-to-Noise Ratio) of digital data transmission (binary PCM) in the presence of white noise
3. Explain the types of modulation used in electronic communication systems
4. Define the electromagnetic spectrum and its use in radio frequency communication
5. Explain the basic principles of digital communication techniques
6. Describe the types and principles of antennas and wave propagation
7. Calculate the bandwidth and signal-to-noise ratio of a signal at the output of a linear time-invariant system given the signal and the power spectral density of the noise at the input of the system
8. Implement the mathematical techniques of generation, transmission, and reception of amplitude modulation (AM), frequency modulation (FM), and phase modulation (PM) signals
9. Utilize simulation software and hardware to design and test analog and digital communication systems

ECE 3785

Communication Systems and Circuits Lab

Credit hours: 1

Covers hands on experiments related to course work, in the area of communication systems and circuits. Includes digital and analog modulation for the baseband and bandpass communications. Provides appropriate wireless communication techniques for modern circuits and applications using mini projects. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Describe analog (AM and FM) and digital (Baseband and Bandpass) communication signals in time and spectral domain
2. Design contemporary analog and digital communications systems and circuits
3. Evaluate the noise performance of various analog and digital communication systems and circuits
4. Analyze the propagation model of a wireless communication link and link budget
5. Identify multiple access techniques for wireless communications
6. Implement analog and digital communication systems in teams

ECE 4700

Computer Architecture for Engineering Applications

Credit hours: 3

Uses register transfer languages and simulation tools to describe and simulate computer operation; central processing unit organization, microprogramming, input/output, pipelining, virtual memory concepts, VLIW, superscalar out of order, ILP, and memory system architectures. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Explain the organization of a computer system including the CPU datapath, CPU control, memory system, and I/O system.
2. Explain the impact of semiconductor technology on computer design and architecture.
3. Explain the basics and principles of instruction set design and its impact on hardware design.
4. Design datapath and control circuitry for a processor.
5. Explain register-transfer level (RTL) system concepts and description methods.
6. Implement a microprocessor on FPGA using and HDL Language.

ECE 4730

Embedded Systems II

Credit hours: 3

Presents the design of hardware and software required for embedded, real-time systems. Covers types of real-time systems, fuzzy logic, sensors, real-time operating systems, C programming skills, and wireless sensor networks. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Demonstrate embedded C language programming skills
2. Explain the functional hardware components of a microcontroller
3. Design fuzzy logic controllers
4. Design hardware and software of embedded systems
5. Design real-time operating systems
6. Analyze sensors
7. Recognize ethical and professional responsibilities in project and application design considering global and economic contexts

ECE 4750

Digital Signal Processing

Credit hours: 3

Introduces the theory of digital signal processing and its application to practical problems. Covers spectrum representation, Nyquist sampling, z-transform, discrete Fourier transform, discrete-time Fourier transform, FIR (Finite Impulse Response) and IIR (Infinite Impulse Response) digital filter design. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Demonstrate familiarity with the classification of signals
2. Demonstrate familiarity with analog-to-digital and digital-to-analog conversion
3. Analyze discrete-time linear time-invariant systems
4. Determine z-transforms to understand their application in the analysis of LTI systems
5. Demonstrate proficiency in frequency analysis of signals and systems
6. Determine discrete Fourier transforms
7. Use fast Fourier transform algorithms
8. Demonstrate the structures of FIR and IIR systems
9. Design digital filters for selected applications

ECE 4755

Digital Signal Processing Lab

Credit hours: 1

Performs software and hardware experiments illustrating the basic principles and techniques of digital signal processing. Teaches programming of real-time signal processing algorithms on a concrete DSP chip, and Accelerate the DSP code on the GPU. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Apply their knowledge of two key DSP concepts of sampling and quantization on various designs
2. Explain the issues involved in sampling, aliasing, and analog reconstruction of signals
3. Design specifications for anti-aliasing pre-filters and post-filters
4. Choose the best design of FIR, and IIR filters for certain application based on the causality, stability, z-transforms, transfer functions, frequency response, time constants, transient and steady-state response
5. Construct the designated filter using various DSP tools including FFTs
6. Implement the designed filter and DSP system in using a signal processor
7. Employ GPU processor to accelerate the DSP code
8. Compare the performance of GPGPU with a GPCPU for various signal processing algorithms

ECE 4760

VLSI Design

Credit hours: 3

Focuses on theories and techniques of VLSI design on CMOS technology. Studies the fundamental concepts and structures of designing digital VLSI systems, including CMOS devices and circuits, standard CMOS fabrication processes, CMOS design rules, static and dynamic logic structures, interconnect analysis, CMOS chip layout, simulation and testing, low power techniques, design tools and methodologies, VLSI architecture. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Use mathematical methods and circuits analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnect.
2. Create models of CMOS circuits that realize specified digital functions.
3. Perform datapath design and optimization using pipelining, parallelism, and retiming.
4. Design VLSI circuits using area, power, performance, and timing as design tradeoffs.
5. Design integrated circuits for testability and fault models.
6. Design VLSI interconnects using area, power, noise, resistance, capacitance, and timing as design tradeoffs.
7. Explain process technology steps required to build VLSI circuits and complex logic elements and structures.
8. Explain VLSI memory structures and tradeoffs between different memory types.

ECE 4765

VLSI Design Laboratory

Credit hours: 1

Covers the complete process of building a ready-to-fabricate CMOS integrated circuit using commercial design software. Includes the layout design of CMOS transistors, gate level design, design using VHDL, CHIP design and pin configuration, and simulation of the circuit for slack time and power consumption. Lab access fee of \$45 for computers applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Design complex digital circuits using design tools.
2. Simulate complex digital circuits using design tools.
3. Lay out complex digital circuits using design tools.
4. Optimize circuits with respect to area, performance, and/or power consumption.
5. Use CAD design tool.

ECE 4900

Electrical and Computer Engineering Capstone I WE

Credit hours: 3

Focuses on team-oriented design and technical writing by incorporating group projects, oral presentations and written reports within the Electrical and Computer Engineering Capstone I and Capstone II. Incorporates engineering standards and realistic constraints including economic, environmental, sustainability, manufacturability, ethical, social, political, health and safety. Emulates the problems encountered by engineers working in commercial, industrial, and governmental entities. Capstone I and Capstone II must be taken in consecutive semesters. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Plan an engineering project involving multiple tasks
2. Design electrical systems that meet defined constraints
3. Communicate technical information in writing
4. Identify business issues related to technology
5. Explain the impact of engineering on societal issues
6. Analyze the economics of designing and manufacturing the engineering artifact

ECE 4950

Electrical and Computer Engineering Capstone II WE

Credit hours: 3

Electrical and Computer Engineering Capstone I and Capstone II focus on team-oriented design and technical writing by incorporating group projects, oral presentations and written reports. Capstone II meets one of two Writing Enriched courses required for graduation in Electrical Engineering and Computer Engineering. Capstone II incorporates engineering standards and realistic constraints including economic, environmental, sustainability, manufacturability, ethical, health and safety, social, and political. Emulates the problems encountered by engineers working in commercial, industrial, and governmental entities. Capstone I and Capstone II must be taken in consecutive semesters. Lab access fee of \$45 applies. Course lab fee of \$50 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Design an electrical system or process to meet given specifications with realistic engineering constraints
2. Use effective team processes, communication, and conflict resolution skills
3. Implement an electrical system
4. Troubleshoot an electrical system
5. Present the design project results orally and in written format

ECON 1010

Economics as a Social Science SS

Credit hours: 3

An introductory course which studies the operation of a mixed market system, including production, domestic and global trade, and labor-management economics. Includes business cycles and monetary and fiscal policies designed to modify those cycles. Canvas Course Mats \$85/McGraw applies

Course Learning Outcomes

Please see the department for information.

ECON 2010

Principles of Economics I SS

Credit hours: 3

Teaches basic concepts and tools from the fields of Microeconomics and Macroeconomics. Focuses on the tenets of economic analysis and explains how consumers, producers and other economic agents make decisions, as well as the outcomes of their interactions. Provides the needed framework for business students to understand the role of macroeconomic policies in the US, including GDP measurement, inflation and unemployment. Uses lectures, class discussions, and a variety of in-class activities to promote engaged learning. Required for all business students. Lab access fee of \$13 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Define basic concepts of economic modeling;
2. Use the demand and supply model to determine equilibrium prices and quantities in perfectly competitive markets and their efficiency properties;
3. Apply marginal analysis to predict consumer and producer behavior;
4. Define macroeconomic concepts for the analysis of countries' economic performance;
5. Apply measurement techniques to the GDP and its components, inflation, economic growth, and unemployment;
6. Apply economic models and techniques to economic policy and business decisions.

ECON 2020

Principles of Economics II SS

Credit hours: 3

Teaches basic concepts and tools from the fields of Microeconomics and Macroeconomics not covered in ECON 2010. Focuses on economic scenarios that depart from perfect competition, including market failures and imperfect competition. Analyzes the Keynesian framework and its applications to fiscal policy, as well as monetary theory and policy. Uses lectures, class discussions, and a variety of in-class activities to promote engaged learning. Required for Finance and Economics majors. Lab access fee of \$13 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Analyze market imperfections such as externalities, government intervention, and imperfect competition, including effects on consumption, production, and social welfare;
2. Describe different types of consumer behavior studied in Behavioral Economics, including framing effects, mental accounting, and anchoring, and their effects on business decisions;
3. Explain the aggregate demand and aggregate supply model including how economic disturbances affect the GDP and the price level of equilibrium;
4. Contrast the short and long-run impacts of different fiscal and monetary policies on full employment, inflation, and economic growth;
5. Analyze the different components of the balance of payments which determine the exchange rates in currency markets.

ECON 3010

Intermediate Microeconomics

Credit hours: 3

Covers intermediate microeconomic theory for economics and finance majors planning on extending their economics training into econometrics, mathematical economics and other related courses. Reviews microeconomic theory and models to develop an understanding of, and ability to use, modern microeconomic theory, measurement, and policy.

Course Learning Outcomes

1. Describe basic economic concepts such as marginal analysis, demand and supply, alternative market types, elasticity, and other microeconomic concepts.
2. Describe consumer behavior relationships including utility functions, individual and market demands, and interactions among these concepts in modern microeconomic theory.
3. Describe producer behavior including an analysis of production functions, cost analyses and the interactions within these microeconomics concepts.
4. Define the characteristics of market equilibrium theory in the context of perfect and imperfect competition models.
5. Calculate optimum price and quantity values for market equilibrium within varied perfect and imperfect competition models.

ECON 3030

Intermediate Macroeconomics

Credit hours: 3

Extends discussion of models of income determination, economic growth theory, analysis of fiscal and monetary policy theory, international trade issues, and alternative views related to the impact of macro theory in the US and world economies. Prepares economics majors for other advanced economic theory and policy courses.

Course Learning Outcomes

Please contact the department for information.

ECON 305G

International Economics GI

Credit hours: 3

Covers theoretical and practical concepts of international trade and finance. Reviews empirical tests of basic international trade theories. Uses international trade and finance databases for the analysis of trade patterns, balance of payments, exchange rates and global capital markets. Includes coverage of cultural and intercultural relationships that exist within an economic context.

Course Learning Outcomes

1. Describe the main assumptions of the classical and new international trade theories.
2. Illustrate theories and practical applications of exchange rates, the balance of payments, and other monetary issues in a global context.
3. Discuss international and global macroeconomic relationships within and among nations around the world.
4. Analyze global or intercultural issues.
5. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
6. Evaluate how one's own cultural rules and biases compare and contrast with those from different cultures.
7. Compare regional trade agreements such as the United States, Mexico, and Canada (USMCA), the European Union (EU), the Southern Common Market (MERCOSUR), and the Association of Southeast Asian Nations (ASEAN), among others.

ECON 3370

Economic Modeling and Data Analytics

Credit hours: 3

Covers at an intermediate level some of the most important quantitative tools used in Economics and Data Analytics. Explains how to build, solve and estimate theoretical models of real-world situations. Applies optimization techniques and machine learning methods to economic and business problems. Uses lectures, class discussions, and a variety of in-class activities to promote engaged learning.

Course Learning Outcomes

1. Use optimization techniques to solve economic and business problems.
2. Use statistical software to collect and handle data.
3. Develop models of economic and business phenomena.
4. Apply machine learning methods to data to estimate models and make predictions.
5. Analyze the outcomes of theoretical and empirical models.

ECON 3470

Principles of Applied Econometrics

Credit hours: 3

Provides an opportunity for economics students to use mathematical and statistical skills in real-world applications of econometrics. Examines the foundations of econometrics through well-known examples. Develops analytical skills by using data inputs and working through a series of projects students might encounter in future professional experience.

Course Learning Outcomes

1. Interpret basic linear regression analysis.
2. Use the economic data to test well-known economic theories.
3. Use econometric software packages to perform regression analysis.
4. Conduct hypothesis testing for long-run cointegration and short-run error-correction testing as well as testing multicollinearity, autocorrelation, normality, and heteroscedasticity.
5. Apply econometrics techniques for time series and panel data models.

ECON 3830

History of Economic Thought

Credit hours: 3

Traces the evolution of formal economic theory primarily beginning with Adam Smith, the first classical economic theorist. Studies other classical writers including Ricardo and Malthus as well as Marx's criticisms. Studies neoclassical analysis through Marshall and the critiques of the Austrian school. Reviews the modern theorists including Keynes and the development of macroeconomics, the development of empirical and mathematical economic theories, monetarism, and other post-Keynesian analysis. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Demonstrate understanding of the contribution of varied historical theorists and philosophers to the theory of economic thought;
2. Describe the major schools of economic thought and the contribution each made to current economic theory;
3. Evaluate the strengths and weaknesses of economic theory in terms of positive and/or normative elements within modern economic theory;
4. Evaluate and analyze historical economic theory as it contributes to your individual philosophy of how to apply these concepts to your life.

ECON 4960

Economics capstone research project

Credit hours: 3

Provides guidance for the capstone research project for the Bachelor's Degree in Applied Economics. Integrates all steps of the economic scientific method from designing a research project to using appropriate empirical tools and analyzing economic issues. Provides students the opportunity to work on real-world projects. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Formulate an economic problem;
2. Discuss previous empirical evidence;
3. Organize data information;
4. Apply instruments from economic modeling, data analytics, and applied econometrics;
5. Propose solutions to economic problems based on findings.

EDAB 6010

ABA Concepts and Principles

Credit hours: 3

Provides students with a strong foundation in the basic concepts and principles of ABA, including the history and philosophical assumptions of behavior analysis and autism spectrum disorder. Graduate fee of \$515 applies.

Course Learning Outcomes

1. Describe dimensions of behavior.
2. Explain the theories of respondent and operant behavior.
3. Evaluate measures of operant behavior.
4. Analyze critically strengths and weaknesses of reinforcement and punishment.
5. Evaluate methods to generalize new behaviors.
6. Identify operations and reinforcement effects.

EDAB 6020

Ethics and Professional Competencies in Applied Behavioral Analysis

Credit hours: 3

Defines ethical responsibilities required in the field of applied behavior analysis. Introduces policy and practice related to informed consent, protection of confidentiality, selection of least intrusive and least restrictive behavior change procedures within the context of case methodology. Emphasizes legal issues and ethical decision making processes. Covers professional, disciplinary, and ethical standards for Board Certified Behavior Analyst certification in depth. Graduate fee of \$515 applies.

Course Learning Outcomes

1. Describe procedures to solicit or otherwise influence clients only through the use of truthful and accurate representations of intervention efficacy in applied behavior analysis
2. Evaluate professional competencies in applied behavior analysis, consultation, supervision, training, and referral
3. Analyze how life style, systems change goals, and targets for behavior change are consistent with applicable laws and the ethical and professional standards of the profession
4. Evaluate legal and ethical measures to obtain informed consent
5. Analyze the risk-benefit ratio of situations to determine whether to initiate, continue, modify, or discontinue behavior analysis services
6. Critically evaluate contingencies that may compromise the practitioner-client covenant, including relationships between the practitioner, the client, and other parties
7. Evaluate effective assessments and behavior change procedures within applicable ethical standards, taking into consideration the guidelines of minimal intrusiveness
8. Apply the ethical code of competence to the implementation of behavioral support

EDAB 6030

Developing and Changing Behaviors

Credit hours: 3

Explains various behavioral assessments and intervention strategies. Focuses on single subject designs and procedures for measuring behavior, displaying data, and interpreting results. Examines ways to evaluate and analyze behavior change. Graduate fee of \$515 applies.

Course Learning Outcomes

1. Apply methods of data collection and analysis to measure increase and decrease in target behaviors.
2. Design effective behavior change procedures using imitation, shaping, and chaining.
3. Implement procedures for behavior change through imitation, shaping, and chaining.
4. Describe aspects of Skinner's Verbal Behavior, including echoics, mands, tacts, and intraverbals.
5. Identify effective strategies for educating children with autism and other disabilities.
6. Assess academic performance by collecting information that is valid, reliable, and practical.
7. Use single-subject research designs to make data-based decisions concerning student learning.

EDAB 6040

Measurement in Single Subject Design

Credit hours: 3

Introduces methods for collection and interpretation of various types of data. Focuses on the importance of making data-driven decisions for behavior change procedures based on functional relationships. Graduate fee of \$515 applies.

Course Learning Outcomes

1. Use vocabulary associated with the science of Applied Behavior Analysis appropriately, as educator and clinician
2. Analyze the effectiveness of methods used to increase or decrease target behaviors
3. Evaluate critically various behavioral measurement tools
4. Evaluate effectiveness of various strategies for teaching children with autism
5. Assess methods and tools for collecting information about academic growth in terms of validity, reliability, and practicality
6. Use data collected as part of single-subject research projects to make data-based decisions concerning student learning
7. Apply information from the behavior analytic literature concerning education or other applied behavior analysis settings to real world situations
8. Implement single-subject design methodologies

EDAB 6050

Functional Behavior Assessment and Treatment

Credit hours: 3

Focuses on using methods and tools for selecting and defining target behaviors and for behavior measurement. Provides experience in methods to develop new behavior using imitation, modeling, shaping, and chaining and methods to decrease behaviors using extinction, differential reinforcement and antecedent interventions. Reviews and extends the study of functional behavior assessment, verbal behavior, generalization and maintenance of behavior change. Course fee of \$515 applies.

Course Learning Outcomes

1. Explain the role of a Functional Behavior Assessment (FBA) and a Behavior Intervention Plan (BIP) in modifying behavior from behavior analytic and IDEA perspectives
2. Analyze the use of FBA and BIP tools in terms of historical context and principles of applied behavior analysis
3. Conduct a Functional Behavior Assessment
4. Analyze the differences between a functional assessment and a functional analysis
5. Evaluate strategies to address specific behaviors according to their maintaining contingencies
6. Evaluate the utility of the outcomes of functional assessment interviews
7. Synthesize summary statements as part of an FBA
8. Analyze the rationale, methods, and data analysis associated with conducting direct observations
9. Create a Behavior Intervention Plan based on functional assessment data

EDAB 6060

Advanced Topics in Applied Behavior Analysis

Credit hours: 3

Focuses on advanced topics in behavior analysis, including current research, changes in relevant legislation, emerging areas of behavior analysis, measurement technology, school applications, teaching methodology, innovative interventions, and ethics. Graduate fee of \$515 applies.

Course Learning Outcomes

1. Evaluate stakeholders' implementation of a behavior intervention plan and one analogue condition of a functional assessment.
2. Create a chronological client contact service log, accounting for all interactions with stakeholder(s).
3. Create a fidelity checklist to evaluate stakeholders' implementation of behavior intervention plans and functional analysis recommendations.
4. Design competency-based training tasks and documents related to the supervision of behavior analytical techniques.
5. Evaluate critically elements of behavioral analysis, including (i) Primary functions of problem behaviors, (ii) Functions of behavior identified via experimental analysis, (iii) Interventions; effectiveness of reinforcers and punishers, (iv) Diagnosis and treatment of self-injury, (v) Behavior disorders maintained by automatic reinforcement, (vi) Assessments based on different populations and environments, (e.g. children, older adults, students with profound disabilities), (vii) Interventions and elements used for behavior change procedures.

EDAB 6070

Training Supervision and Performance Monitoring in Applied Behavior Analysis

Credit hours: 3

Examines the training, supervision, and performance monitoring from an applied Behavior Analytic perspective. Provides students with a strong foundation in effective training as it applies to parents, staff, and supervisees. Develops competency in supervision of ABA interns. Provides an overview of systems-level analysis, including organizational assessment, quality assurance, performance, and outcome monitoring. Graduate fee of \$515 applies.

Course Learning Outcomes

1. Evaluate stakeholders performance for implementing a Behavior Assessment and Intervention Plan and implementing one analogue condition of a Functional Behavior Assessment
2. Maintain a chronological client contact service log to account for all interaction with stakeholder(s)
3. Create a competency-based training and fidelity checklist to account for stakeholders' ability to implement behavior intervention plans
4. Create a competency-based training and fidelity checklist to account for stakeholders ability to implement functional analysis
5. Generate documents and tasks related to supervision of behavior analytical techniques
6. Evaluate the application of essential components of behavior analysis (e.g. assessment, diagnosis, treatment, intervention, etc.)

EDAB 6080

Introduction to Practice in ABA

Credit hours: 3

Provides an introduction to applied practice in behavior analysis. Focuses on foundational knowledge to apply clinical skills to address problem behaviors of social importance and to teach pro-social, adaptive behaviors.

Course Learning Outcomes

1. Describe evidence-based practice as it relates to Applied Behavior Analysis.
2. Integrate the concept of best available evidence in the treatment selection process.
3. Apply the concept of social validity to clinical problem solving.
4. articulate the key points of professional judgement in the EBP process.

EDAB 6100

Group Research Design in ABA

Credit hours: 3

Provides an introduction to group research design in the field of Applied Behavior Analysis (ABA). Examines the basic concepts and principles of group research designs. Addresses the history and contemporary application of these principles to research in autism spectrum disorder.

Course Learning Outcomes

1. articulate the defining characteristics of various group research designs.
2. Distinguish between non-experimental and experimental group research designs.
3. Summarize ethical considerations in the context of group research methodology.
4. Describe relevant variables, threats, and other considerations underlying group research.

EDAB 6210

Basic Behavior Analysis

Credit hours: 3

Provides an introduction to basic behavior analysis. Provides a strong foundation in the basic behavior analytic research that serves as the foundation for the principles and procedures used by behavior analysts in daily practice. Presents the direct link between historical and contemporary basic research in behavior analysis and the practice of applied behavior analysis.

Course Learning Outcomes

1. Identify the historical antecedents to the behavioral approach to learning and behavior.
2. Describe the core components of classical and instrumental conditioning.
3. Identify key publications in the basic research literature that demonstrate the principles of reinforcement.
4. articulate the connection between basic behavior analytic research and contemporary practices in the treatment of autism spectrum disorder.

EDAB 6220

Foundational Philosophy and Concepts in Radical Behaviorism

Credit hours: 3

Provides an introduction to the philosophical and theoretical foundations of radical behaviorism. Examines the principles of radical behaviorism and their implications for understanding human behavior. Explores the history of behaviorism, the main tenets of radical behaviorism, and the implications for understanding of human behavior. Describes a variety of philosophical assumptions on the subject, such as determinism, selectionism, parsimony, and other core concepts.

Course Learning Outcomes

1. Summarize the historical roots of radical behaviorism.
2. Describe the main tenets of radical behaviorism.
3. Describe major philosophical underpinnings of radical behaviorism.
4. Evaluate the strengths and limitations of radical behaviorism as a theoretical framework for understanding complex human behavior.
5. Apply radical behaviorist principles to real-world scenarios and problems to identify the potential applications and limitations of the approach.
6. Synthesize insights from traditional and contemporary radical behaviorism perspectives to understand human behavior and the principles governing it.

EDAB 6300

Thesis Proposal Seminar

Credit hours: 3

Addresses the development and completion of a Master's thesis proposal. Provides information regarding all aspects of research methods in applied behavior analysis.

Course Learning Outcomes

1. Develop a clear and focused research question that addresses a relevant topic in applied behavior analysis.
2. Design research study that effectively addresses the research question, using appropriate research methodology and techniques.
3. Analyze data obtained using appropriate quantitative analysis methods.
4. Communicate research findings effectively, both in written and oral form, using appropriate scientific language and conventions.
5. Explore ethical considerations in research with human subjects.

EDAB 689R

ABA Supervision Seminar

Credit hours: 1

Provides a comprehensive view of clinical practice in applied behavior analysis. Examines ways to apply clinical skills to the treatment selection and implementation process. Explores strategies to promote a client centered and culturally competent approach to clinical practice in applied behavior analysis. May be repeated for a maximum of 7 credits toward graduation. May be Graded Credit/No Credit.

Course Learning Outcomes

1. Carry out an assessment appropriate to an identified clinical problem.
2. Implement procedures to increase behavior for an identified clinical problem.
3. Implement procedures to decrease behavior for an identified clinical problem.
4. Employ appropriate data-based decision and progress monitoring procedures as it relates to clinical practice.

EDCO 6010

Foundational Principles of School Counseling

Credit hours: 3

Examines the foundational principles of school counseling and introduces students to the Utah School Counseling Model and the ASCA National Model. Provides students with the information and knowledge of how to implement a College and Career Readiness School Counseling Program.

Course Learning Outcomes

1. Explain the fundamentals of School Counseling Programs including both Utah and national models.
2. Discuss professional organizations, preparation standards, and credentials relevant to the practice of school counseling.
3. Identify roles of the school counselor as a counselor, leader, and advocate.
4. Show proficiency in core curriculum design, lesson plan development, classroom management strategies, and differentiated instructional strategies.
5. Discuss the process of developing and managing school counseling programs.

EDCO 6020

Ethics and Professional Competencies of School Counseling

Credit hours: 3

Provides essential knowledge and skills as established by the Utah State Board of Education standards. Focuses on legislation impacting professional school counselors and the ASCA Code of Ethics.

Course Learning Outcomes

1. Identify the legal and ethical obligations of the school counseling profession.
2. Examine legislation and government policy relevant to school counseling.
3. Apply legal and ethical considerations in school counseling scenarios or situations.
4. Explain ethical and professional standards while working with minors in a school setting.

EDCO 6030

Career Counseling

Credit hours: 3

Introduces theories of career development and career decision-making models relating to educational and career development program planning, organization, implementation, administration, and evaluation. Covers the history of work and career in the U.S. in addition to contemporary influences and multicultural considerations.

Course Learning Outcomes

1. Apply theories, models, and research on career development, college and career counseling, and decision-making.
2. Utilize effective strategies for career development program planning, organization, implementation, administration, and evaluation.
3. Use strategies for facilitating student skill development for career, educational, and lifework planning and management.
4. Implement approaches for conceptualizing the interrelationships among and between work, mental well-being, relationships, employability skills, and other life roles and factors.

EDCO 6040

Multicultural Counseling

Credit hours: 3

Examines implications of working with students with diverse cultural backgrounds. Exposes students to various cultures and the methods, values, and beliefs that organize family life and human development. Examines how the intersections of race, class, culture, gender, ethnicity, and sexuality shape and affect the lives of individuals and families. Explores intervention practices, social advocacy models, and resistance strategies.

Course Learning Outcomes

1. Describe multicultural and pluralistic characteristics within and among diverse groups nationally and internationally.
2. Explain theories and models of multicultural counseling, cultural identity development, and social justice and advocacy.
3. Demonstrate multicultural counseling competencies.
4. Describe the effects of power and privilege for counselors and clients.
5. Identify strategies for identifying and eliminating barriers, prejudices, and processes of intentional and unintentional oppression and discrimination.
6. Explain the help-seeking behaviors of diverse clients.
7. Examine the influence of global issues and international educational practices and their implications for fostering diversity within American schools.

EDCO 6050

Interventions in Schools

Credit hours: 3

Introduces developmentally relevant counseling treatment or intervention plans. Includes development of measurable outcomes for students. Teaches evidence-based counseling strategies and techniques for prevention and intervention. Provides instruction on the referral process and community-based resources. Emphasizes suicide prevention models and strategies. Explores crisis intervention, trauma-informed, and community-based strategies, such as Psychological First Aid.

Course Learning Outcomes

1. Develop relevant counseling treatment or intervention plans.
2. Implement evidence-based counseling strategies and techniques for prevention and intervention.
3. Explain the referral process and how to access community-based resources.
4. Apply suicide prevention models and strategies with students or clients.
5. Use crisis intervention, trauma-informed, and community-based strategies, such as Psychological First Aid.

EDCO 6060

College and Career Readiness

Credit hours: 3

Prepares future school counselors to help all students succeed in post-secondary training and future careers. Emphasizes current labor market demands and resources that can provide early and ongoing exposure to information necessary for students to make informed decisions regarding post-secondary education and improve their career literacy.

Course Learning Outcomes

1. Implement indicators and interventions for college readiness to promote the Utah College and Career Readiness Mindsets and Competencies.
2. Create a school-wide college-going culture by collaboration with school personnel and local industry partners.
3. Identify gaps and remove systemic barriers in college access by utilizing proactive strategies.
4. Assist students in academic planning that connects college and career goals through the plan for college and career process.
5. Describe post-secondary information, and the value of a college degree.
6. Increase secondary students' and parents' understanding of the financial aid and college application process.
7. Identify program, concepts, and processes to enhance students' career literacy.

EDCO 6100

Research and Evaluation

Credit hours: 3

Introduces practitioner research in school counseling. Identifies methods for locating, reading, interpreting, and using credible research, and explores approaches to applying action research methods in school counseling programs to advance the counseling profession. Provides students the skills and competencies necessary to successfully conduct valid and reliable research and analyze and use data for completing data projects required by the Utah State Board of Education.

Course Learning Outcomes

1. Identify, collect, analyze, and use appropriate process, perceptual, and outcome data for decision-making to drive the implementation of the school counseling program.
2. Disaggregate different types of data (e.g., access, attainment, and achievement) to identify and address barriers to student learning and growth.
3. Complete the components of the Closing-the-Gap Action Plan (i.e., USBE annual data project) by writing a measurable goal statement, aligning the goal statement to school improvement goals as well as student outcome data (e.g., access, attainment, and achievement), and listing systemic prevention/interventions.
4. Describe how to conduct and critique practitioner research to inform counseling practices and advance the counseling profession.

EDCO 6710

School Counseling Practicum

Credit hours: 3

Provides students with an opportunity to job shadow a school counselor at a local school for 100 hours and directly apply concepts and principles learned in coursework. Includes weekly reporting and reflection from practicum experiences to a group supervisor. Provides instructional content relating to the special topics in school counseling.

Course Learning Outcomes

1. Discuss special topics related to school counseling.
2. Apply concepts and principles learned in coursework in a school setting.
3. Practice consultation and collaboration techniques.
4. Discuss strategies for handling complex situations in the schools.

EDCO 689R

School Counseling Internship

Credit hours: 3

Supports the student in completing the required 600 hour internship. May be repeated for a maximum of 6 credits toward graduation. May be Graded Credit/No Credit.

Course Learning Outcomes

1. Perform all duties required of K-12 school counselors.
2. Apply ethical principles in practice.
3. Conduct equitable counseling services for all students/clients.
4. Advocate for the rights and needs of students/clients.
5. Report all school and state required data.

EDEC 1640

Childrens Music and Movement

Credit hours: 2

Covers historical foundations of music for young children. Explores strategies for teaching music and movement. Explores music appreciation, creative and structured music, and transitions and movement activities for young children. Investigates musical instruments and their use. Provides opportunities to teach music and movement activities to children. Examines music and movement curricula, academic content and learning environments. Course fee of \$10 for materials applies.

Course Learning Outcomes

1. Describe the historical foundations of early childhood music.
2. Identify basic music skills needed for supporting music experiences with young children.
3. Select appropriate music, movement activities and musical instruments for use with young children.
4. Write developmentally appropriate music and movement curriculum for young children.
5. Use appropriate action songs and music as transitional activities with young children.
6. Use appropriate structured, non-competitive music and movement games and activities with young children.
7. Integrate music and movement into other curricular areas.

EDEC 2300

Including Young Diverse Learners

Credit hours: 2

Introduces the implications of diversity and exceptionality in young children. Emphasizes the impact of diversity in children's educational settings. Includes basic assessment strategies. Introduces teaching strategies to address children with special needs and/or from diverse populations. Emphasizes inclusive and adaptive strategies for supporting young children with exceptionalities. Covers partnerships, families, and communities. Includes 10 hours of field experiences.

Course Learning Outcomes

1. Identify special education federal and state laws, with their application to policies and best practices for educating young children with diverse needs.
2. Describe variations of development and disability and their implications for the early childhood classroom.
3. Evaluate the development of young children who are evidencing or who are at risk for developmental delays.
4. Select inclusive strategies and adaptations that support learning and development for all children in an early childhood classroom.
5. Create resources for teaching young children with special needs or from diverse backgrounds.
6. Summarize the effects and contributions of family and culture regarding developmental differences.

EDEC 2500

Child Development Birth to Eight Years

Credit hours: 3

Covers developmental theories and milestones of a child's development. Emphasizes growth in all developmental domains. Focuses on supportive parental and care giver behaviors. Addresses the influence of out-of-home care. Examines the role of play when creating supportive environments. Investigates risk factors that impede optimal development. Includes 15 hours of structured observation, assessment, and interactions with young children.

Course Learning Outcomes

1. Explain the major theories of human development.
2. Describe the growth and development of children, ages 0-8, across cognitive physical, social, emotional, moral, and creative domains.
3. Summarize significant milestones and variations of early development.
4. Examine the effect of play on the development of young children.
5. Compare supportive caregiver behaviors.
6. Analyze factors that influence children's development.
7. Conduct focused observations and assessments.

EDEC 2600

Introduction to Early Childhood Education

Credit hours: 2

Introduces the field of early childhood education. Focuses on the historical, theoretical and philosophical foundations of early childhood education. Emphasizes developmentally appropriate practices, constructivism, and integrated, child-centered curriculum. Covers learning in all domains and content areas. Explores the components that identify quality programs for young children. Addresses ethical and professional teaching practices. Includes 8 hours of classroom observations. Canvas Course Mats \$60/Sage applies.

Course Learning Outcomes

1. Explain the theoretical, philosophical, and historical background of early childhood education.
2. Describe the principles of Developmentally Appropriate Practice.
3. Evaluate the principles of Developmentally Appropriate Practice in connection to the education of young children and early childhood classrooms.
4. Compare the roles of teachers, parents, families, and communities in the child's educational process.
5. Evaluate early childhood programs using measures of quality.
6. Evaluate responsible and ethical professional practices.
7. Examine current issues impacting early childhood educators.

EDEC 2610

Child Guidance

Credit hours: 3

Focuses on the adult role in fostering the social and emotional development of young children. Emphasizes strategies adults can use to build positive self-concept, appropriate social behaviors, empathy, independence, responsibility and effective communication in children. Addresses the value of play to enhance children's social development. Introduces strategies to reduce aggressive behaviors. Examines factors that effect resiliency in young children. Includes 20 hours of structured field observations and interactions with young children.

Course Learning Outcomes

1. Describe the development of social competence in young children.
2. Critique early childhood classroom environments in regards to fostering social competence in young children.
3. Apply a variety of verbal communication skills associated with promoting children's self-awareness and self-esteem.
4. Explain how play supports children's social development.
5. Select appropriate teaching approaches and interpersonal interactions that support children's emotional development.
6. Develop effective teaching strategies and interpersonal interactions for enhancing children's peer relationships and friendships.
7. Select appropriate rules and consequences to support self-regulation in young children.
8. Describe strategies to reduce aggressive behaviors.
9. Explain risk factors that influence resiliency in young children.

EDEC 2620

Early Childhood Curriculum

Credit hours: 3

Examines the philosophy of Developmentally Appropriate Practice in connection to teaching preschool children, preparing the classroom environment, and planning/implementing instruction. Investigates a variety of curriculum models. Addresses the role of play to support learning in all areas of development. Introduces the principles of intentional teaching. Focuses on creating and teaching child-guided and teacher-guided learning experiences using early childhood standards. Covers integrating content when planning lessons. Includes curriculum mapping to facilitate integration of state core curriculum standards in early childhood classrooms. Includes 20 hours of field experiences in an early childhood classroom. Course fee of \$10 for materials applies.

Course Learning Outcomes

1. Distinguish between a variety of curriculum models that meet the diverse needs of young children.
2. Explain the principles of Developmentally Appropriate Practice in connection with teaching children, preparing the environment, lesson planning and implementing instruction.
3. Defend the value of play as a means to promote positive development in young children.
4. Analyze the principles of intentional teaching.
5. Create child-guided and teacher-guided learning experiences using appropriate early childhood core standards.
6. Integrate a variety of content-literacy, math, social studies, science, creative arts into lesson plans.
7. Implement developmentally appropriate lessons with young children.
8. Map a year of early childhood state core curriculum to include content integration, engaging activities and opportunities to master of core objectives.

EDEC 2630

Literacy and Literature for Early Childhood

Credit hours: 3

Introduces practical aspects of fostering literacy development in young children. Focuses on emerging and early literacy in the home, early care, and education settings. Investigates strategies for holistic integration of various literacy processes. Addresses the role of appropriate children's literature to support early language and literacy development. Examines methods for developing positive attitudes towards reading, writing and books.

Course Learning Outcomes

1. Identify the major theorists and theories of language and literacy development.
2. Identify emergent and early literacy behaviors in children ages 0-6.
3. Explain the role children's literature and environmental print play in early literacy development.
4. Analyze multicultural texts for use in early childhood classrooms.
5. Implement instructional literacy strategies appropriate for young children.
6. Design developmentally appropriate lesson plans to integrate content areas and themes with literacy and language activities.
7. Assess young children's literacy development.
8. Select appropriate literature to support reading motivation and reading enjoyment.

EDEC 2700

Early Childhood Practicum

Credit hours: 3

Provides support-teaching and lead-teaching experiences in partnership preschool programs. Includes planning and implementing learning plans. Focuses on appropriate interactions with children in whole groups, small groups and individually. Addresses positive and effective guidance strategies. Provides parent education opportunities. Provides individual and collaborative reflection on teaching practices. Addresses professional and ethical teaching practices. Requires an assigned field experience with children. Course fee of \$25 for materials applies.

Course Learning Outcomes

1. Design developmentally appropriate learning plans for young children.
2. Implement developmentally appropriate learning plans for young children.
3. Use assessment data to inform instruction.
4. Utilize guidance techniques that enhance social and emotional development, and support self-regulation and independence in young children.
5. Reflect on progress toward effective classroom practice.
6. Exhibit professional conduct with children, co-workers, and parents.
7. Create appropriate opportunities to involve parents in the education of their child.

EDEC 2720

Early Childhood Assessment

Credit hours: 2

Addresses assessment of children in an early childhood classroom during the practicum experience. Focuses on authentic assessment of young children, using anecdotal observations, child work samples, photos, checklists, event samplings, and logs. Emphasizes using child assessment to inform curriculum planning. Prepares participants to create child portfolio assessments for use in parent conferences. Includes creating a professional teaching portfolio assessment.

Course Learning Outcomes

1. Collect authentic assessment data of young children's learning, using anecdotal observations, child work samples, photos, checklists, event samplings, and logs.
2. Gather data in all domains of physical, social, language, literacy, and cognitive development.
3. Create checklists to match objectives in learning plans to simplify data collection.
4. Implement event sampling and center logs for collaborative data collection.
5. Prepare digital child portfolio assessments that connect to core standards and include anecdotal observations, child work samples, checklists, event samplings and log information, and photos.
6. Use daily assessment data to inform curriculum planning.
7. Discuss child assessment portfolio with parents or caregivers.
8. Document professional growth through a professional teaching portfolio.

EDEL 1010

Introduction to Education

Credit hours: 2

Facilitates matriculation into professional education programs. Examines the relationships of teaching, learning, motivating, and instructing in classroom settings. Includes observation in public schools to help students understand these relationships and appreciate the role of professional educators in today's society. Requires substantial commitment of time to off-campus field experiences.

Course Learning Outcomes

1. Explain pathways to education careers and the knowledge, skills, abilities, and dispositions necessary for success.
2. Identify personal and student attributes in order to build relationships and support student development.
3. Utilize theory and content when planning for instruction.
4. Implement effective instructional strategies.
5. Use assessment data to make instructional decisions.
6. Reflect on practice to promote professional growth and advance student learning.

EDEL 2200

Introduction to Educational Technology

Credit hours: 2

Explores the evaluation, selection, and use of technology for children. Develops students' confidence in the use of a variety of technologies. Includes authentic hands-on experiences with digital tools. May be delivered online.

Course Learning Outcomes

1. Model digital citizenship and responsibility.
2. Create digital products using a variety of tools.
3. Demonstrate the connections between core standards and technology integration.
4. Utilize digital tools to collaborate with peers.
5. Reflect on the appropriate use of technologies with children.

EDEL 2330

Childrens Literature

Credit hours: 3

Focuses on current and classic children's literature for ages 0-12. Examines picture books, beginning readers, chapters books and novels. Addresses evaluating the literary quality of children's books in a variety of genres. Covers book awards and selection criteria for quality literature. Examines reading motivation and enjoyment. Investigates controversial issues in children's literature. Canvas Course Mats \$42/Pearson applies.

Course Learning Outcomes

1. Analyze literary elements of literature and artistic elements of picture book illustrations for a variety of children's books.
2. Explore a variety of authors and illustrators in relation to book type, genre, and elements of quality.
3. Examine awards and selection criteria for quality children's literature in the following categories: picture book, chapter books, novels, poetry, nonfiction and multicultural.
4. Create a bibliography of children's literature based on book types, genres and elements of quality.
5. Select a variety of genres and award winning books for integration into thematic units, content instruction or other learning experiences in elementary settings.
6. Use appropriate read aloud techniques when reading children's books to promote interest and appreciation of literature.
7. Compare strategies used to increase children's reading motivation and reading enjoyment.
8. Analyze controversial issues teachers face when using literature in classrooms.

EDEL 3000

Educational Psychology

Credit hours: 3

Stresses research-based teaching/learning principles used in a classroom setting to enhance learning. Includes study of parent education, involvement, and support strategies, and collaboration with community agencies and professionals. Emphasizes the application of theory to practice with emphasis on teacher-student instructional interaction and teacher/parent/community agency interactions. Designed to help students understand how children develop and learn and how that knowledge should influence classroom teaching.

Course Learning Outcomes

1. Explain how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, social, emotional, moral, and physical domains.
2. Determine how domains of development interact during childhood and manifest in the elementary classroom.
3. Analyze elementary classroom practice and lesson plans for the use of developmentally appropriate methodologies.
4. Examine the roles of motivation, metacognition, and self-regulation in successful learning experiences.
5. Evaluate the impact of differences in intelligence and approaches to learning on motivation, instruction, and student success.
6. Implement research-based theories of learning in elementary classroom instruction.

EDEL 3100

Early Childhood Principles and Practices

Credit hours: 2

Focuses on early childhood principles for grades K-3. Examines the philosophy of Developmentally Appropriate Practice in relation to interacting with young children, preparing the classroom environment, and planning/implementing instruction. Addresses the role of play to support learning in all areas of development. Includes strategies for supporting children's social, emotional, and cognitive development. Introduces the principles of intentional teaching. Emphasizes lesson planning in all content areas. Addresses the teacher's responsibility in creating a child-centered environment that supports creativity, critical thinking, communication, and collaboration.

Course Learning Outcomes

1. articulate the principles of Developmentally Appropriate Practice in regards to interacting with K-3 children, designing the classroom environment, planning lessons and implementing instruction.
2. Evaluate the value of play as a means to promote positive development in young children.
3. Examine the teacher's role in providing positive guidance to support children's social, emotional and cognitive development.
4. Examine the principles of intentional teaching.
5. Create child-guided and teacher-guided learning experiences using K-3 core standards.
6. Integrate creativity, critical thinking, communication and collaboration into learning experiences.

EDEL 325G

Equitable Technology Integration GI

Credit hours: 2

Addresses the equitable integration of technologies into elementary classroom instruction. Prepares future teachers to use technologies to differentiate their instruction to meet the needs of all students. Explores ways technology can be used to revitalize pedagogy. Explores the impact of the global digital divide. Provides future teachers with the ability to develop lesson activities that empower students to make meaningful connections and develop 21st Century skills.

Course Learning Outcomes

1. Create professional learning goals to apply pedagogical approaches made possible by technology.
2. Identify methods for providing equitable access to educational technology, digital content, and learning opportunities to meet the diverse needs of all students.
3. Collaborate with colleagues to curate a collection of digital resources and tools for learning and promote global engagement.
4. Model safe, legal, and ethical practices with digital tools.
5. Create authentic learning opportunities in face-to-face, hybrid, and online environments that challenge students to engage with content and communicate ideas, knowledge or connections.
6. Develop a variety of technology-based formative and summative assessments that accommodate learner needs, provide timely feedback to students, and inform instruction.
7. Analyze global or intercultural issues.
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
9. Evaluate how one's own cultural values compare with those from different backgrounds.

EDEL 330G

Multicultural Education GI

Credit hours: 3

Discusses implications of human diversity for major societal institutions. Addresses the impact of diversity in children's education environments, ages birth through adolescence. Focuses on linguistic, cultural, ethnic, familial, religious, developmental, and gender diversity. Emphasizes inclusive, anti-bias classroom strategies for supporting learning and development of diverse students. Encourages examination of personal beliefs and attitudes about diversity.

Course Learning Outcomes

1. Analyze the basic curricular, pedagogical and personal components of multicultural education.
2. Explain the differing ideologies and paradigms that guide multicultural education.
3. Reflect on our own identities, biases, and position in the curricula and schooling experience including issues of diversity, privilege, and power.
4. Synthesize new knowledge and skills in the creation of multicultural curricula and practice.
5. Create environments that support individual and collaborative learning, encouraging positive social interaction, active engagement in learning, and self-motivation.
6. Analyze global or intercultural issues.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Evaluate how one's own cultural values compare with those from different backgrounds.

EDEL 3350

Instructional Design and Assessment

Credit hours: 3

Covers instructional design and assessment for program effectiveness and student achievement. Discusses instructional models, skills and techniques for engaging students in course content and assessing learning. Teaches beginning lesson plan design.

Course Learning Outcomes

1. Apply (i.e., teach using) a variety of instructional models and/or strategies that will assist in the development of students' critical thinking, problem solving, and performance skills.
2. Evaluate a variety of instructional models and/or strategies that promote student's critical thinking, problem solving, and performance skills.
3. Participate in a learning environment that encourages positive social interaction, active learning and self-motivation.
4. Implement instruction based on knowledge of subject matter, students, the community, and curriculum goals.
5. Create instructional objectives, lesson plans, and a cohesive learning segment.
6. Develop formal, informal, and alternative assessment strategies to assess student development.
7. Evaluate formal, informal, and alternative assessment strategies.
8. Reflect on one's own effectiveness and professional growth.

EDEL 340G

Exceptional Students GI

Credit hours: 2

Covers the role of teachers in the inclusion of exceptional children, working with parents and specialists, and in developing individual educational plans for exceptional children. Introduces characteristics and special needs of exceptional children who have physical, emotional, social, mental, or health exceptionalities. Stresses curriculum modification planning necessary for special needs students. Addresses ethical behaviors specific to teaching exceptional children.

Course Learning Outcomes

1. Describe teacher's role in the inclusion process with exceptional children including collaborating with parents and specialists in developing an individual education plan for each child
2. Evaluate ethical behaviors of teachers working with special needs children/adolescents
3. Describe the characteristics and needs of children who have physical, mental, emotional, social, communication, sensory, and health exceptionalities
4. Create adaptations of the standard curriculum to meet the needs of exceptional children
5. Describe uses of technology and assistive technology devices for individuals with disabilities
6. Analyze the unique needs and viewpoints of families who have a member with an exceptionality
7. Analyze global or intercultural issues
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups
9. Evaluate how one's own cultural values compare with those from different backgrounds

EDEL 4200

Elementary Learning Environments I

Credit hours: 1

Introduces students to basic classroom management ideas. Provides learning strategies for managing students and materials in the classroom environment. Explores basic classroom management theories and practices.

Course Learning Outcomes

1. Describe the central concepts of classroom management.
2. Use a variety of classroom management strategies to effectively maintain a positive learning environment.
3. Analyze a learning environment, the classroom management, and the student response.
4. Specify strategies for managing students in a well-organized classroom.

EDEL 4210

Elementary Learning Environments II

Credit hours: 1

Establishes a foundation for selecting a model to follow for the development of a classroom management plan. Considers the role of the teacher and students in developing rules and establishing habits in a classroom setting.

Course Learning Outcomes

1. Define key teaching vocabulary of learning environments.
2. Analyze the learning environment of a master teacher.
3. Identify strategies for creating a positive learning environment.
4. Apply strategies for creating a positive learning environment.

EDEL 4230

Elementary Learning Environments III

Credit hours: 1

Presents strategies for routine management of the classroom environment and materials, and the initial set up of a classroom and management plans.

Course Learning Outcomes

1. Recognize aspects of a positive classroom community.
2. Select classroom approaches that support effective teaching.
3. Use social networks to collaborate and improve teaching and knowledge.
4. Examine ways to engage and motivate students.

EDEL 4240

Elementary Learning Environments IV

Credit hours: 1

Mentors teacher candidates through school-based collaboration with cooperating teacher or intern coach to determine best practices for classroom management. Includes developing a resume, tips on interviewing for a teaching position, and assistance with a teacher performance assessment.

Course Learning Outcomes

1. Identify management practices and behaviors that are characteristic of effective career teachers.
2. Develop a management philosophy based on experience in the classroom and research of best practices.
3. Develop instructional plans, materials, and assessments for a teacher performance assessment that support effective management practices.
4. Demonstrate effective classroom management while teaching well-planned lessons.

EDEL 4400

Elementary Literacy Instruction and Assessment I

Credit hours: 3

Presents practical and theoretical foundations for fostering reading competence in children, kindergarten through grade 3. Addresses literacy models, research-based reading instruction, and literacy assessments. Includes collaborative activities and public school field experience with children. Emphasizes findings of the National Reading Panel, International Reading Association standards and positions in literacy instruction, as well as Utah Common Core curriculum requirements.

Course Learning Outcomes

1. Identify the theories and approaches regarding effective literacy instruction.
2. Explain the nature of reading, the role of language, cognitive development, experience and the constructive, active role of the student in emergent and early literacy tasks.
3. Analyze appropriate assessment and observation data to monitor students' literacy learning including struggling readers.
4. Implement assessment driven instruction covering the essential literacy components of oral language development, concept of print, phonemic awareness, alphabetic principles, phonics, and sight word instruction.
5. Create research-based literacy instruction which meets the developmental, academic, social, and cultural needs of students including struggling readers.

EDEL 4410

Elementary Literacy Instruction and Assessment II WE

Credit hours: 3

Presents practical and theoretical foundations for fostering reading competence in children, grade 3 to 6. Surveys three essential components of learning to read: fluency, vocabulary, and comprehension, as well as reading motivation and academic reading. Addresses the explicit gradual release of responsibility model and think-alouds. Provides collaborative activities and public school field experience where original lesson plans are taught. Emphasizes findings of the National Reading Panel, International Reading Association standards and positions in literacy instruction, as well as Utah Common Core curriculum requirements.

Course Learning Outcomes

1. Design appropriate instruction for fluency, vocabulary, and comprehension development.
2. Implement assessment driven instruction covering the essential literacy components of fluency, vocabulary, and comprehension.
3. Identify literacy instruction in the content areas.
4. Apply reading motivation principles throughout the literacy curriculum.
5. Implement a wide variety of materials including human and technological resources to enhance learning.
6. Apply assessment techniques to promote planning instruction, evaluation of student progress, and determine next steps.
7. Create research-based literacy instruction which meets the developmental, academic, social, and cultural needs of students including struggling readers.
8. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

EDEL 4420

Elementary Language Arts Instruction and Assessment

Credit hours: 3

Presents methods for teaching reading and language art concepts to children, grades K-6. Includes classroom instruction and field experiences with children.

Course Learning Outcomes

1. Create developmentally appropriate oral language activities and materials to engage children in speaking and listening.
2. Plan instruction based on children's developmental spelling stages.
3. Evaluate instruction based on children's developmental spelling stages.
4. Create craft writing lessons using the process and traits of writers.
5. Create personal/expressive lessons in narrative and expository modes of writing.
6. Design lessons using children's literature as a base and springboard for writing.
7. Identify strategies for literacy instruction for children with different learning preferences, exceptionalities, and diverse cultural/ethnic language backgrounds.
8. Integrate technology in lessons to enhance learning the language arts.

EDEL 443G

Teaching Methods for English Learners GI WE

Credit hours: 3

Introduces teachers to the teaching of English as a second language not only for linguistic development, but for cognitive, academic and social development. Includes classroom instruction and field experiences with children. Presents methods for promoting reading competence and fostering literacy in limited English-speaking children, grades K-6. Prepares teachers to teach English as a second language in U.S. public schools. Covers both theoretical and applied aspects of second language learning and teaching and provides techniques, activities, strategies and resources to plan instruction for English language learners (ELLs).

Course Learning Outcomes

1. Explain how language proficiency standards and objectives align with state/local content standards/objectives.
2. Analyze the political, social and cultural factors that influence the type and quality of ELL programs available in public schools.
3. Apply theoretical backgrounds of second language acquisition to teaching.
4. Apply effective strategies, methods and materials for teaching English language learners.
5. Analyze outcomes of teaching and learning to reflect on and adapt instructional planning and practice.
6. Analyze global or intercultural issues.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Evaluate how one's own cultural values compare with those from different backgrounds.
9. Compose a variety of disciplinarily-appropriate texts with multiple situations for multiple audiences.

EDEL 4510

Elementary Mathematics Instruction and Assessment I

Credit hours: 3

Introduces methods for teaching math concepts to children, grades K-6. Focuses on developing a mathematical mindset, choosing worthwhile mathematical tasks, and planning lessons. Includes classroom instruction and field experiences with children.

Course Learning Outcomes

1. Construct a philosophy of math teaching consistent with current research and research-based practice.
2. Examine current trends in school mathematics locally, nationally, and globally.
3. Orchestrate discourse within a problem-solving learning environment.
4. Analyze math tasks for worthwhile attributes.
5. Design conceptually-based math lesson plans.
6. Assess children's mathematical thinking to make instructional decisions.
7. Use resources (e.g., manipulatives, technology, quality literature) within a problem-based learning environment.

EDEL 4520

Elementary Science Instruction and Assessment

Credit hours: 3

Presents methods for teaching science concepts to children, grades K-6. Includes classroom instruction and field experiences with children. Includes hands-on laboratory experiences.

Course Learning Outcomes

1. Implement lessons and units of study aligned with the National Science Education Standards and the Utah Core Standards.
2. Explain how various learning theories and educational research can inform science instruction.
3. Implement instructional strategies that can be used to address issues of equity and diversity in the classroom.
4. Apply personal experiences with inquiry learning when planning inquiry-based instruction in content appropriate to the elementary curriculum.
5. Analyze the interactive relationship between student learning, methods of formal and informal assessment, and instructional design.
6. Explain how various types of grouping patterns in the learning environment can be used to encourage positive social interaction and engagement in learning in order to plan learning experiences in science.
7. Identify how community resources may be incorporated into science instruction.
8. Reflect individually and collaboratively on how various instructional practices influence student learning in order to continue to grow professionally.

EDEL 4530

Elementary Social Studies Instruction and Assessment

Credit hours: 3

Prepares candidates with pedagogical skills to teach social studies concepts, skills, dispositions, and themes (civic, economics, history, geography, culture and identity) to students grades K-8. Includes classroom instruction and field experiences with students.

Course Learning Outcomes

1. Use the interrelatedness of the social sciences to build a culturally responsive classroom environment in which difficult discussions (i.e. cultural, developmental, pedagogical, content/theme related) can be approached.
2. Evaluate elementary students' abilities to view events through the social studies lenses of civics, history, anthropology (culture and identity), geography, and economics.
3. Evaluate elementary students' abilities to make informed decisions as citizens through social studies activities.
4. Design inquiry-based instructional activities that use primary and secondary sources to teach the major concepts and modes of inquiry from the social studies.
5. Explore ways that the Utah Social Studies Core can be used to frame powerful, integrated curriculum planning.

EDEL 4540

Elementary Fine Arts Instruction and Assessment

Credit hours: 3

Presents methods for integrating music, art, dance, and drama experiences across the curriculum in grades K-6. Includes classroom instruction and field experiences with children.

Course Learning Outcomes

1. articulate appropriate knowledge about teaching creativity and creative arts for children, and encouraging creative abilities in all children.
2. Integrate the philosophical, theoretical, and practical foundations of the Elementary Fine arts Core Curriculum into the elementary classroom.
3. Utilize a collection of resources, activities, and strategies that are available to teachers, and that promote children's use of the creative and fine arts to learn with, in, through, and about the arts.
4. Conduct appropriate performance assessments of arts learning, integration, and curricula in elementary classrooms.
5. Implement effective management strategies for arts learning
6. Describe research related to the benefits of authentic arts instruction for all children.

EDEL 4550

Elementary Mathematics Instruction and Assessment II

Credit hours: 3

Presents methods for teaching math concepts through the contexts of specific mathematical content to children, grades K-6. Includes classroom instruction and field experiences with children.

Course Learning Outcomes

1. Demonstrate strategies for teaching mathematics to all students, which includes children from diverse cultural, economic, and mathematically unsuccessful backgrounds.
2. Describe current trends in school mathematics locally, nationally, and internationally, especially beliefs about the learning and teaching of mathematics from the perspective of NCTM's Principles and Standards for School Mathematics (2000).
3. Orchestrate discourse within a problem-solving environment.
4. Create meaningful mathematical tasks consistent with knowledge of content, students' thinking, and available resources including manipulatives and technology.
5. Make instructional decisions based on children's thinking.
6. Use resources for continuing professional development in pedagogy and the discipline of mathematics.

EDEL 4620

Differentiation for Academic Diversity

Credit hours: 2

Includes theory and philosophy for teachers working with diverse populations, grades K-6. Outlines critical need for knowing students' personal, cultural, and community assets, as well as academic strengths and needs. Addresses strategies for pre- and formative assessment determining instruction that differentiates content, learning processes, and products for students' readiness, interests, and learning profiles.

Course Learning Outcomes

1. Examine a variety of approaches for building a classroom culture and community.
2. Analyze principles of differentiated instruction.
3. Align methods of pre- and post-assessment with instructional decisions.
4. Dissect selected USOE Core and CCSE standards and objectives into the necessary components of what students should know, understand, and be able to do.
5. Design a personalized approach fostering a classroom environment where all students' assets are recognized and utilized.

EDEL 4880

Student Teaching--Grades K-6

Credit hours: 9

Provides a culminating 12-week teaching experience in an elementary classroom, grades K-6. Enhances knowledge, skills, and attitudes in preparation for a teacher preparation assessment. Course Lab fee of \$200 for practical experience applies.

Course Learning Outcomes

1. Demonstrate instructional strategies and assessment appropriate to teaching children
2. Apply knowledge, skills, and attitudes derived in previous course work and program experiences
3. Implement best teaching practices for diverse student populations
4. Demonstrate strategies for working with parents

EDEL 4980

Elementary Education Capstone Seminar

Credit hours: 1

Integrates previous coursework and current student teaching or internship experience. Includes designing, teaching and assessing a comprehensive learning segment in both literacy and math. Engages preservice teachers in professional analysis and reflection.

Course Learning Outcomes

1. Evaluate instructional practices, and behaviors that are characteristic of effective career teachers.
2. Reflect in writing on candidates own practices in light of research on teaching and learning.
3. Evaluate the effect of candidates own professional decisions and actions on students in their classroom.
4. Foster relationships with school colleagues and agencies in the larger community to support students learning and well-being

EDEL 4990

Teacher Performance Assessment Project

Credit hours: 2

Introduces the teaching and learning cycle: planning, instruction, and assessment. Assists students in completing an authentic assessment tool that shows how they develop and evaluate student learning. Documents authentic practices from the student's teaching experience that address planning, instruction, assessment, analyzing teaching, and academic language to reveal the impact of a candidate's teaching performance on student learning.

Course Learning Outcomes

1. Design instruction to support their students' various strengths and learning needs.
2. Implement instruction that engages all students in learning.
3. Assess student learning.
4. Provide feedback to guide further learning.
5. Use assessment results to inform instruction.

EDHE 6200

Higher Education Leadership Capstone Project

Credit hours: 3

Focuses on the capstone project report. Addresses literature review, proposal, feedback and future steps. Includes report and defense of capstone projects.

Course Learning Outcomes

1. Design research and proposal aimed at improving some aspect of higher education institutional processes and/or programs.
2. Present and defend project proposal to key stakeholders.
3. Demonstrate implementation and adaptation of project based on stakeholder feedback, propose next steps related to the project.
4. Produce publishable quality manuscript.

EDHE 6410

Foundations and Contexts of Higher Education

Credit hours: 3

Examines diverse models and systems of higher education in an effort to provide contexts for effective work and leadership in higher education environments. Explores the nuances of higher education institutions in terms of political dynamics, shared governance, technology, innovation, organizational culture, and external/internal constituent expectations and perceptions. Discusses U.S. and international models of higher education and future possibilities.

Course Learning Outcomes

1. Describe the history and evolution of the U.S. higher education system.
2. articulate the strengths and weaknesses of diverse models of higher education.
3. Compare cultural differences within and across higher education institutions.
4. Evaluate how the U.S. higher education system has impacted diverse populations.
5. Examine the impact of technology on higher education design, delivery, and consumption.
6. Discuss potential models for the future delivery of higher education.

EDHE 6420

Diversity in Higher Education

Credit hours: 3

Examines multiple critical lenses informing the higher education landscape on issues related to marginalization, identity, silence, under-representation and other factors that American higher education has historically been inadequate at addressing. Guides students to develop a personal framework based in reflexivity around biases. Synthesizes collegial, institutional, historical and contextual nuances to provide foundational knowledge. Develops a dispositional and interdisciplinary approach to facilitate inclusion within particular higher education roles and activities.

Course Learning Outcomes

1. Analyze personal biases.
2. Develop personal disposition with regard to issues of discrimination.
3. Explore self-awareness of personal experiences and strategies to effectively communicate cross-culturally.
4. Evaluate the role of communities of learning/practice to develop systematic patterns of bias checking.
5. Analyze the historic and contemporary interactions between U.S. higher education and societal issues such as discrimination, exclusion, and oppression.
6. Construct contextual institutional maps related to notions of diversity, inclusion, exclusion and discrimination.
7. Synthesize theories of inclusion and value of diversity in relationship to contemporary higher education issues.

EDHE 6430

Student Success and Development

Credit hours: 3

Presents various theories relevant to college student development and applies those theories to the field through class discussion, papers, and special projects. Introduces students to the major theories of learning, development, and retention and connects them with current practice.

Course Learning Outcomes

1. Interpret the historical theories of student development, retention, and persistence
2. Create meaningful connections between student development and retention theories, research, and practice
3. Analyze strategies in developing and retaining a diverse student body
4. Communicate the application of theory into practice for various stakeholders

EDHE 6440

Leadership in Higher Education

Credit hours: 3

Examines organizational theory, models, governance, and management processes in higher education, leadership perspectives and leadership theory. Explores leadership as a discipline that transcends functional area, serving as a framework to lead and guide within higher education. Investigates leadership theories and formulates personal approach as an educational leader.

Course Learning Outcomes

1. Synthesize fundamental principles, generalizations, and theories of leadership
2. Evaluate ideas, arguments, and points of view surrounding leadership theories
3. Evaluate personal leadership identity development, style, tendencies, and skill development needs
4. Investigate ways in which diverse higher educational settings create unique challenges to leadership
5. Apply personal leadership philosophy in addressing current higher education issues
6. Apply links between the theory and practice of higher educational leadership

EDHE 6450

Law-Policy-Ethics in Higher Education

Credit hours: 3

Examines legal frameworks, liability, compliance, constitutional and civil rights, competing rights of institutions, faculty, staff, and students, and contractual obligations in higher education. Explores the legal, ethical, institutional, and political processes that influence higher education and the relationship between law and the system of higher education. Critiques legal issues as a way to define the role and meaning of higher education in today's society.

Course Learning Outcomes

1. Evaluate different types and sources of law, legal reasoning, legal structures, legal rules, appellate court decisions, statutes, and regulations related to institutions of higher education, and the U.S. legal system.
2. Explain the interaction between ethics, law, and policy in the higher education context.
3. Apply learning from cases, statutes, and administrative regulations to contexts in higher education.
4. Summarize effective strategies for working with legal counsel.
5. Defend positions to others regarding issues of law and policy in a civil manner.

EDHE 6460

Planning-Budget-Organizational Effectiveness

Credit hours: 3

Examines the principles and practices of strategic planning, evaluation, accountability, and financial management in higher education institutions, operating units, and academic programs.

Course Learning Outcomes

1. Analyze diverse models used for strategic planning in higher education.
2. Evaluate accreditation processes and standards.
3. Evaluate performance of academic programs, institutional services, and overall university mission fulfillment.
4. Examine funding models and revenue streams for higher education, including public funding, enrollment management, and external funding.
5. Assess principles of strategic resource allocation for both operations and capital facilities at the institutional level.
6. Explain the process of planning, budgeting, and implementing effective practices in institutional leadership.

EDHE 696R

Higher Education Leadership Capstone

Credit hours: 1

Addresses the three phases of capstone project development. Provides instruction on writing the literature review. Examines the development of the capstone proposal and presentation. Incorporates feedback and reflection on proposal presentations.

Course Learning Outcomes

1. Write an effective literature review.
2. Develop all phases of a sound proposal for improvement of some aspect of a process or program in an institution of higher education.
3. Identify key stakeholders and/or decision-makers around proposed improvement.
4. Design and defend project proposal.
5. Synthesize feedback and reflection into written capstone paper.

EDLE 6120

Personal Leadership and Organizational Design

Credit hours: 3

Introduces students to critical concepts about leadership theories and practice. Provides both historical perspective and current understanding to approaches, methods, and practices of leaders. Provides insight into how leadership skills and organization strategies produce increased productivity and better learning/working environments for P-12 students' academic success and well-being. Provides opportunity for class members to examine their own beliefs and develop a personal model of leadership. Emphasizes attributes that promote integrity, fairness, transparency and trust.

Course Learning Outcomes

1. Evaluate elements of key leadership theories and approaches in the historical context of the development of leadership theories.
2. Apply principles from systems leadership theory to real- world contexts.
3. Describe the responsibility to act ethically and professionally in personal conduct, relationships with others, decision-making, stewardship of the school's resources, and all aspects of school leadership.
4. Explain ways to provide moral direction for the school and promote ethical and professional behavior among faculty and staff.
5. Evaluate personal leadership styles, beliefs, skills, strengths, weaknesses, and experiences in light of new learning about leadership from the course.
6. Create a personal model of leadership to guide the individual's role as a leader in educational settings.

EDLE 6130

School Operations and Management-Finance/Law/Safety

Credit hours: 3

Explores school finance, law, and safety as primary themes in school management and operations. Provides an overview of current K-12 management conditions and theory. Discusses these themes 1) best management theories and practices for not-for-profit organizations, 2) rules and regulations that govern school finance, 3) court rulings in areas of student speech, discipline, and other points of tensions in public schools, and 4) school organization to keep students physically and emotional safe.

Course Learning Outcomes

1. Analyze how school finances are allocated and distributed at a state, district, and school level.
2. Analyze the role of federal funding in state and district operations.
3. Evaluate connections between multiple sources of school funding and how funding is influenced.
4. Evaluate school finance systems that encourage and support fiscal responsibility, transparency, and school improvement.
5. Describe theories and strategies for managing K-12 not-for-profit organizations.
6. Evaluate hallmark legal decisions that inform school governance in the 21st century, including legal standards related to speech, discipline, safety, harassment, and serving students with disabilities.
7. Apply understanding of safety procedures, protocol, and school climate.
8. Demonstrate competency in ensuring physical and emotional safety in both schools and community.
9. Demonstrate competency in crisis management and communication.

EDLE 6140

Instructional Leadership

Credit hours: 3

Advances student understanding, skill, and capacity to facilitate coherent systems of curriculum development, impactful instruction, valid assessment. Builds professional capacity for data interpretation and decision making for the success and well-being of students and faculty.

Course Learning Outcomes

1. Design coherent systems of curriculum, instruction, and assessment within and across grade levels to promote student academic success.
2. Evaluate school-wide instructional practice and effective pedagogy that is consistent with student development and learning.
3. Analyze student performance data from formative, summative, benchmark, and standardized assessments to provide actionable information to monitor and improve student learning.
4. Critique educator performance to provide actionable information to improve instruction and student learning.
5. Explain how to facilitate faculty understanding and application of Utah Core Standards.
6. Apply key elements and protocols for professional learning communities that focus on student achievement.
7. Develop competency in building a collaborative professional culture in the school setting.

EDLE 6150

School Operations and Management- Communication/Planning/HR/Evaluation

Credit hours: 3

Explores school communication, planning, human resources, and evaluation as primary themes in school management and operations. Provides an overview of current K-12 management conditions and theory. Reviews the role of legislation, policy, and leadership on the primary themes. Prepares students to communicate with stakeholders, strategically plan for school improvement, know best practices in the hiring and retention of public school staff.

Course Learning Outcomes

1. Evaluate the role of communication in organizational improvement, leadership, management, and program evaluation.
2. Apply various communication methods to create an inclusive environment for all stakeholders.
3. Create new oral and written communications related to organizational leadership.
4. Evaluate the role of strategic planning and systems thinking in school improvement.
5. Analyze methods and process for program creation, evaluation, and sustainability in the planning process.
6. Evaluate the role of Human Resource best practice, law, and procedures in K-12 environments.
7. Analyze hiring processes at a local school.
8. Analyze evaluation methods for teachers, staff, and other employees in K-12 environments.

EDLE 6160

Developing Positive School and Community Culture

Credit hours: 3

Introduces students to critical concepts about building a school culture that leverages the strengths of collective solutions. Identifies leadership skills required to effectively manage change within the school setting. Introduces assessments to use in identifying challenges and summarizing impact of PLC fairness, transparency and trust.

Course Learning Outcomes

1. Build a collaborative professional environment within the school and surrounding community.
2. Develop an equitable and culturally responsive school community.
3. Use various communication formats with stakeholders.
4. Manage professional discourse within a school and community to achieve beneficial outcomes.

EDLE 6170

Leading Change/Innovation/Educational Entrepreneurship

Credit hours: 3

Introduces critical concepts of school change. Addresses strategies to encourage and manage innovation and entrepreneurship. Prepares students to aid learners in developing deeper abilities to create, critique, and collaborate to solve complex challenges facing society. Prepares students to successfully manage change and innovation in teaching and learning in the 21st century. Guides students in learning to anticipate needed changes and to develop skills to effectively lead innovation in their school settings.

Course Learning Outcomes

1. Apply change leadership principles in a school setting.
2. Describe the importance of changing the way we view learning in a 21st century context.
3. Evaluate strategies to leverage the power of professional relationships and partnerships to ground student learning in next generation skills.
4. Analyze the role assessment plays in managing effective school change.
5. Identify innovative technological practices that influence student achievement.
6. Evaluate strategies to encourage teacher innovation and entrepreneurship in order to address students' learning challenges.
7. Analyze the benefits and challenges related to change and innovation in school settings.

EDLE 6200

Current Research in Education Leadership

Credit hours: 3

Examines current research in education leadership through reading, discussion, analysis, and writing. Includes reviews of research literature related to K-12 education. Emphasizes connections to state board professional requirements.

Course Learning Outcomes

1. Discuss current issues in K-12 education leadership
2. Analyse current issues in K-12 education leadership from the perspective of a school administrator
3. Apply learning from current research to personal leadership practice
4. Write effective literature reviews of education leadership research articles and books.

EDLE 696R

Clinical Portfolio

Credit hours: 1

Focuses on clinical experiences to build skills and strategies needed for school leadership. Aligns all experiences with USBE licensure requirements. Includes the development of the professional school leadership portfolio. Requires evidence for all USBE professional school leadership strands.

Course Learning Outcomes

1. Show evidence of knowledge of the seven required state leadership strands.
2. Show evidence of application of the seven required state leadership strands in a school setting.
3. Show evidence of professional behavior related to the seven required state leadership strands.
4. Discuss the school leader's role related to the seven required state leadership strands.

EDSC 1010

Introduction to Education

Credit hours: 2

Facilitates matriculation into professional education programs. Examines the relationships of teaching, learning, motivating, and instructing in classroom settings. Includes observation in public schools to help students understand these relationships and appreciate the role of professional educators in today's society. Requires substantial commitment of time to off-campus field experiences.

Course Learning Outcomes

1. Explain pathways to education careers and the knowledge, skills, abilities, and dispositions necessary for success.
2. Identify personal and student attributes in order to build relationships and support student development.
3. Utilize theory and content when planning for instruction.
4. Implement effective instructional strategies.
5. Use assessment data to make instructional decisions.
6. Reflect on practice to promote professional growth and advance student learning.

EDSC 3000

Educational Psychology

Credit hours: 3

Stresses research-based teaching and learning principles used in secondary classroom settings to enhance student learning and motivation. Emphasizes the application of theory to practice. Designed to help students in the professional secondary teacher preparation program prepare for state teacher licensing requirements. Requires service-learning.

Course Learning Outcomes

1. Explain how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, social, emotional, moral, and physical domains.
2. Determine how domains of development interact during adolescence and manifest in the secondary classroom.
3. Analyze secondary classroom practice and lesson plans for the use of developmentally appropriate methodologies.
4. Examine the roles of motivation, metacognition, and self-regulation in successful learning experiences.
5. Evaluate the impact of differences in students' cultural and contextual backgrounds and their approaches to learning on motivation, instruction, and student success.
6. Implement research-based theories of learning in secondary instruction.
7. Design multiple methods of developmentally appropriate assessment to engage learners, monitor progress, and guide instructional decision-making.

EDSC 325G

Equitable Technology Integration GI

Credit hours: 2

Addresses the equitable integration of technologies in 7-12th grade and in all curricular areas. Prepares future teachers to use technologies to differentiate their instruction to meet the needs of all students. Explores ways technology can be used to revitalize pedagogy. Evaluates the impact of the global digital divide. Provides future teachers with the ability to develop lesson activities that empower students to make meaningful connections and develop 21st Century skills.

Course Learning Outcomes

1. Create professional learning goals to apply pedagogical approaches made possible by technology.
2. Identify methods for providing equitable access to educational technology, digital content, and learning opportunities to meet the diverse needs of all students.
3. Collaborate with colleagues to curate a collection of digital resources and promote global engagement.
4. Model safe, legal, and ethical practices with digital tools.
5. Create authentic learning opportunities in face-to-face, hybrid, and online environments that challenge all students to engage with content and communicate ideas, knowledge or connections.
6. Develop a variety of technology-based formative and summative assessments that accommodate learner needs, provide timely feedback to students, and inform instruction.
7. Analyze global or intercultural issues.
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
9. Evaluate how one's own cultural values compare with those from different backgrounds.

EDSC 4200

Classroom Management I

Credit hours: 2

Provides effective classroom management procedures (including classroom setup). Develops strategies to build strong student-teacher relationships and classroom management philosophy, rules, and consequences. Identifies strategies for 1st day success and strategies to handle behavior problems encountered in the classroom.

Course Learning Outcomes

1. Explain how to support students as self-directed learners who internalize classroom routines, expectations and procedures.
2. Design a variety of classroom management strategies to effectively maintain a positive learning environment.
3. Describe student equity in learning by organizing, allocating, and managing the resources of time, space, and attention.
4. Use social networks to collaborate and improve teaching knowledge.
5. Develop communication skills of respect and responsiveness.

EDSC 4250

Classroom Management II

Credit hours: 2

Develops strategies for planning and conducting instruction. Establishes appropriate strategies for handling chronic misbehavior and students with behavioral or emotional disorders. Explores practical and appropriate responses, including internal control and behavior modification strategies with an emphasis on self-monitoring. Prepares preservice secondary teachers to interact well with parents.

Course Learning Outcomes

1. Develop learning experiences that engage and support students as self-directed learners who internalize classroom routines, expectations and procedures.
2. Establish a variety of classroom management strategies to effectively maintain a positive learning environment.
3. Engage students in equitably learning by organizing, allocating, and managing the resources of time, space, and attention.
4. Collaborate with others to create learning environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.
5. Interpret assessment results to inform student instruction and share results with caregivers.
6. Reflect on classroom experiences during student teaching in preparation for a full-time teaching position.
7. Use communication skills of respect and responsiveness to establish a positive learning climate of openness, respectful interactions, support, and inquiry.

EDSC 4440

Content Area Literacies

Credit hours: 3

Prepares preservice secondary teachers to facilitate the development of reading, writing, speaking and listening skills in the content areas through an asset-based lens and to support and expand the literacy practices of their disciplines.

Course Learning Outcomes

1. Evaluate the disciplinary literacy demands of the disciplines.
2. Use an asset-based lens when creating literacy activities.
3. Choose appropriate texts for diverse learners.
4. Scaffold reading comprehension for students when reading the texts of the disciplines.
5. Design scaffolded writing and/or writing-to-learn tasks in disciplinary genres.
6. Provide appropriate feedback on student work.
7. Design scaffolded talk opportunities in disciplinary genres.
8. Design appropriate routines and activities to support vocabulary development in the disciplines.
9. Compose assessments that evaluate students' content learning and literacy skill development.

EDSC 445G

Multicultural Instruction ESL GI

Credit hours: 3

Prepares pre-service secondary teachers to understand and facilitate achievement in the content areas for ethnically and linguistically diverse students at the middle school and high school level. Covers foundations of multicultural education and instructional methodology for adaptations for ethnically and linguistically diverse students. Emphasizes inclusive, anti-bias classroom strategies for supporting learning and development of diverse students. Encourages examination of personal beliefs and attitudes about diversity. Introduces teachers to the teaching of English as a second language not only for linguistic development, but for cognitive, academic and social development. Covers both theoretical and applied aspects of second language learning and teaching and provides techniques, activities, strategies and resources to plan instruction for English language learners (ELLs).

Course Learning Outcomes

1. Analyze the basic curricular, pedagogical, and personal components of multicultural education.
2. Explain the differing ideologies and paradigms that guide multicultural education.
3. Evaluate how one's own cultural values compare with those from different backgrounds.
4. Synthesize new knowledge and skills in the creation of multicultural curricula and practice.
5. Analyze effective strategies, methods and materials for teaching English language learners.
6. Model effective practices in teaching ELLs for colleagues.
7. Explain how language proficiency standards and objectives align with state/local standards/objectives.
8. Analyze global or intercultural issues.
9. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.

EDSC 455G

Secondary Curriculum Instruction and Assessment GI

Credit hours: 3

Examines state standards to prepare preservice secondary teachers to write objectives, lesson plans, and units using appropriate models of instruction and assessment. Includes a field experience component.

Course Learning Outcomes

1. Explain concepts to engage learners in critical/creative thinking and collaborative problem solving.
2. Evaluate multiple methods of assessment to engage learners, document learner progress, and guide instruction.
3. Apply knowledge of content areas, cross-disciplinary skills, learners, the community, and pedagogy to plan instruction that supports every student.
4. Apply a variety of instructional strategies to encourage and teach learners key concepts and skills of their content area.
5. Demonstrate the dispositions of a professional educator.
6. Analyze global or intercultural issues.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Evaluate how one's own cultural values compare with those from different backgrounds.
9. Interrelate respectfully with individuals representing cultures and perspectives other than one's own.

EDSC 4850

Student Teaching Secondary

Credit hours: 4 to 10

Provides a thirteen-week teaching experience in a secondary classroom, grades 7-12. Includes application of knowledge, skills, and attitudes derived in previous course work and program experience. Requires students to be recommended for a secondary education license from the Utah State Board of Education. Course Lab fee of \$200 for practical experience applies.

Course Learning Outcomes

1. Demonstrate instructional strategies and assessment appropriate to teaching children.
2. Apply knowledge, skills, and attitudes derived in previous course work and program experiences.
3. Implement best teaching practices for diverse student populations.
4. Demonstrate strategies for working with parents.

EDSC 4990

Teacher Performance Assessment Project WE

Credit hours: 2

Introduces the teaching and learning cycle: planning, instruction, and assessment. Assists students in completing an authentic assessment tool that shows how they develop and evaluate student learning. Documents authentic practices from the student's teaching experience that address planning, instruction, assessment, analyzing teaching, and academic language to reveal the impact of a candidate's teaching performance on student learning. May be Graded Credit/No Credit.

Course Learning Outcomes

1. Design instruction to support their students' various strengths and learning needs.
2. Implement instruction that engages all students in learning.
3. Assess student learning.
4. Provide feedback to guide further learning.
5. Use assessment results to inform instruction.
6. Compose a variety of disciplinarily-appropriate texts.

EDSP 2840

Instruction and Assistive Technology

Credit hours: 2

Provides students with an overview of the field of instructional and assistive technology (IT and AT) and an understanding of how to successfully integrate varied uses of technology into their specific learning environment. Develops students' proficiencies for evaluating technology needs and teaching technology-enhanced learning activities to support students with diverse needs in the classroom.

Course Learning Outcomes

1. Differentiate between Assistive Technology (AT) and Instructional Technology (IT).
2. Select appropriate assistive technology tools and services.
3. Use technology to create, adapt and personalize learning experiences that foster independent learning and accommodate learner differences and needs.
4. Implement assistive technology (AT) and instructional technology (IT) that allows access and improved student outcomes for students with disabilities in the general education curriculum.
5. Apply ethical standards of practice in working with students and personnel who use assistive technology.
6. Collaborate to identify, plan and implement assistive and instructional technologies across settings and transitions.
7. Identify funding source options for obtaining assistive technology devices and services.

EDSP 3000

Educational Psychology

Credit hours: 3

Stresses research-based teaching and learning principles used in classroom settings to enhance student learning and motivation. Emphasizes the application of theory to practice. Helps students in the professional teacher preparation program prepare for state teacher licensing requirements. Requires service-learning.

Course Learning Outcomes

1. Explain how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, social, emotional, moral, and physical domains.
2. Determine how these domains of development interact during childhood and adolescence and manifest in the classroom.
3. Analyze classroom practice and lesson plans for the use of developmentally appropriate methodologies.
4. Examine the roles of motivation, metacognition, and self-regulation in successful learning experiences.
5. Evaluate the impact of differences in intelligence and approaches to learning on motivation, instruction, and student success.
6. Describe major research-based perspectives of learning, analyze their use in classrooms and lesson plans, and implement them in instruction.
7. Design and develop multiple methods of developmentally appropriate assessment to engage learners in their own growth, to monitor learner progress, and to guide teachers and learners decision-making.

EDSP 340G

Exceptional Students GI

Credit hours: 2

Covers the role of teachers in the inclusion of exceptional children, working with parents and specialists, and in developing individual educational plans for exceptional children. Introduces characteristics and special needs of exceptional children who have physical, emotional, social, mental, or health exceptionalities. Stresses curriculum modification planning necessary for special needs students. Addresses ethical behaviors specific to teaching exceptional children. Requires ten hours of field work.

Course Learning Outcomes

1. Describe teacher's role in the inclusion process with exceptional children including collaborating with parents and specialists in developing an individual education plan for each child
2. Evaluate ethical behaviors of teachers working with special needs children/adolescents
3. Describe the characteristics and needs of children who have physical, mental, emotional, social, communication, sensory and health exceptionalities
4. Create adaptations of the standard curriculum to meet the needs of exceptional children
5. Describe uses of technology and assistive technology devices for individuals with disabilities
6. Analyze the unique needs and viewpoints of families who have a member with an exceptionality
7. Analyze global or intercultural issues
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
9. Evaluate how one's own cultural values compare with those from different backgrounds

EDSP 4100

Instructional Strategies and Program Management for Students with Mild/Moderate Disabilities

Credit hours: 3

Provides an overview of the individual education plan (IEP), service delivery patterns, assessment and programming variables and organizational variables necessary for teaching students with mild/moderate and significant disabilities.

Course Learning Outcomes

1. Oversee the IEP team members' involvement in the IEP process, including the student.
2. Interpret the Individuals with Disabilities Education Act (IDEA) requirements for an initial Individualized Education Plan (IEP) evaluation, eligibility, and a re-evaluation for special education services.
3. Use baseline data to write individualized SMart goals specific to the student's needs with access to the core curriculum.
4. Construct effective schedules, daily routines, accommodations/modifications and service delivery systems in meeting individual student needs.
5. Maintain accurate student records to assure that appropriate confidentiality standards are in place and enforced.

EDSP 4110

Special Education Law/Policies/Procedures

Credit hours: 3

Provides overview of the role of the federal, state, and local government in special education issues with special emphasis on case and regulatory law, including Utah regulation. Focuses on six major principles of the Individuals with Disabilities Education Act as they relate to the free and appropriate public education for all students.

Course Learning Outcomes

1. Evaluate the primary purposes and provisions of federal statutes that affect special education.
2. Apply professional ethics, standards, and practices by implementing laws, regulations, and policies.
3. Compare state and federal laws related to special education.
4. Describe the rights of parents and students with disabilities.
5. Explore issues surrounding the right to due process of law.

EDSP 4120

School to Post-School Transition Planning

Credit hours: 2

Provides students with knowledge, strategies, and resources necessary to prepare students with disabilities for the transition from school to postsecondary education, employment, community participation, and independent living. Provides skills for transition planning and helping students access services necessary to reach their desired outcomes and become as independent as possible. Emphasizes the person-centered planning process, which embeds decisions based on students' preferences, interests, and abilities.

Course Learning Outcomes

1. Evaluate evidence-based instruction, curricular resources, and practices regarding transition to postschool settings.
2. Use a variety of formal and informal transition assessments and procedures to identify student strengths, preferences, and interests as they relate to postschool settings.
3. Use the person-centered planning process to write transition goals for individual desired outcomes related to post-secondary education, employment and independent living.
4. Explain strategies for collaborating with stakeholders to ensure and increase effective transition services, supports, and outcomes for individuals with exceptionalities and their families.

EDSP 4130

Math Instruction for Students with Mild/Moderate/Severe Disabilities

Credit hours: 2

Provides specific strategies and techniques to use in teaching students with learning difficulties both in pull-out special educational settings and in more inclusive general education settings. Provides math curricula aligned with the Utah Core standards using Utah Effective Teaching standards. Emphasizes how to implement targeted interventions in Math at the Tier 3 level for students who are not making progress at the Tier 1 and Tier 2 interventions.

Course Learning Outcomes

1. Summarize tier support models used in schools for teaching math to students with mild/moderate/severe disabilities (e.g., pull out, co-taught, full inclusion).
2. Design an instruction plan that will help students work towards bridging the gaps between grade-level Utah Core math standards and their current level of math performance.
3. Identify methods for delivering instruction in teaching math to students with mild/moderate/severe disabilities.
4. Identify the range of appropriate accommodations and modifications for students with mild/moderate/severe disabilities in math instruction.
5. Explain math progressions needed to effectively monitor progress towards annual goals.
6. Describe a variety of effective instructional techniques and learning strategies used in teaching math (e.g., concrete manipulatives, multiple representations) to students with mild/moderate/severe disabilities.
7. Conduct error analysis on data from assessment instruments for intervention.
8. Explain curriculum based math measurements that facilitate consultation with parents, educators, students, and professionals involved in the IEP process.
9. Design an RTI plan based on case studies that includes Tier 1, Tier 2, and Tier 3 levels.

EDSP 4131

Math Practicum

Credit hours: 1

Provides students the opportunity spend time in practicum placements to practice applying skills, competencies, and techniques to teach math to students with mild or moderate disabilities.

Provides students with an opportunity to work with practicum coordinators to analyze and solve instructional and management problems by making data-based decisions.

Course Learning Outcomes

1. Plan learning experiences that encourage assigned students to achieve success by allowing them to demonstrate learning in different ways.
2. Adapt lesson plans to meet the needs of students with mild to moderate disabilities using the Utah Core standards and Utah Effective Teaching standards.
3. Analyze the effects of learning experiences on individuals and on the class as a whole.
4. Determine appropriate educational changes to improve student learning.
5. Develop academic and/or behavioral intervention plans based on feedback from supervisor.

EDSP 4135

Reading and Writing Instruction for Students with Mild/Moderate/Severe Disabilities K-12

Credit hours: 2

Provides specific strategies and techniques to use in teaching students with learning difficulties both in pull-out special educational settings and in more inclusive general education settings. Features reading and writing curricula aligned with the Utah Core standards using Utah Effective Teaching standards. Emphasizes evidence-based practices and empirically supported instruction for teaching reading and writing to students with disabilities combined with data based decision making.

Course Learning Outcomes

1. Identify methods for delivering instruction in teaching reading and writing to students with mild/moderate/severe disabilities.
2. Identify an appropriate range of accommodations and modifications for students with mild/moderate/severe disabilities in reading and writing instruction.
3. Explain reading and writing scope and sequence needed to effectively monitor progress towards annual goals.
4. Describe a variety of techniques and learning strategies used in teaching reading (e.g., phonemic awareness, phonics, fluency, comprehension, and vocabulary) and writing (e.g., handwriting and written expression) to students with mild/moderate/severe disabilities.
5. Determine the grade level and readability of curriculum/textbooks to modify materials for students with mild/moderate/severe disabilities.
6. Describe a variety of instructional techniques for all essential literacy components used in teaching reading.
7. Conduct error analysis on data from assessment instruments for intervention.
8. Explain curriculum based reading and writing measurements that facilitate consultation with parents, educators, students, and professionals involved in the IEP process.
9. Design reading and writing IEP goals based on case studies that includes Tier 1, Tier 2, and Tier 3 levels.

EDSP 4136

Reading Practicum

Credit hours: 1

Provides students practicum placements to practice applying skills, competencies, and techniques to teach reading and writing to students with mild or moderate disabilities. Provides students with practicum coordinators to analyze and solve instructional and management problems by making data-based decisions.

Course Learning Outcomes

1. Plan learning experiences that encourage assigned students to achieve success by allowing them demonstrate learning in different ways.
2. Adapt lesson plans to meet the needs of students with mild to moderate disabilities using the Utah Core standards and Utah Effective Teaching standards.
3. Analyze the effects of learning experiences on individuals and on the class as a whole.
4. Determine appropriate educational changes to improve student learning.
5. Develop academic and/or behavioral intervention plans based on feedback from supervisor.

EDSP 4140

Collaboration and Consultation with Parents and School Staff WE

Credit hours: 3

Provides strategies for collaborating and communicating with families, other educators, related service providers, individuals with exceptionalities, and personnel from community agencies in culturally responsive ways. Provides a review of interagency collaboration and consultation for life skills. Emphasizes creating multidisciplinary teams and professional learning communities who are prepared to assist parents and other teachers in collaborative problem solving.

Course Learning Outcomes

1. Summarize the importance of building a community of collaborators and learners and how understanding ourselves might affect our teaching and communication skills.
2. Identify the principles of effective communication skills necessary to interact with families and school personnel concerning development of individualized plans.
3. Interpret the basic concerns of individual families and their child's disability.
4. Describe the multiple roles and responsibilities of the family and team members in terms of collaboration.
5. Identify the culturally responsive factors that might affect planning and consultation with educators.
6. Explain the factors leading to conflict and principles of conflict resolution.
7. Summarize the strengths and challenges of multiple modes of delivery (e.g., team teaching, co-teaching).
8. articulate roles and responsibilities of the para-educator related to instruction, intervention, and direct service.
9. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

EDSP 4160

Assessment and Evaluation in Special Education

Credit hours: 3

Provides an overview of multiple methods of assessment. Presents the connection between gathering assessment information and applying results to decisions regarding students' eligibility for special education services. Includes administering eligibility assessment tests, interpreting results, and communicating results of assessment tools.

Course Learning Outcomes

1. List multiple methods of assessment and data-sources in making educational decisions.
2. Apply the mechanics of selecting and using technically sound formal and informal assessments that minimize bias and considers needs of students from all cultural and linguistic backgrounds.
3. Describe measurement principles and practices used to interpret assessment results and guide educational decisions for individuals with exceptionalities.
4. Describe the legal issues of assessment in IDEA 2004 and ethical concerns of assessment.
5. Explain the use of criterion referenced assessment tools to improve student learning.
6. Develop an evaluation report and summary that is clear, consistent, and coherent.
7. Apply assessment results to decisions regarding students' eligibility for special education services.
8. Analyze accuracy of data to make recommendations based on assessment that will facilitate student learning.

EDSP 4170

Instruction in Life Skills for Students with Severe and Significant Disabilities

Credit hours: 3

Provides special education pre-service teachers with knowledge and understanding of the characteristics and needs of individuals with severe and significant disabilities. Includes Instructional programs and practices for Students with Moderate and Severe Disabilities. Evaluates procedures for data based evaluation of student progress.

Course Learning Outcomes

1. Describe the characteristics of students with significant and multiple disabilities, including autism spectrum disorders
2. Design educational environments and environments to facilitate the growth, inclusion and self determination of students with significant disabilities
3. Apply knowledge of assessment and intervention research to meet state standards, accommodations and modifications
4. Describe the procedures for data based evaluation of student progress
5. Evaluate evidence based practices in special education literature

EDSP 4180

Curriculum and Instruction for Students with Severe and Significant Disabilities

Credit hours: 3

Examines the history of instructional models and characteristics for students with moderate and severe disabilities. Creates instruction and assessment that includes accommodations, adaptations and materials appropriate for teaching individuals with moderate and severe disabilities.

Evaluates methods of assessment for purposes of classification and educational placement.

Course Learning Outcomes

1. Explain types, characteristics, causes and prevalence of severe /significant disabilities.
2. Evaluate methods of assessments for the purpose of classification and educational planning.
3. Create standards based IEP lesson with levels of educational performance, goals and accommodations for a student with severe and multiple disabilities.
4. Identify the reasons for self advocacy and self determination for individuals with severe and multiple disabilities and their families.
5. Develop instructional methods and specific learning strategies, accommodations, modifications and adaptations of materials and environments, assistive/adaptive technology in a continuum of educational placements.

EDSP 4200

Classroom Management I

Credit hours: 2

Provides effective classroom management procedures (including classroom setup). Develops strategies to build strong student-teacher relationships and classroom management philosophy, rules, and consequences. Identifies strategies for 1st day success and strategies to handle behavior problems encountered in the classroom.

Course Learning Outcomes

1. Explain how to support students as self-directed learners who internalize classroom routines, expectations and procedures.
2. Design a variety of classroom management strategies to effectively maintain a positive learning environment.
3. Describe student equity in learning by organizing, allocating, and managing the resources of time, space, and attention.
4. Use social networks to collaborate and improve teaching knowledge.
5. Develop communication skills of respect and responsiveness.

EDSP 4250

Classroom Management II

Credit hours: 2

Develops strategies for planning and conducting instruction. Establishes appropriate strategies for handling chronic misbehavior and students with behavioral or emotional disorders. Explores practical and appropriate responses, including internal control and behavior modification strategies with an emphasis on self-monitoring. Prepares preservice teachers to interact well with parents.

Course Learning Outcomes

1. Develop learning experiences that engage and support students as self-directed learners who internalize classroom routines, expectations and procedures.
2. Establish a variety of classroom management strategies to effectively maintain a positive learning environment.
3. Engage students in equitably learning by organizing, allocating, and managing the resources of time, space, and attention.
4. Create learning environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self- motivation.
5. Interpret assessment results to inform student instruction in order to share results with caregivers.
6. Reflect on classroom experiences during student teaching in preparation for a full-time teaching position.
7. Use communication skills of respect and responsiveness to establish a positive learning climate of openness, respectful interactions, support, and inquiry.

EDSP 4440

Content Literacy

Credit hours: 3

Prepares preservice teachers to facilitate reading, writing and study skills achievement in the content areas. Includes field experience in public schools.

Course Learning Outcomes

1. Identify various literacy strategies and when/how to implement them.
2. Create instructional opportunities that are adapted to diverse learners.
3. Explain how others differ in their approaches to learning.
4. Use effective verbal, nonverbal, and media communication techniques to foster inquiry, collaboration, and interaction.
5. Illustrate knowledge of reading and writing strategies through individual and group presentations.

EDSP 445G

Multicultural Education/ESL

Credit hours: 3

Prepares pre-service teachers to understand and facilitate achievement for ethnically and linguistically diverse students in the classroom. Covers foundations of multicultural education and instructional methodology for adaptations for ethnically and linguistically diverse students. Emphasizes inclusive, anti-bias classroom strategies for supporting learning and development of diverse students. Encourages examination of personal beliefs and attitudes about diversity. Introduces teachers to the teaching of English as a second language not only for linguistic development, but for cognitive, academic and social development. Covers both theoretical and applied aspects of second language learning and teaching and provides techniques, activities, strategies and resources to plan instruction for English language learners (ELLs).

Course Learning Outcomes

1. Analyze the basic curricular, pedagogical, and personal components of multicultural education.
2. Explain the differing ideologies and paradigms that guide multicultural education.
3. Explain how language proficiency standards and objectives align with state/local standards/objectives.
4. Synthesize new knowledge and skills in the creation of multicultural curricula and practice.
5. Analyze effective strategies, methods and materials for teaching English language learners.
6. Model effective practices in teaching ELLs for colleagues.
7. Analyze global or intercultural issues.
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
9. Evaluate how one's own cultural values compare with those from different backgrounds.

EDSP 455G

Curriculum Design and Assessment

Credit hours: 3

Examines state standards to prepare preservice teachers to write objectives, lesson plans, and units using appropriate models of instruction and assessment. Includes a field experience component.

Course Learning Outcomes

1. Explain concepts to engage learners in critical/creative thinking and collaborative problem solving.
2. Evaluate multiple methods of assessment to engage learners, document learner progress, and guide instruction.
3. Apply knowledge of content areas, cross-disciplinary skills, learners, the community, and pedagogy to plan instruction that supports every student.
4. Apply a variety of instructional strategies to encourage and teach learners key concepts and skills of their content area.
5. Demonstrate the dispositions of a professional educator.
6. Analyze global or intercultural issues.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Evaluate how one's own cultural values compare with those from different backgrounds.
9. Interrelate respectfully with individuals representing cultures and perspectives other than one's own.

EDSP 4990

Teacher Performance Assessment Project WE

Credit hours: 2

Introduces the teaching and learning cycle: planning, instruction, and assessment. Assists students in completing an authentic assessment tool that shows how they develop and evaluate student learning. Documents authentic practices from the student's teaching experience that address planning, instruction, assessment, analyzing teaching, and academic language to reveal the impact of a candidate's teaching performance on student learning. May be graded credit/no credit.

Course Learning Outcomes

1. Design instruction to support their students' various strengths and learning needs.
2. Implement instruction that engages all students in learning.
3. Assess student learning.
4. Provide feedback to guide further learning.
5. Use assessment results to inform instruction.
6. Compose a variety of disciplinarily-appropriate texts.

EDUC 6082

Equitable Technology Integration for Practitioners

Credit hours: 3

Integrates information and communication technologies into instruction and prepares teachers to use technologies to differentiate their instruction to meet the needs of all students. Uses technology to revitalize pedagogy and provides teachers with the skills to develop lesson activities that empower students to make meaningful connections and develop 21st Century skills.

Course Learning Outcomes

1. Create professional learning goals to apply pedagogical approaches made possible by technology.
2. Identify methods for providing equitable access to educational technology, digital content, and learning opportunities to meet the diverse needs of all students.
3. Collaborate with colleagues to curate a collection of digital resources and promote global engagement.
4. Model safe, legal, and ethical practices with digital tools.
5. Design authentic learning activities that align with content area standards using digital tools and resources to maximize critical thinking and problem-solving.
6. Create learning opportunities in face-to-face, hybrid, and online environments that challenge students to engage with content and communicate ideas, knowledge or connections.
7. Develop a variety of technology-based formative and summative assessments that accommodate learner needs, provide timely feedback to students, and inform instruction.

EDUC 6100

Research Methodology

Credit hours: 3

Introduces the principal methodologies used in research in education. Presents basic information about the purposes of research, the scientific method, and basic qualitative and quantitative research. Identifies methods for locating, reading, interpreting and using research reports and in applying measurement issues and research methods to classroom problems. Investigates teacher research practices and ways it can be used to study teaching and teacher education.

Course Learning Outcomes

1. List major components of a research study
2. Describe the process of action research using qualitative, quantitative, and mixed methods
3. Critique educational research
4. Identify the ethical considerations involved in conducting and reporting educational research
5. Critically analyze strengths and weaknesses of own and peer action research
6. Select a research topic and method for a Master's project
7. Use research to inform instruction

EDUC 6110

Applied Statistics for Education

Credit hours: 3

Introduces elementary statistics in educational settings and includes descriptive statistics, sampling, central tendency, and inferential methods. Emphasizes reading, understanding and evaluating statistics in research reports.

Course Learning Outcomes

1. Interpret statistical terminology.
2. Interpret statistical tables and figures.
3. Identify what specific research questions(s) can be answered by each of a variety of statistical procedures.
4. Determine what can and cannot be accomplished when someone sets up and tests one or more null hypotheses.
5. Detect the misuse of statistics.
6. Distinguish between good and poor research designs.
7. Derive information from research reports.
8. Use basic descriptive and inferential statistics.

EDUC 6201

Teacher Performance Assessment Project

Credit hours: 2

Introduces the teaching and learning cycle: planning, instruction, and assessment. Assists students in completing an authentic assessment tool that shows how they develop and evaluate student learning. Documents authentic practices from the student's teaching experience that address planning, instruction, assessment, analyzing teaching, and academic language to reveal the impact of a candidate's teaching performance on student learning. Graduate fee of \$300 applies.

Course Learning Outcomes

1. Design instruction to support their students' various strengths and learning needs.
2. Implement instruction that engages all students in learning.
3. Assess student learning.
4. Provide feedback to guide further learning.
5. Use assessment results to inform instruction.

EDUC 6202

Classroom Management Practicum

Credit hours: 3

Provides first-hand, supervised, clinical experience in observing and implementing effective class management practices.

Course Learning Outcomes

1. Identify school-wide disciplinary procedures.
2. Analyze the components of an effective classroom management program.
3. Create a toolbox of effective classroom management procedures, including classroom setup.
4. Explain the role of teacher-student relationships and interactions in an effective management system.
5. Implement classroom management strategies and procedures that allow all students to be engaged in learning.
6. Evaluate various methods for resolving discipline problems.

EDUC 6203

Student Teaching Graduate Licensure

Credit hours: 6

Includes 400 hours of student teaching experience in a secondary classroom, grades 7-12. Includes application of knowledge, skills, and attitudes derived in previous course work and program experience. Is required for students to be recommended for a secondary education license from the Utah State Office of Education. May be Graded Credit/No Credit. Graduate fee of \$200 applies.

Course Learning Outcomes

1. Design instruction to support their students' various strengths and learning needs.
2. Implement instruction that engages all students in learning.
3. Evaluate student learning.
4. Critique student work to guide further learning.
5. Use assessment results to inform instruction.
6. Create a professional resume.
7. Self-assess progress toward effective classroom practice.
8. Exhibit responsible and ethical professional practices.

EDUC 6311

Introduction to Exceptional Students

Credit hours: 3

Provides a comprehensive introduction of characteristics of children and youth with disabilities and topics related to models of service delivery, documentation procedures, and legal/ethical issues. Includes historical factors, legislation, etiology, characteristics, needs, educational strategies, including existing and emerging technologies, assessment, and support services for individuals with disabilities ranging from mild, moderate to severe levels of varying disabilities. Studies the impact of disabilities on academic and social/emotional performances.

Course Learning Outcomes

1. Explain significant philosophical and historical aspects of special education, as well as emerging issues, practices and research in the field.
2. Describe current legislation pertaining to students with disabilities and their families, as well as ethical standards related to professional practices in the field.
3. Identify the characteristics of various categories of exceptionality and how they inform educational strategies and decision-making.
4. Explain the purpose and components of an IEP/IFSP and their processes, as well as the roles of team members.
5. Evaluate effective communication strategies with parents/families from diverse backgrounds and professionals from other disciplines and community useful for those working with exceptional students.

EDUC 6320

21st Century Instruction and Assessment

Credit hours: 3

Focuses on instructional design and delivery incorporating 21st century learning design and assessment. Introduces a range of instructional models and assessment tools. Requires planning and implementing instruction and assessment using several selected models.

Course Learning Outcomes

1. Identify student, school, district, and state learning goals
2. Describe the strengths and weaknesses of each model of instruction and each mode of delivery
3. Explain ways in which models of instruction are consistent with 21st century learning design
4. Assess how lessons based on various models of instruction meet a range of instructional needs
5. Create applications for each model of instruction that incorporate 21st century learning design
6. Evaluate research findings on the effectiveness of various instructional models
7. Construct a variety of assessment tools
8. Use assessment data from a variety of assessments to plan instruction

EDUC 6330

Diversity and Differentiation in the Classroom

Credit hours: 3

Provides an in-depth understanding of differentiated instructional design and delivery. Focuses on planning and implementing instruction for a diverse classroom community.

Course Learning Outcomes

1. Analyze learner diversity and academic needs to make appropriate instructional modifications.
2. Design assessment appropriate to all of the diverse needs, including disabilities and English Language Learners.
3. Modify classroom elements based on learner need, including readiness, affect, interest, and learning profiles.
4. Design and implement differentiated instruction equitable for all learners, using selected models of instruction.
5. Interpret research findings about differentiated instruction and multicultural learning.

EDUC 6400

Contemporary Issues in Teacher Leadership

Credit hours: 3

Introduces students to critical concepts about contemporary teacher leadership. Examines current issues and strategies impacting teacher leadership. Analyzes contemporary theories of learning and teaching from personal and public perspectives and how those theories converge with professional practice in classrooms and schools. Examines the philosophical foundations of curriculum and instruction in American schools, the social and cultural conditions that influence education, and new concepts in education curriculum materials, and methods of instruction from the perspective of teacher leadership.

Course Learning Outcomes

1. Identify elements of emergent leadership from an organization-as-complex adaptive system view during the 21st Century knowledge age.
2. Evaluate personal leadership styles, beliefs, skills, strengths, weaknesses, and experiences.
3. Create a personal model of leadership to guide the individual's role as a leader in educational settings.
4. Deconstruct the underlying foundations of contemporary theories of learning.
5. Analyze underlying assumptions about learning from a public perspective.
6. Evaluate the relationships between educational theory, classroom practice, and public perspectives.
7. Trace the effects of social, cultural, and political conditions on educational practice.

EDUC 6411

Instructional Coaching

Credit hours: 3

Ensures that those obtaining the Utah State Board of Education (USBE) Instructional Coaching endorsement are prepared with the requisite, foundational skill-set to effectively coach their fellow educators' practice to improve student outcomes and overall educator effectiveness using the USBE Coaching Framework. Teaches the USBE Coaching Framework to ensure a level of consistency statewide among all institutions providing courses for the Instructional Coaching Endorsement.

Course Learning Outcomes

1. Demonstrate the components of the USBE coaching model.
2. Engage in professional roles and responsibilities in relation to LEA expectations.
3. Increase student success in schools by building on the educators' current knowledge, skills, and best practices.
4. Create trusting relationships that build rapport and foster collaboration with all stakeholders.
5. Use specific terminology that is clear, non-threatening, and objective in coaching sessions.
6. Engage with educators by asking effective probing and reflective questions regarding student achievement and teacher response data to help educators critically evaluate their practice.
7. Utilize data to shift decision-making about instructional practices.
8. Utilize effective listening and communication strategies with educators (eg. aware of own biases, supportive presence/body language, positive language, and tone).

EDUC 6412

Adult Learning--Theory and Practice

Credit hours: 3

Builds theoretical background knowledge and skills required for teaching adults in professional development or coaching, mentoring settings. Ensures that those pursuing and obtaining the Utah State Board of Education Instructional Coaching endorsement are prepared with the requisite, foundational skill-set to effectively coach their fellow educators' practice to improve student outcomes and overall educator effectiveness.

Course Learning Outcomes

1. Incorporate principles of Adult Learning Theory into the design of professional learning.
2. Support stages of educator development through coaching and professional learning opportunities.
3. Encourage student progress through the stages of self-efficacy.
4. Use best practices of adult learning theory (andragogy) when teaching adult learners.
5. Apply theories of change to ensure that coaching occurs in optimal environments that foster the growth needed to positively impact students.
6. Effectively differentiate instruction when working with educators to honor their experience and meet their personalized needs.

EDUC 6415

Global Issues in Teaching and Learning

Credit hours: 3

Introduces teachers and instructional specialists to exemplary global/intercultural curriculum and pedagogy that have helped students enhance higher order thinking skills, socio-emotional competences, and global/intercultural competences. Analyzes globalization processes and their influences on teaching and learning in a global and intercultural context. Discusses similarities and differences of pedagogical and classroom practices between/within/across cultures in terms of competency-based teaching and learning. Integrates global/intercultural curriculum and pedagogy to be used in K-12 classrooms and any other educational settings.

Course Learning Outcomes

1. Recognize the complexity of practicing global and intercultural curriculum and pedagogy in a global context.
2. Compare similarities and differences of pedagogical and classroom practices within and across different cultures and social contexts.
3. Analyze high-performing curriculum and pedagogy that shape teaching quality around the world and enhance competency-based learning.
4. Develop curricular materials and pedagogical tools that infuse global learning and global competency development in schools and classrooms at all levels.

EDUC 6490

Masters Project

Credit hours: 3

Provides working knowledge of action research methods in an educational setting. Sets the standards for the professional master's project. Establishes techniques and strategies for successful project completion.

Course Learning Outcomes

1. Synthesize research on an educational topic.
2. Analyze an educational topic for designing a project.
3. Discuss findings of a project on an educational topic.
4. Describe implications of a project to an educational setting.

EDUC 6663

Content Area Reading

Credit hours: 3

Designed to help practicing teachers develop an in-depth understanding of the research findings, issues, principles and practices related to exemplary, research-based reading and writing instruction in the content areas. Covers the use of textbooks and nonfiction reading materials for young students who are beginning readers and writers. Focuses on how to assist all learners to read, understand and learn from nonfiction reading materials. Covers assisting students at all grade levels in their reading of materials and writing of text related to science, social studies, history, math art, music, etc.

Course Learning Outcomes

1. Explain the major theories and issues related to the literacy development of all students.
2. Determine if students are appropriately integrating the components of reading in their course assignments
3. Support other teachers in their use of instructional grouping options and instructional practices
4. Use, interpret and recommend a wide range of assessment tools and practices to plan instruction for all students
5. Select instructional materials that match the reading levels, interests, and cultural and linguistic backgrounds of students
6. Identify the characteristics of considerate and inconsiderate text.
7. Model reading and writing for real purposes.
8. Motivate learners to be lifelong readers.

EGDT 1010

Electrical Drafting and Design

Credit hours: 3

Introduces several types of electrical drawings such as Block, Connection, Logic, Schematic, Wiring, and Panel Diagrams. Covers basic DC theory, electricity and electrical terms. Includes the principles of Ohm's law, Watt's law, Logic Truth Tables, Series and Parallel Circuits, and Printed Circuit Board Design. Lab access fee of \$45 for computers applies. Course fee of \$27 applies for supplies.

Course Learning Outcomes

1. Produce electrical drawings such as block, connection, logic, schematic, wiring, and panel diagrams.
2. Outline basic DC theory, electricity and electrical terms, logic and truth tables.
3. Classify fundamental relationships of current, voltage and resistance using Ohm's Law and Watt's Law.
4. Design simple printed circuit boards.

EGDT 1020

3D Architectural Modeling

Credit hours: 3

Utilizes a Building Information Modeling system (BIM) to design 3D architectural models. Covers 3D modeling design theory, parametric modeling methods, generation of residential and commercial construction plans and details, building components and systems, and manipulation of model information. May be delivered hybrid and/or online. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Examine typical building materials & techniques applied to a 3D architectural model.
2. Compose both basic and complex residential building projects in a 3D model.
3. Create Building Information Models (BIM) for specific architectural projects in a residential context.
4. Generate floor plans, elevations, sections, details, and 3D views from a 3D architectural model.

EGDT 1040

Fundamentals of Technical Engineering Drawing

Credit hours: 3

Introduces fundamental technical engineering drawings, practices, and standards used by various engineering disciplines. Provides basic sketching, computer-aided drafting (CAD) tools, geometric construction, drawing layout, standard dimensioning, multi-view drawings, sectioning, plotting, checking, correcting, and other CAD and drafting skills. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe key elements of technical engineering drawings in conjunction with drafting standards and practices used in various and typical engineering disciplines;
2. Apply key elements of engineering drawings in conjunction with drafting standards and practices used in various and typical engineering disciplines to simple and complex technical engineering drawings;
3. Apply various CAD and drafting tools including geometric construction, scaling, and multiple views, to the completion of simple and complex technical engineering drawings;
4. Demonstrate in AutoCAD how to organize, manage, and transfer drawing data and files to clearly and accurately communicate technical information to end users;
5. Demonstrate in AutoCAD the application of dimensions, annotations, production constraints, scale, and other drafting techniques to various technical engineering drawings;
6. Demonstrate hand sketching and drafting techniques needed to complete various technical engineering drawings.

EGDT 1050

Intro to 3D Printing and Fabrication PP

Credit hours: 3

Introduces the history of design and fabrication. Explores how design and fabrication applies to, affects, and connects various fields, environments, cultures, and workplaces. Teaches basic design and fabrication competencies through analyzing and solving real-world problems using current technology. Encourages an appreciation for the evolution of design and fabrication and its application in diverse fields of academia and industry. Investigates the possibilities of new emerging technologies in these fields. Course fee of \$42 applies for supplies.

Course Learning Outcomes

1. Explain the history and evolution of design and fabrication.
2. Describe the effect of design and fabrication on communities, cultures, and environments.
3. Apply the Engineering Design Process in the research and design of a prototyped solution to solve a real-world problem.
4. Develop, revise, and present a prototyped solution to solve a real-world problem.
5. Collaborate as an effective member on a technical team throughout the prototyping process.
6. Identify new applications of fabrication in career and academic pursuits.

EGDT 1071

3 Dimensional Modeling--Solidworks

Credit hours: 3

Teaches basic 3D computer modeling, which emphasizes the development of 3D machine parts, assemblies, and drawings in a constraint-based modeling environment using Solidworks. Emphasizes the feature based design process, which simulates actual manufacturing processes with 2D sketching tools and with 3D modeling tools including extrusions, revolutions, sweeps, lofts, coils, shells, placed features, patterns, and many others. Also teaches creation of basic multi-part assemblies, constraint-driven assembly animation, and generation of detailed production drawings. Software fee of \$35 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Successfully model and edit basic 3D machine parts using sketching tools and modeling functions including extrude, revolve, hole shell, web, loft, sweep, coil, fillet, chamfer, draft, emboss, pattern, and mirror;
2. Understand and apply geometric and dimensional constraints to part models;
3. Design an optimal feature creation order for any basic machine part;
4. Create basic assemblies made from multiple parts;
5. Understand and apply mate, angle, tangent, and insert assembly constraints, and transition constraints to assemblies;
6. Create custom drawing borders and title blocks;
7. Generate correctly scaled base, projected, auxiliary, isometric, section, detail, breakout, and broken views of parts in drawings;
8. Create appropriate drawing dimensions, annotations, notes, and symbols;
9. Correctly format line weight, line type, terminator, center mark, and dimension style standards for any drawing.

EGDT 1100

Architectural Drafting and Design

Credit hours: 3

Covers procedures used in developing a complete set of architectural residential plans. Includes architectural drafting standards and code requirements. Reinforces math skills using dimensioning and estimating exercises. Utilizes lectures and text reading assignments with related worksheets and drawings. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Produce a set of residential plans which meet established standards and submittal documents.
2. Apply math theory in estimating material needs and in dimensioning.
3. Organize building codes and ADA accessibility requirements related to residential design and construction.

4.

Differentiate career options and opportunities in the residential sector of the architecture industry.

EGDT 1200

Mechanical Drafting and Design

Credit hours: 3

Requires previous knowledge of CAD software including geometric construction, linework, and dimensioning. Focuses on the design and documentation of mechanical components with proper tolerancing using design layouts, the Machinery's Handbook, and manufacturer's reference materials including retaining rings, bearings, oils seals, and other hardware. Details the form, fit, and function of mechanical components using the ASME Y14.5 Standard. Introduces geometric dimensioning and tolerancing in detailing the components. Includes precision dimensioning, gear design, shaft design, surface finish, materials, threaded holes, threaded fasteners, manufacturing methods, and machining processes and applications. Course fee of \$50 applies. Software fee of \$35 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Create mechanical components in CAD using industry standards.
2. Apply data from design layouts, Machinery's Handbook, and manufacturer's reference materials in mechanical component design.
3. Calculate feature tolerances based on fit conditions of mating parts and industry standards.
4. Create detailed drawings of mechanical components using the ASME Y14.5 standard.
5. Apply geometric dimensioning and tolerancing symbols to detail features on the mechanical component drawings.

EGDT 1300

Structural Drafting and Design

Credit hours: 3

Covers fundamentals of structural design. Studies structural steel detailing of beams, columns, braces, templates, marking and numbering systems, bill of materials, welding symbols, and erection drawings to AISC standards. Software fee of \$20 applies. Lab access fee of \$45 for computers applies. Course fee of \$19 applies for supplies.

Course Learning Outcomes

1. Interpret design drawings and acquire data through sketching.
2. Detail for fabrication beams, braces, and templates, applying industry standards and practices.
3. Produce structural drawings using industry standards for views, details, dimensioning, and practice.
4. Collaborate and participate in an industry workgroup.
5. Evaluate peer drawings using standard checking methods to verify numbering sequence, bill of materials, and fastening.

EGDT 1400

Surveying Applications and Field Techniques I

Credit hours: 3

For people seeking a surveyor's license, civil engineering majors, Engineering Graphics and Design Technology majors, Construction Management majors, and anyone else wishing to learn fundamentals of surveying. Covers history of surveying, mathematics, field notes, measurement and computations, basic surveying instruments and equipment, leveling procedures, bearing computations, topography, mathematical traverse closures, area computations, and basic property surveying. Completers should be able to work in the job-entry phase of the surveying field. Course fee of \$47 for materials applies. Lab access fee of \$45 computers applies.

Course Learning Outcomes

1. Explain the history of surveying, the United States Public Land Survey system, basic surveying units of measure, and the State Plane Coordinate system;
2. Demonstrate proper handling, set-up and use, as well as maintenance of surveying equipment;
3. Perform basic horizontal distance measuring techniques using a surveyor's tape;
4. Demonstrate the proper completion of various forms of surveyor's field note sheets;
5. Demonstrate proper surveying procedures and safety to gather information and accomplish a topographic survey. The student will also produce the accompanying topographic map;
6. Demonstrate the proper set-up and use of an automatic level to accomplish a differential and profile leveling project;
7. Demonstrate the ability to carry out surveying mathematical computations, including bearing and azimuth calculations;
8. Demonstrate, using a total station, the proper techniques to complete a property traverse while demonstrating safe surveying techniques;
9. Demonstrate the ability to do a traverse mathematical closure using the Compass Rule Adjustment method and the accompanying area computation using the Double Meridian Distance method.

EGDT 1600

Technical Math Algebra

Credit hours: 3

Covers the basic principles of algebra, geometry, and trigonometry as they relate to problem solving on the job. Includes solving equations, percent, proportion, variation, calculator operations, measurements, formula rearrangement, functions and graphs, and solving right and oblique triangles.

Course Learning Outcomes

1. Correctly solve mathematical problems related particular field.
2. Apply data from technical publications in the solution of problems, such as, Machinery's Handbook.

EGDT 1610

Technical Math Geometry Trig

Credit hours: 3

Covers more advanced principles of algebra, geometry, and trigonometry as they relate to problem solving on the job. Includes systems of equations, powers and roots, trigonometry functions, vectors, polynomials, quadratic equations, exponents and radicals, and circle concepts.

Course Learning Outcomes

1. Correctly solve mathematical problems related to the student's particular field.
2. Apply data from technical publications in the solution of problems, such as Machinery's Handbook.

EGDT 1720

Architectural Rendering FF

Credit hours: 3

Discusses how Architectural Rendering plays an important role in the way we view and present the world around us. Includes: elements in the physical and natural world, as well as the influences human cultures have on our society through the construction of buildings, structures, and other works of man. Introduces the necessary skills and practices required in architectural rendering theory and presentation. Develops skills in perspective, layout, shading, color theory and presentations of interior and exterior architectural rendering projects. Software fee of \$45 applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Produce architectural renderings showing several approaches to accomplish a desired end result;
2. Develop competence in architectural rendering by meeting the established standards of the discipline;
3. Produce both interior and exterior architectural renderings to industry standards using common techniques and practices;
4. Develop architectural rendering projects to meet the needs of a simulated client;
5. Demonstrate effective communication skills through written, verbal, and visual means.
6. Demonstrate teamwork by critiquing other presentations and presenting solutions, suggestions, and methods for improvement in the respective designs.

EGDT 2020

Descriptive Geometry

Credit hours: 3

Covers advanced orthographic projection principles used to render views of objects from any conceivable direction. Explains the creation of views needed to solve problems graphically rather than mathematically. Includes true length and angle, true size and shape, clearance, bearing, slope and grade, intersections, shortest distance, dihedral angle, and revolution. Reinforces the use and application of accurate scaling techniques. Software fee of \$18 applies. Lab access fee of \$45 for computers applies. Course fee of \$19 for materials applies.

Course Learning Outcomes

1. Break down problems involving true length, true slope, and bearing of a line.
2. Solve problems of strike and dip by constructing the true size of a plane.
3. Produce the ellipse axis from an edge view.
4. Solve problems of true angle and length of pipes before bending.
5. Analyze problems of clearance and shortest distance between lines and planes.

EGDT 2040

Piping Drafting

Credit hours: 2

Includes single-line and double-line pipe symbols. Covers both isometric and orthographic projection. Studies piping connections such as welded, screwed, soldered, flanged, and bell and spigot. Uses manufacturer's and reference materials specifications. Includes information on copper tubing and brass fittings. Uses hydraulic theory and formulas. Also uses computer (CAD) to develop drawings. Software fee of \$18 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify and describe the five different types of pipe connections and the fittings used with each.
2. Produce a working drawing of a pipe system, single and double-line, using both isometric and orthographic projection.

EGDT 2100

Architecture Materials and Methods

Credit hours: 3

Introduces traditional architectural materials and methods of design and construction. Covers wood, masonry, and concrete construction as well as finish materials. Builds skills related to organizing, detailing, dimensioning, and scheduling construction documents for a commercial type building. Software fee of \$18 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the vocabulary of various building materials and their specific uses.
2. Define the traditional foundation and framing methods of building projects.
3. Explain a number of different roof structures and the proper detailing of these elements.
4. Explain the National CAD Standard and how it is incorporated.
5. Describe various door and window types and produce drawings with appropriate and clear detailing.
6. Define interior and exterior finish materials in drawings with appropriate detailing.
7. Demonstrate the principles of masonry construction and detailing.
8. Evaluate new building materials and methods of construction.

EGDT 2200

Advanced Mechanical

Credit hours: 3

Employs 3D modeling software to enhance design processes, including sketching, parametric modeling, 3D assemblies, and producing 2D working drawings. Included are sheet metal, structural parts, mass property, and stress analysis. Software fee of \$35 applies. Lab access fee of \$45 computers applies.

Course Learning Outcomes

1. Sketch constrained 2D profiles necessary for feature modeling.
2. Produce 3D features from sketches.
3. Produce part models made from base solids and multiple feature types.
4. Place multiple mating parts into assemblies and constrain fit, function, and motion.
5. Produce custom drawing formats.
6. Produce details working drawing for manufacture.

EGDT 2300

Advanced Structural CAD

Credit hours: 3

A second year class for students who have completed first year structural drafting and want to enhance their knowledge of structural steel detailing. Includes the proper views and dimensioning practices for columns, stairways, handrails, cross-bracing, anchor bolt layout, erection drawing, and field bolt lists. Completers should be ready for entry-level employment as a structural steel detailer for small detailing companies or large construction companies. Software fee of \$18 applies. Lab access fee of \$45 computers applies.

Course Learning Outcomes

Please see the department for information.

EGDT 2310

Structural Steel Modeling

Credit hours: 3

Teaches Tekla Structures modeling software. Includes modeling of structural steel buildings, hoppers, stairs, piping, and miscellaneous steel projects. Prepares students for detail and erection drawings which are produced for fabrication and erection of structural steel projects. Software fee of \$18 applies. Lab access fee of \$45 computers applies.

Course Learning Outcomes

1. Model a structural steel building in Tekla Structures (XSteel).
2. Connect the structural steel using Tekla Structures (XSteel).
3. Develop a user defined joint for connecting the structural steel.
4. Produce detail shop drawings in Tekla Structures (XSteel).
5. Produce an erection drawing in Tekla Structures (XSteel).

EGDT 2400

Surveying Applications and Field Techniques II

Credit hours: 3

Covers advanced concepts in the U.S. Public Land and State Plane Coordinate systems. Utilizes advanced surveying instruments such as total station, automatic level, GPS equipment, and data collectors. Covers advanced leveling procedures, volume computations, monumentation, mapping, boundary surveys, and route surveys. Features the writing of legal property descriptions. Builds upon knowledge of safe surveying procedures. Includes use of surveying calculation softwares. Covers horizontal curve calculations and highway staking. Completers should be able to work as an instrument person on survey crews and also prepare the drawings related to the surveys. Lab access fee of \$45 for computers applies Software fee of \$18 applies. Course fee of \$52 for materials applies

Course Learning Outcomes

1. Set up and use a total station to obtain horizontal and vertical angles and distance.
2. Use an automatic level to determine elevations.
3. Carry out volume computations using borrow-pit and cross-section methods.
4. Use the U.S. Public Land and State Plane Coordinate systems to establish survey control monuments as needed.
5. Survey property boundaries by point-to-point and radial methods & prepare accompanying property drawings.
6. Accomplish traverse closures and area determination using surveying software and other equipment.
7. Accomplish route surveys - right of way, centerline, cross-sections.
8. Prepare plan-profile and cross section sheets.
9. Carry out various property and construction surveys using GPS equipment and data collector.

EGDT 2600

Applied Structures I - Statics

Credit hours: 3

Covers architectural structures for low-rise and light construction projects. Applies trigonometry and technical math. Covers lateral, wind, seismic, and snow loads. Introduces the basic principles of statics including; force systems, moments, resultants of force systems, analysis of structures, centroids and centers of gravity, and moments of inertia.

Course Learning Outcomes

1. Demonstrate the principles of trigonometry and statics for structural applications.
2. Compute resultants of coplanar force systems, moments, resultants of parallel force systems, and nonconcurrent force systems.
3. Calculate centroids, centers of gravity, and moments of inertia of structural members.
4. Specify structural members and connections using tables.
5. Apply basic principles of structural design for low-rise wood and light construction.
6. Determine extra requirements for lateral, wind, seismic, and snow loads.
7. Specify required sizes of fasteners, shafts, beams, and columns.

EGDT 2610

Applied Structures II - Strength of Materials

Credit hours: 3

Examines architectural long-span and high-rise structures with an emphasis on steel and concrete construction. Covers stresses, strains, properties of materials, Poisson's ratio, thermal effects, shear force, bending moments, lateral loads, deflection, connections, beam design and column design.

Course Learning Outcomes

1. Appraise design considerations for long-span and high-rise building types.
2. Select appropriate structural systems for differing conditions and building types.
3. Determine steel structural systems including various connection options.
4. Calculate concrete structural systems including connections to other material.
5. Characterize structural issues related to curtain walls, complex forces, and new technologies.
6. Calculate stresses, strains, and deformation.
7. Identify the mechanical properties of materials, Poisson's ratio, thermal effects, shear forces, and bending moments.

EGDT 285R

AEC Design Lecture Series

Credit hours: 0.5

Provides student opportunities to network and collaborate with industry professionals. Provides exposure to career options within the architecture and other related design industries. Emphasizes the importance of professional ethics and communicating with others. May be Graded Credit/No Credit. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Network with industry professionals.
2. Recognize real world success strategies in the design and decision making process.
3. Recognize industry failures in the design and decision making process.
4. Identify career and academic options in the building and design industry.

EGDT 2860

Cooperative Correlated Instruction Skills USA

Credit hours: 0.5

SkillsUSA is a first year class for Engineering Graphics and Design Technology majors. Includes leadership training, parliamentary procedure, job interview skills, prepared speaking, extemporaneous speaking, and organizational skills. Upon completion, the student should understand the SkillsUSA organization and how it helps to build leadership skills.

Course Learning Outcomes

1. Conduct election for SkillsUSA officers.
2. Chair and organize a committee.
3. Demonstrate abilities to compete in two of the following contest. a. Chapter Business Procedure b. Prepared Speaking c. Extemporaneous Speaking d. Job Interview e. Job Skill Demonstration f. Opening and Closing Demonstration g. Related Technical Math h. Architectural Drafting i. Mechanical Drafting.
4. Participate in a meeting that is being conducted using parliamentary procedure.
5. Organize and contact guest lectures.

EGDT 2870

Portfolio and Career Preparation

Credit hours: 1

Required for Engineering Graphics and Design Technology majors. Teaches necessary job acquisition skills. Instructs students in the job search process, including production of typical types of correspondence, job interview techniques, and creation of presentation-quality portfolios. Correspondence includes letters of application, resumes, follow-up letters, letters of acceptance and rejection, and references. Interview techniques include interview preparation, appearance, and question/answer techniques. Final project is portfolio of samples of work in all areas of Engineering Graphics & Design Technology learned for the degree. Software fee of \$18 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Locate sources of job leads.
2. Make telephone contact for an interview.
3. Write a letter of application.
4. Prepare an up-to-date resume.
5. Prepare a pocket resume for on-site filling out of job application forms.
6. Write a follow-up letter and time the mailing of the letter for the best effect on the employer.
7. Write letters of acceptance or letters declining a job offer in such a way that future employment at the firm they are declining to work for will still be a possibility.
8. Complete and present portfolio.

ENGL 1005

Literacies and Composition Across Contexts CC

Credit hours: 5

Focuses on reading-based writing with strong rhetorical concentration; expands critical reading, writing, and thinking concepts from 0890 and prepares students for reading, writing, and thinking in ENGL 2010 and other future courses and future situations. Provides strong skills development in digital literacy for multi-media content creation, research, and presentations. Provides a project-based curriculum, along with best-practices pedagogies, providing students with authentic contexts, audiences, and opportunities to be intrinsically motivated to develop writing and reading skills and knowledge. May be delivered hybrid and/or online. Canvas Course Mats of \$33/Fountain Head Press applies. Lab access fee of \$15 applies.

Course Learning Outcomes

1. Use thinking, reading and writing strategies to analyze rhetorical acts.
2. Use the ability to read and write rhetorically in both academic and non-academic genres.
3. Accurately use a rhetorical vocabulary to make informed choices about writing within multiple contexts for a variety of audiences.
4. Implement strategies such as summarizing, paraphrasing, and quoting in reading and writing effectively.
5. Apply Standard English grammatical/usage rules, controlling for surface errors in syntax, spelling, punctuation, and other conventions when appropriate to meet the needs of an identified audience.
6. Use readings from across the curriculum, scholarly journals and texts, and current events, as well as classroom discussions, journaling, and other assignments, as invention strategies to move ideas forward.
7. Use rhetorical appeals to effectively and ethically support claims to build strong, convincing arguments for particular audiences and purposes.
8. Achieve an identified purpose in writing and speech.
9. Respond effectively to peers' work.

ENGL 1010

Introduction to Academic Writing CC

Credit hours: 3

Teaches rhetorical knowledge and skills, focusing on critical reading, writing, and thinking. Introduces writing for specific academic audiences and situations. Emphasizes writing as a process through multiple drafts and revisions. May be delivered hybrid and/or online.

Course Learning Outcomes

1. Illustrate rhetorical awareness of audience, purpose, context, and genre in written and oral forums.
2. Develop critical reading, writing, and thinking skills, learning to inquire into issues and problems.
3. Incorporate process as an integral component of college-level writing.
4. Apply knowledge of conventions of academic writing and research.
5. Craft well-reasoned written and oral arguments derived from personal and public inquiry.
6. Interpret multiple perspectives across a diverse array of positions.

ENGL 2050

Editing

Credit hours: 3

Covers the essentials of editing manuscripts for publication. Provides students with the necessary knowledge of punctuation, grammar and usage as well as the symbols and conventions of editing.

Course Learning Outcomes

1. Correct errors in any type of linguistic construction.
2. Edit a writer's manuscript using conventional editing symbols.
3. Use industry-standard resource materials of editors.
4. Use library resources effectively to verify information within a manuscript.
5. Use standard punctuation, grammar, and usage standards for manuscript publication.
6. Perform the editor's role in the publication process in relation to the author and the press.
7. Recognize the stylistic elements of manuscript writers to assist revision in a way that maintains the integrity of the writer's voice.
8. Demonstrate editing skills in professional projects.

ENGL 2100

Technical Communication HH WE

Credit hours: 3

Teaches basic technical writing skills used in a variety of professional settings. Emphasizes audience analysis, document design, and using precise language for a particular audience.

Course Learning Outcomes

1. Produce a variety of technical communication genres that are common in workplace writing
2. Profile audiences for clear, effective, and professional communication that takes into account their values and knowledge
3. Write accurately and precisely about technical subjects in a clear style that allows readers to take action
4. Design document interfaces that enhance the readability and usability of a text

ENGL 2250

Introduction to Creative Writing HH

Credit hours: 3

Provides introductory instruction in practices and techniques for generating, writing, and revising original creative works in short fiction, drama, creative non-fiction, poetry, or combinations of these. Uses readings from a wide range of contemporary authors, guest speakers, and student writing to facilitate critical and aesthetic understanding of literary texts. Introduces students to the creative writing workshop process.

Course Learning Outcomes

1. Practice writing short fiction, poetry, creative nonfiction, short drama or combinations of these.
2. Contribute to a community of writers by reading and responding to writing by other class members.
3. Identify elements of craft writers use to create successful literary texts in their respective genres.
4. Appraise strategies that help writers build critical awareness of their own work.
5. Practice literary strategies established writers use to create effective texts.

ENGL 2600

Critical Introduction to Literature HH

Credit hours: 3

Surveys contemporary critical, theoretical, and ideological approaches to literature (such as structuralist, poststructuralist, psychoanalytical, feminist / gender, Marxist, new historical, postcolonial, etc.). Introduces key literary terms and engages close reading techniques. Includes lectures, screenings, student presentations, analyses and written reports, exams, and a final essay in MLA format and documentation.

Course Learning Outcomes

1. Identify major schools of critical thought.
2. Identify interpretive techniques and theoretical premises of contemporary critical perspectives.
3. Apply critical theory to literary and cultural texts.
4. Apply critical literary vocabulary in written and spoken discourse.

ENGL 270G

Positionality and Interpretive Methods GI

Credit hours: 3

Examines the ways sociocultural context influences understanding of the world. Emphasizes multiple methods of inquiry and issues of equity and inclusion. Connects students to diverse cultural texts, preparing for contributions to scholarly and popular conversations through sophisticated, creative, and socially aware interpretive methods. Introduces the concept of positionality, helping students proceed as responsible scholars and writers through an exploration of social location. Prepares students for success by developing transferable skills in textual analysis, research, and production.

Course Learning Outcomes

1. Examine how personal values, views, and location in time and space influence understanding and representation of the world through multimodal texts.
2. Develop research methods and creative practices that engage with and respond to various positionalities.
3. Interpret diverse cultural texts carefully, being attentive to explicit and implicit meanings and positionality.
4. Define positionality through close reading, active questioning, and critical dialogue.
5. Produce critical projects such as or including positionality statements, essays, creative works, and oral presentations.
6. Analyze global or intercultural issues.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Evaluate how one's own cultural values compare with those from different backgrounds.

ENGL 2800

Introduction to the English Major

Credit hours: 3

Introduces students to the English major and the practice of reading, discussing, and writing about texts and cultural productions across a variety of modes, including poetry, fiction, film, and professional, multimodal and digital texts, among others. Explores a range of genres and textual artifacts from Western and non-Western literary traditions. Builds skills in critical, technical, and creative production through assignments that represent the multiple disciplines in the English department. Previews the four different emphases offered by the English department: literary studies, creative writing, writing studies, and English education, to provide students with a foundation in studies in the humanities. Surveys the professional skills, careers, and opportunities fostered by a degree in English.

Course Learning Outcomes

1. Describe the field of English studies and the four different emphases offered by the English department: literary studies, creative writing, writing studies, and English education.
2. Define key terminology, concepts, genres, and disciplines within English studies.
3. Demonstrate skills in close reading, critical analysis, collaborative discussion, secondary literacy instruction, and digital literacy across a variety of texts.
4. Compose texts through the practice of literary and rhetorical analysis and creative response.
5. Assess the academic and professional opportunities and skill sets fostered by a degree in English.
6. articulate the value of textual and cultural productions as well as studies in the humanities.

ENGL 2850

Literary History I

Credit hours: 3

Examines texts from the British Isles to approximately 1700. Develops interpretive skills emphasizing form, genre, culture, and history. Explores major intellectual and literary movements in the period. Defines and practices literary terminology in interpretations of representative canonical and noncanonical texts. Focuses on discussion, analysis, and a variety of textual productions.

Course Learning Outcomes

1. Demonstrate skills in literary analysis including close reading, interpretation, and synthesis through an engagement with texts written in the British Isles (including Celtic, Anglo-Norman, Latin, and English) before 1700 CE.
2. Situate literary artifacts and movements in their historical, geographical, and cultural contexts and their connections to later and contemporary literary texts and contexts.
3. articulate the relationship between the historical, cultural, social, and rhetorical contexts that shape literary movements, developments in literary genre and form, and strategies of criticism and interpretation.
4. Produce critical interpretive projects that demonstrate a fluency with literary terminology, modes of analysis, and various literary genres and forms.
5. Interrogate the relationship between texts from England, Scotland, Ireland, Wales, and literature in translation.

ENGL 2870

Literary History II

Credit hours: 3

Surveys Anglophone literature from approximately 1700 to the present. Provides a critical introduction to literary periods and the relationship between literary artifacts and their historical, geographical, and cultural contexts. Develops and applies critical reading and analytical skills through discussion and interpretive projects.

Course Learning Outcomes

1. Demonstrate skills in literary analysis including close reading, interpretation, and synthesis through an engagement with Anglophone literature from the eighteenth century to the present.
2. Situate literary artifacts and movements in their historical, geographical, and cultural contexts and their connections to texts and contexts from earlier periods.
3. articulate the relationship between these contexts that shape literary movements, developments in literary genre and form, and strategies of criticism and interpretation.
4. Produce critical interpretive projects that demonstrate a fluency with literary terminology, modes of analysis, and various literary genres and forms.

ENGL 3010

Rhetorical Theory

Credit hours: 3

Considers prominent theories of rhetoric and accompanying methods for the production of texts in various contexts, encouraging adopting, amending, and/or developing hybrid theories of rhetoric.

Course Learning Outcomes

1. Recognize rhetoric's key elements.
2. Identify the application and pervasiveness of rhetoric.
3. Develop an understanding of the history of rhetoric from ancient to contemporary periods.
4. Analyze works by theorists of rhetoric.
5. Compose papers about rhetorical theory using appropriate grammar, punctuation, and documentation styles.

ENGL 3050

Advanced Editing and Design for Print Media

Credit hours: 3

Refines student editing, design, and publishing skills. Provides students with the opportunity to take manuscripts from editing to press-ready. Teaches industry standards for current publishing tools. Includes projects such as designing books, marketing literature, and corporate identities. Covers design, typography, and pre-press issues as they relate to writing and editing documents. Recommended for students involved with student publications, including journals and campus newspaper.

Course Learning Outcomes

1. Demonstrate proficiency in common publishing tools related to editing and document design
2. Apply design principles (layout, color theory, typography, paper sizes) in service to document usability
3. Follow industry standards and norms of professionalism while working with clients in relation to taking a large project to print
4. Manage multiple files, assets, and databases in service of keeping projects organized

ENGL 3090

Academic Writing for English Majors WE

Credit hours: 3

Centers on scholarly research and writing in fields related to English Studies, drawing on students' areas of focus. Emphasizes analysis, rhetorical theories of writing, development, style, oral presentations, and primary and secondary research techniques. Prepares students to extend their abilities with researched writing in other upper-division courses and teaches students advanced scholarly attitudes toward researched writing.

Course Learning Outcomes

1. Assess literary and non-literary texts, according to their explicit and implicit meanings.
2. Develop sound and critical arguments that are grounded in textual evidence.
3. Appraise secondary sources based on current academic standards.
4. Analyze texts with pertinent critical or theoretical concepts and methods.
5. Write critical essays using current and correct MLA citation style.
6. Engage with literary and non-literary texts, as well as critical, scholarly, or theoretical materials in complex, sophisticated ways.
7. Connect informed and engaged ideas, questions, and interpretations of texts with peers through respectful comments that take into account multiple perspectives.
8. Integrate information from outside sources through a dialogue between multiple texts and the student's own writing.
9. Employ skills such as formatting, editing, proofreading, and revising.

ENGL 3340

Digital Document Design

Credit hours: 3

Teaches web-based document design and other digital genres. Introduces HTML, CSS, and industry standard tools. Emphasizes rhetorical differences between digital and print documents and focuses on the collaborative and viral nature of web texts.

Course Learning Outcomes

1. Create standard-compliant web pages using open source tools
2. Design online documentation
3. Analyze the relationship between audience and purpose when preparing technical documents to meet client needs
4. Compose electronic documentation to meet the needs of community partners

ENGL 3890

Contemporary Critical Approaches to Literature WE

Credit hours: 3

Provides in-depth study of one contemporary theoretical and critical approach to literature using primary texts. Explicates how interpretive techniques function within the discipline of English Studies. Required for English majors. Should be taken beginning of junior year.

Course Learning Outcomes

1. Distinguish major theorists in contemporary theory.
2. Recognize the tenets of one major theoretical approach to literary theory.
3. Use critical vocabulary persuasively in written and spoken discourse.
4. Identify the terminology, contexts, and uses of contemporary cultural theory.
5. Analyze cultural and literary texts according to one major theoretical approach.
6. Compose written analyses of cultural and literary texts using a specific, contemporary theoretical approach.

ENGL 402G

Multicultural Rhetorics GI

Credit hours: 3

Investigates multicultural forms of rhetoric through various historical and spatial contexts. Theorizes ways to view rhetoric and conduct research through an intercultural lens by tracing the shifting nature of rhetoric through multiple ideological frameworks. Fosters a deeper understanding of how cultures and rhetorics interface.

Course Learning Outcomes

1. Examine multicultural rhetorics through the lens of rhetorical theories.
2. Analyze the rhetorical aims of a variety of multicultural discourses.
3. Critique multicultural and public discourses by examining the relationships among various rhetorical and social powers and structures.
4. Implement theoretical models in research and writing projects relating to a variety of multicultural rhetorics.
5. Analyze global or intercultural issues.
6. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
7. Evaluate how one's own cultural values compare with those from different backgrounds.

ENGL 412R

Studies in Literary Genres

Credit hours: 3

Provides an historical and craft overview of developments in a specific genre of creative writing. Engages with literary texts from the position that reading widely and critically is vital to authoring literary works. Utilizes creative, critical, and reflective components to help students situate their own work within a history of a certain genre. Focuses on a different creative writing genre each semester, including fiction, non-fiction, poetry, or drama. May be repeated with different genres for a maximum of 6 credits toward graduation

Course Learning Outcomes

1. Catalog key developments in the history of a specific genre of creative writing.
2. Analyze literary texts in order to situate their own work within a literary tradition.
3. Write original creative writing in a specific genre that engages with the literary tradition of the genre.
4. Analyze the connection between literary traditions and successful contemporary works in a specific genre.

ENGL 4220

Teaching Reading and Literature

Credit hours: 3

Emphasizes the teaching of reading and literature in the secondary English classroom. Includes an introduction to the field of English Education and to lesson planning. Presents strategies for teaching skills and concepts outlined in state and national standards. Explores issues and research related to adolescent literacy through reading and discussion including social and cultural influences on literacies and learning. Requires students to create lesson plans and teaching materials.

Course Learning Outcomes

1. Create pedagogically sound lesson plans individually and in small sequences.
2. Create unique teaching materials to aid in teaching reading and literature to secondary students.
3. Evaluate existing teaching materials for appropriateness and effectiveness.
4. Apply current pedagogical theories and models of learning to lesson ideas involving diverse students.
5. Use research on adolescent literacy and learning in their educational planning practices.

ENGL 4225

Teaching Reading Practicum

Credit hours: 1

Focuses on classroom observations and working with current secondary teachers in their classrooms. Requires a minimum of eight hours of observations/work in approved secondary schools. Entails reading, observations, practical work in classrooms, and critical reflection.

Course Learning Outcomes

1. Demonstrate appropriate teaching skills in a classroom setting.
2. Reflect critically on both observed and enacted teaching.
3. Apply pedagogical understanding to classroom situations.
4. Evaluate instructional choices.

ENGL 4230

Teaching Writing

Credit hours: 3

Emphasizes developing a writing program in the secondary English classroom, including assigning and assessing student writing. Presents strategies for teaching writing to secondary students. Includes designing assessments (including rubrics and scoring guides) and lessons to teach skills in each of the major writing modes: informative, argumentative, and narrative. Entails class discussion, scholarly reading, and creation of teaching materials.

Course Learning Outcomes

1. Create pedagogically sound lesson plans individually and in small sequences.
2. Create unique teaching materials to aid in teaching writing to secondary students.
3. Evaluate existing teaching materials for appropriateness and effectiveness.
4. Design appropriate assessments, including rubrics for student work.
5. Apply current pedagogical theories and models of learning to lesson ideas involving diverse students.
6. Use research on adolescent literacy and learning in their educational planning practices.

ENGL 4235

Teaching Writing Practicum

Credit hours: 1

Focuses on classroom observations and working with current secondary teachers in their classrooms. Requires a minimum of eight hours of observations/work in approved secondary schools as well as work providing feedback to secondary student writing. Entails reading, observations, practical work in classrooms, and critical reflection.

Course Learning Outcomes

1. Demonstrate appropriate teaching skills in a classroom setting.
2. Reflect critically on both observed and enacted teaching.
3. Apply pedagogical understanding to classroom situations.
4. Evaluate instructional choices.
5. Evaluate student writing.
6. Write appropriate feedback to secondary students about their writing.

ENGL 4240

Grammar and Unit Design in the English Classroom

Credit hours: 3

Continues to examine issues related to teaching English in secondary schools. Focuses on writing long-term unit plans for teaching based on best practices and current educational approaches. Refines understanding of pedagogical theories and approaches with special emphasis on teaching the conventions of writing instruction. Treats modern grammars as multi-faceted, socially-driven practices. Focuses on curriculum design and assessment. Entails class discussion, critical reading, and creation of teaching materials.

Course Learning Outcomes

1. Create substantive, pedagogically-sound unit plans to teach important concepts and skills in each of the major strands: Reading, Writing, and Speaking and Listening.
2. Employ best practices in grammar instruction with students from diverse backgrounds and with diverse learning needs.
3. Design appropriate assessments to measure student learning at the end of each unit.
4. Differentiate instructional plans to meet a variety of student needs.
5. Defend instructional decisions.

ENGL 4245

Grammar and Unit Design Practicum

Credit hours: 1

Focuses on classroom observations and working with current secondary teachers in their classrooms. Requires a minimum of fifteen hours of observations/work in approved secondary schools. Requires the teaching of three class periods. Entails reading, observations, practical work in classrooms, and critical reflection.

Course Learning Outcomes

1. Demonstrate appropriate teaching skills in a classroom setting.
2. Reflect critically on both observed and enacted teaching.
3. Apply pedagogical understanding to classroom situations.
4. Analyze and describe student growth over time.
5. Plan and implement appropriate lesson plans for a specific class.
6. Write appropriate communications to parents about student progress.

ENGL 4250

Adolescent Literature

Credit hours: 3

Explores attitudes towards adolescence as a distinctive psychological, social and moral state, using contemporary and time-honored works from various cultures. Pays particular attention to contemporary adolescent issues, history of young adult literature, significant trends in young adult literature, and the role of young adult literature in the literacy development process.

Course Learning Outcomes

1. Explain key assumptions, concepts, and theoretical issues associated with the literature of adolescence.
2. articulate conceptions of adolescence as a distinctive psychological, social, and moral state.
3. Examine contributions by writers of adolescent works to literary and cultural history.
4. Analyze critical arguments pertaining to adolescent literature.

ENGL 4390

Writing Studies Capstone

Credit hours: 3

Prepares students to enter careers and graduate school by critically reflecting on the relevance and value of Writing Studies. Presents strategies for professional written and oral presentations related to application processes. Requires the creation of professional and departmental portfolios. Promotes opportunities for internships, service learning, and other academic or workplace experience.

Course Learning Outcomes

1. Qualify the roles, ethics, and responsibilities of a writing studies graduate.
2. Prepare professional application materials and a sustainable digital presence for job searches or graduate school applications.
3. Apply effective oral, written, and design skills in professional situations such as presentations and interviews.
4. Create a comprehensive portfolio.
5. Evaluate experience acquired through professional development opportunities, such as internships, service learning, or academic and work experience.

ENGL 4490

Creative Writing Capstone

Credit hours: 3

Applies a variety of advanced techniques for preparing creative manuscripts in a number of genres. Focuses on revising, editing, and polishing work previously shaped in intermediate and advanced creative writing courses. Addresses challenges of composition, theory, and practical tools for pursuing publication. Focuses on the production of a final portfolio acceptable for graduate school applications, submissions to appropriate publications, and presenting in readings and other public events. Investigates processes for bridging the gap between generating drafts and moving successfully into the community of active writers.

Course Learning Outcomes

1. Recognize requirements for publication in one or more genres of creative writing (fiction, creative nonfiction, or poetry)
2. Describe their intentions, best practices, and goals for writing in their genre
3. Rewrite work drafted in previous courses in preparation for publication according to accepted criteria
4. Create a portfolio of completed work acceptable for graduate school applications, publication submission, readings, and application for employment
5. Assemble a set of practical tools in anticipation of publishing, presenting, practicing, getting paid for writing

ENGL 463R

Topics in Shakespeare

Credit hours: 3

Examines Shakespeare's drama and poetry. Discusses relevant cultural and historical aspects of his time.

Course Learning Outcomes

1. Apply various critical approaches to Shakespeare's works.
2. Articulate significant literary trends in Shakespeare's work, life, and times.
3. Investigate connections among Shakespeare's contemporary authors and their works.
4. Evaluate Shakespeare's working milieu and theater practices.
5. Analyze significant aspects of Shakespeare's life, works, and milieu.

ENGL 4650

Studies in Shakespeare

Credit hours: 3

Examines Shakespeare's drama and poetry. Discusses relevant cultural and historical aspects of his time.

Course Learning Outcomes

1. Apply various critical approaches to Shakespeare's works.
2. articulate significant literary trends in Shakespeare's work, life, and times.
3. Investigate connections among Shakespeare's contemporary authors and their works.
4. Evaluate Shakespeare's working milieu and theater practices.
5. Analyze significant aspects of Shakespeare's life, works, and milieu.

ENGL 4790

Literary Studies Capstone

Credit hours: 3

Explores the value and relevance of an English Literary Studies degree. Professionalizes students by assisting them with career or graduate school preparation. Offers students the opportunity to reflect on their major and to optimize writing and communication skills. Includes revision of an existing paper as a scholarly writing sample and creation of a professional portfolio to display knowledge and abilities. Culminates with submission of a reflective portfolio to the department.

Course Learning Outcomes

1. Describe the relevance of literature in English and English majors in contemporary society.
2. Strategize ways of entering the careers of their choice.
3. Present themselves professionally both orally and in writing.
4. Prepare a professional application package to submit for job searches or graduate school applications.
5. Prepare and submit a comprehensive portfolio.

ENGR 1000

Introduction to Engineering WE

Credit hours: 3

Introduces engineering-problem-solving techniques, design processes, modelling of simple engineering systems using CAD, and systems analysis in Excel. Emphasizes engineering design procedures by incorporating group projects and presentations. Course Lab fee of \$11 for computers applies. Lab access fee of \$45 for computers applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Apply the engineering design process.
2. Employ principles of effective teamwork.
3. Communicate effectively through written reports and oral presentations.
4. Use Computer Aided Design (CAD) software to create basic engineering models and/or drawings.
5. Apply modern software tools for engineering analysis and programming.
6. Fabricate prototypes safely using power and hand tools.

ENGR 2010

Engineering Statics

Credit hours: 3

Teaches principles of engineering mechanics as applied to bodies at rest. Discusses the concepts of position and force vectors, free body diagrams, equilibrium, center of gravity, centroids, distributed loading, friction, area and mass moments of inertia. Applies principles learned in the analysis of trusses, frames and machines. Lab access fee of \$45 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Explain the difference between scalar and vector quantities
2. Use vectors to represent forces and moments in static equilibrium problems
3. Perform mathematical operations on vector quantities and equations
4. Explain Newton's law for static equilibrium
5. Establish conditions for static equilibrium of rigid bodies
6. Solve structural analysis problems
7. Analyze internal forces in structural members to draw shear and moment diagrams
8. Solve static equilibrium problems that involve friction forces
9. Calculate centroid, center of gravity, and Moment of Inertia of an object

ENGR 2030

Engineering Dynamics

Credit hours: 3

Teaches principles of engineering mechanics as applied to bodies in motion. Studies kinematics and kinetics of particles and rigid bodies. Develops the concepts of force and acceleration, work, energy, impulse, momentum, impact, and vibration. Utilizes theory and methodology developed in the solution of practical engineering problems. Lab access fee of \$45 for computers applies. Canvas Course Mats of \$85/McGraw applies.

Course Learning Outcomes

1. Utilize Newton's Laws of motion
2. Formulate equations of motion of particles and rigid bodies
3. Calculate work and energy of a system of particles and/or rigid bodies
4. Solve particle dynamics problems using force analysis or work and energy analysis
5. Solve rigid body dynamic problems using force analysis or work and energy analysis
6. Predict the motion of a spring-mass-damping system based on the system parameters
7. Solve a second order ordinary differential equation
8. Solve dynamic problems using rectangular, cylindrical, and polar coordinate systems
9. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Confidence in their understanding of basic principles and laws governing bodies in motion 2 - Confidence in their ability to solve particle and rigid body dynamics problems 3 - Confidence in their ability to take advanced courses in Dynamics

ENGR 2140

Mechanics of Materials

Credit hours: 3

Studies behavior of materials under axial, torsional, flexural, transverse shear and combined loading conditions. Analyzes nature of stress and strain for ductile and brittle materials, stress and strain diagrams, stress concentration, and failure of materials. Includes analysis of repeated and dynamic loading, and basic design techniques related to above topics. Lab access fee of \$45 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Explain mechanical properties of materials
2. Analyze the causes of mechanical failure in materials
3. Explain stress, strain, Hooke's law, and stress-strain diagrams
4. Solve strength of materials problems that deal with different types of loadings such as axial, torsional, bending, and transverse shear as well as combined loadings
5. Use stress transformation and Mohr's circle
6. Design beams, shafts, pressure vessels, and columns
7. Apply energy methods to solve a variety of problems especially impact and dynamic loading
8. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Confidence in application of design methods and procedures pertaining to structures and machine components 2 - Confidence in basic knowledge of material properties and mechanical failure 3 - Confidence in ability to take advanced courses in mechanical systems and structures

ENGR 2160

Introduction to Materials Science and Engineering

Credit hours: 3

Introduces students to properties of materials from macro and micro point of view. Includes failure analysis of materials, altering properties of materials, and fracture mechanics. Introduces properties of solid materials and their behavior as applied to engineering. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Analyze materials and their properties.
2. Apply materials' properties and principles to engineering design problems.
3. Apply fracture mechanics to perform failure analysis.
4. Select appropriate materials in engineering design.

ENGR 2300

Engineering Thermodynamics

Credit hours: 3

Covers static pressure, phase diagrams, equations of state, and mass balance. Studies laws of thermodynamics and their application in engineering problem solving. Includes analysis of open and closed systems, steady state, and unsteady flow problems. Studies heat engine, refrigeration, and other important thermodynamic cycles. Discusses the concept of Entropy and Entropy balance. Lab access fee of \$45 applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Analyze basic static pressure problems
2. Explain solid-liquid-vapor phase diagrams
3. Use equations of state appropriately
4. Apply first law of thermodynamics and solve related problems
5. Apply principle of conservation of mass
6. Apply other laws of thermodynamics to various systems
7. Perform entropy balance for closed and open systems
8. Apply basic thermodynamic cycles and their applications
9. Perform energy and entropy balance for various problems

ENGR 2450

Computational Methods for Engineering Analysis

Credit hours: 3

Discusses computational and symbolic methods for the solution of complex engineering problems. Discusses computer representation of numbers and algorithm error analysis. Covers the solution of algebraic and differential equations. Includes the use of modern software tools. Lab access fee of \$45 for computers applies. Canvas Course Mats \$85/McGraw applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Apply basic error analysis and limitations of computational methods;
2. Apply Matlab's basic functions and scripting language;
3. Program the root-finding algorithms;
4. Program algorithms for matrix operations;
5. Solve large systems of linear algebraic equations;
6. Apply optimization concept to solve curve-fitting problems;
7. Apply numerical methods in the solution of linear differential equations;
8. Apply numerical methods to solve nonlinear differential equations.

ENGT 3010

Applied Mathematics I for Engineering Technologists

Credit hours: 2

Review concepts taught in college algebra with focus on application into engineering technology. Investigates trigonometry concepts applied to power systems. Analyzes industry matrix models. Includes an introduction to applied calculus within engineering technology.

Course Learning Outcomes

1. Apply college algebra to engineering technology problems.
2. Apply trigonometry to engineering technology problems.
3. Apply matrix math to engineering technology problems.
4. Apply calculus to industrial automation, power systems, mechanical systems and other areas of engineering technology.
5. Compute calculus based problems in applied engineering technology.

ENGT 3020

Applied Mathematics II for Engineering Technologists

Credit hours: 2

Applies calculus to applications in engineering technology. Introduces basics of applied differential equations and introductory solutions via the Laplace transform technique. Mathematical computations include derivations and problems related to power electronics, power converters, motion control, machines and drives, and proportional, integral, and derivative loops.

Course Learning Outcomes

1. Apply differentiation to pertinent topics in engineering technology.
2. Apply integration to pertinent topics in engineering technology.
3. Apply the Laplace transform technique to solve linear first order differential equations.
4. Apply calculus to PID loops and other engineering technology problems.

ENGT 3050

Programming and Applied Analytics

Credit hours: 3

Applies programming and analytics to engineering technology problems. Applies loops, functions, logical statements, and analysis to power, automation, and mechatronic scenarios. Implements trigonometry, linear algebra and calculus based concepts utilizing modern based software and tools.

Course Learning Outcomes

1. Apply programming commands in modern based software.
2. Apply programming commands and mathematics to engineering technology problems.
3. Interpret data to solve industry problems.
4. Interpret data to make intelligent decisions utilizing industry examples.

ENGT 3100

Power Systems and Automation

Credit hours: 3

Introduces power systems and the steady-state analysis of its major components from generation to the delivery of electrical power. Discusses the flow of active and reactive power and basic control concepts. Introduces equipment nameplates, testing, troubleshooting, and basic automation in power systems. Focuses on fundamental introductory concepts in measurement equipment and Intelligent Electronic Devices (I.E.D.). Introduces the per unit system. Discusses the role of automation, protection, and smart control in power systems. Introduces fault analysis of balanced systems. Provides an introduction to the important topic of symmetrical components. Includes hands-on exercises and demos in the classroom. Canvas Course Mats \$103/Cengage applies.

Course Learning Outcomes

1. Describe the role of generation, transmission, distribution, and automation in a power system.
2. Review phasor analysis for A.C. power systems.
3. Identify individual components found in an automated power system.
4. Model the steady state behavior of individual components in a power system.
5. Analyze single-phase and three-phase systems utilizing the per unit system.
6. Discuss the role of Intelligent Electronic Devices (I.E.D.s) in power systems and automation.
7. Calculate fault current utilizing the equivalent circuit for a balanced three-phase fault.
8. Describe the need for symmetrical components in unbalanced systems.
9. Discuss real and reactive power flow in a power system.

ENGT 3130

Electrical Safety Standards

Credit hours: 1

Emphasizes industrial safety and focuses heavily on electrical safety in the workplace as stated in NFPA 70E and other relevant standards. Includes practices and topics to help mitigate workplace injuries. Discusses when it is appropriate to work on live systems and focuses on the latest NFPA 70E consensus standard. Introduces arc flash hazards, analysis and mitigation strategies.

Course Learning Outcomes

1. Discuss relevant safety standards in the industry including NFPA 70E.
2. Analyze electrical systems and look at ways to mitigate the hazards or reduce risk.
3. Calculate the arc flash incident energy according to the IEEE 1584 standard and discuss ways to mitigate high energy.
4. Identify common industry hazards to provide awareness.
5. Discuss relevant technology relating to electrical safety and hazard mitigation.
6. Analyze the effects of fuses and breaker settings on arc flash incident energy.

ENGT 3150

Power System Analysis and Design

Credit hours: 3

Reviews electrical one-line diagrams, per unit system, and electrical models for transformers, synchronous generators, induction machines, power lines, and other pertinent apparatus. Discusses analysis techniques utilizing both equivalent circuits and Y-bus methods. Introduces unbalanced fault analysis, symmetrical components, and sequence networks for single-line to ground, phase-phase, and phase-phase-ground faults. Focuses on design concepts and codes related to medium and low voltage power systems.

Course Learning Outcomes

1. Analyze non-ideal circuit models of power system components including transformers, power lines, induction machines and synchronous generators.
2. Convert a power system one line diagram into an equivalent per unit circuit.
3. Design a power system following applicable codes and standards.
4. Analyze real and reactive power flows and system components effecting these power flows.
5. Solve unbalanced faults utilizing symmetrical components and sequence networks.
6. Discuss load calculation, conductor sizing, conduit fill, overcurrent protection, types of switchboards/panelboards, motor circuits, transformer characteristics, grounding, hazardous locations, automatic transfer switches, uninterruptible power supplies.
7. Solve a minimum of one case problem.
8. Compute voltages and currents at each bus utilizing Y-Bus.

ENGT 3220

Motion Control for Engineering Technologist

Credit hours: 3

Examines design and integration of servo systems in automated systems. Applies mathematical principles to design concepts. Analyzes PID tuning and feedback control. Investigates servo motors for single axis control, multi-axis control, and coordinated motion control.

Course Learning Outcomes

1. Servo motors and their application in automated systems.
2. Design encoder, speed, and position feedback in a servo motor application.
3. Design the application of proportional, integral, and derivative control of speed and position automation system.
4. Analyze mathematical equations to solve motion control.

ENGT 3225

Motion Control for Engineering Technologist Lab

Credit hours: 1

Analyzes servo motors in automated systems. Applies servo motors to automated systems including wiring and programming. Explores PID tuning. Examines internal and external feedback loops. Apply servo motors to single axis control, multi-axis control, and coordinated motion control.

Course Learning Outcomes

1. Apply servo motors and their use in automated systems
2. Configure servo motors and drives in automated systems
3. Program servo commands to automate a system
4. Tune servo drives
5. Troubleshoot servo drives in automated systems

ENGT 3250

Automated Safety Systems

Credit hours: 2

Explores safety systems in industrial automation including instrumented safety systems, risk assessment, and design. Focuses on a life-cycle approach to automation engineering safety design. Incorporates safety standards such as ISO 13849, ISA 84, IEC 61508 and IEC 61511. Examines safety controllers, peripheral equipment, and relevant technology.

Course Learning Outcomes

1. Describe the relevance of automated safety systems.
2. Describe the design life cycle approach in automated safety systems.
3. Analyze industry relevant safety standards.
4. Explore ways to mitigate risk via assessment.
5. Describe applications, functions, and programming techniques of a safety controller.

ENGT 3255

Automated Safety Systems Lab

Credit hours: 1

Applies safety systems and technology in a lab environment. Discusses wiring of safety relays and other hardwired safety devices. Explores interface wiring and programming of safety programmable relays. Teaches wiring of safety I/O and programming a safety PLC including safety instructions. Focuses on troubleshooting safety systems.

Course Learning Outcomes

1. Wire safety relays and devices.
2. Configure a basic programmable safety relay on a practical system.
3. Program safety routines and instructions.
4. Troubleshoot automated safety system controllers, I/O, and field circuits.

ENGT 3600

Capstone I Design WE

Credit hours: 3

Integrates previous course work to design senior capstone project. Analyzes electrical AC/DC/Servo/Stepper motors, pneumatics, hydraulics for application in capstone project. Develops automated systems layouts of mechanical, actuators, electrical box, safety, and wiring diagrams. Applies project based proposal writing and approval process. Requires selection and documentation of components needed to complete project.

Course Learning Outcomes

1. Write proposals for automated systems.
2. Analyze automated devices for selection of actuators, controllers, sensors, safety, and mechanical systems for integration into a project.
3. Design automated system using best practices.
4. Create documentation of project including mechanical, safety, electrical systems, pneumatic systems, and/or hydraulic systems.

ENGT 4100

Power System Protection and Automation

Credit hours: 3

Reviews phasors and polarity, symmetrical components, sequence networks, and the per unit system. Introduces general protection philosophies, definitions, and ANSI device numbers. Discusses relay input devices, instrument transformers, and accuracy classes. Focuses on introductory concepts related to power system protection fundamentals including protecting, lines, feeders, buses, transformers, motors, and generators. Introduces standardized protection methods and emphasizes system grounding methods and principles. Teaches trip circuits and automation principles in multi-function microprocessor based relays. Emphasizes troubleshooting and testing of protection elements.

Course Learning Outcomes

1. Compute per unit fault currents of balanced and unbalanced systems.
2. Explain various types of protection including overcurrent, instantaneous overcurrent, differential, distance, and directional elements.
3. Explain various overcurrent protective devices including electro- mechanical relays, circuit breakers, time current curves, fuses, and microprocessor based I.E.Ds.
4. Discuss applications of power system and substation protection and automation including load shedding, breaker-failure schemes, reclosers, testing, commissioning, and troubleshooting.
5. Discuss characteristics of current transformers.
6. Calculate criteria to avoid CT saturation.
7. Analyze CT ratings and specifications.
8. Apply correct principles to instrument transformer selection.
9. Discuss CT and PT wiring configurations.

ENGT 4105

Power System Protection and Automation Lab

Credit hours: 1

Applies phasors, symmetrical components, sequence networks, and relaying theory to electrical mechanical and microprocessor based protective relays in a lab setting. Configures, programs, tests, and troubleshoots various types of protective relays, protective elements, and field circuits. Utilizes a current and voltage industry test set. Emphasizes relay settings, testing, and troubleshooting protection elements. Introduces revenue metering, industrial automation controllers, and communications.

Course Learning Outcomes

1. Apply per unit fault currents of balanced and unbalanced systems to microprocessor based relay settings.
2. Program various types of protection elements including overcurrent, instantaneous overcurrent, differential, distance, and directional elements in a lab setting.
3. Analyze smart metering power data via industry software.
4. Troubleshoot wiring and field circuits on protective relays.
5. Analyze wiring of relay input devices to microprocessor based protective relays.
6. Test protective relay elements including overcurrent, instantaneous overcurrent, differential, distance, and directional elements in a lab setting.
7. Apply logic to microprocessor based relays.

ENGT 4130

Distribution System Protection

Credit hours: 2

Discusses distribution system equipment and components including transformers, buses, feeders, fuses, circuit breakers, reclosers, sectionalizers, and capacitor banks. Outlines protection principles used in modern distribution systems. Includes system modeling, differential protection, overcurrent coordination, reclosing, power factor correction, and bus configurations. Covers concepts related to protection of induction motors.

Course Learning Outcomes

1. Identify distribution equipment and components
2. Perform time based overcurrent coordination via calculation and TCC curves
3. Configure transformer differential protection
4. Select and configure bus differential protection
5. Explain uses and applications of capacitor banks in distribution systems
6. Discuss induction motors and motor protection elements

ENGT 4135

Distribution System Protection Lab

Credit hours: 1

Applies distribution system protection principles to electrical equipment and apparatus including transformers, buses, and feeders. Discusses fuses, circuit breakers, reclosers, sectionalizers, and capacitor banks. Applies protection principles used in modern distribution systems in a lab environment.

Course Learning Outcomes

1. Apply distribution protection to protect equipment and components
2. Apply time based overcurrent coordination via calculation and TCC curves
3. Configure transformer and bus differential protection
4. Explain uses and applications of capacitor banks in distribution systems

ENGT 4200

Advanced Automated Systems

Credit hours: 3

Reviews fundamentals of programming programmable logic controllers (PLCs) including fundamental instructions, UDTs, AOIs, function blocks, program efficiency, and organization. Reviews PLC programming languages including ladder diagram and function block diagram. Introduces structured text, STL, and SCL languages. Introduces multiple automation platforms including distributed control systems (DCS) and related programming and design specifications. Focuses on SCADA software to interface to the PLC in order to monitor, control, analyze data, and visualize the system. Introduces web-based deployment of SCADA software and alarm notifications.

Course Learning Outcomes

1. Write organized and efficient PLC code to control an automated system.
2. Interface an automated system and PLC to SCADA software to provide visualization, remote monitoring, control, data trending, and alarming.
3. Program a minimum of two distinct automation platforms.
4. Deploy SCADA software to a web interface for monitoring, trending and alarming.
5. Discuss automation platforms including PLCs, PACs, DCS, and other automation controllers.

ENGT 4600

Capstone II WE

Credit hours: 3

Integrates previous course work and capstone I design to build senior project machine for presentation at Engineering Technology Fair. Utilizes teamwork to apply previous design to build project. Includes creation of documentation of comprehensive project into a manual that is appropriate to industry.

Course Learning Outcomes

1. Write documentation manual for automated systems.
2. Build automated system from drawings.
3. Analyze and improve automated systems.
4. Wire and program automated system.

ENST 3000

Introduction to Environmental Studies

Credit hours: 3

Explores the complex relationships of culture, technology, and nature within an interdisciplinary framework of the natural sciences, social sciences, business, and humanities. Addresses the integration of humanity and nature in the age of globalization.

Course Learning Outcomes

1. Draw conceptual connections about environmental policy across disciplines.
2. Detail basic theories of environmental ethics.
3. Detail the fundamental issues in ecology.
4. Describe federal legislation pertaining to the environment.
5. Describe at least a dozen public policy challenges on environmental issues.
6. Identify multiple competing claims in an array of environmental public policy issues.
7. Analyze environmental public policy issues in terms of scientific ecology.
8. Analyze environmental public policy issues in terms of environmental ethics.

ENST 3100

Environmental Justice

Credit hours: 3

Introduces student to basic environmental justice issues and cases at the national and global level. Teaches basic theories of environmental injustice. Examines root causes and possible solutions to environmental injustice.

Course Learning Outcomes

1. Explain some of the main theories of environmental justice
2. Explain some of the ongoing history of environmental injustice
3. Analyze environmental issues through various theoretical and disciplinary frameworks
4. Compare and contrast theories of environmental justice and injustice
5. Evaluate various theoretical frameworks for understanding environmental injustice
6. Design pathways towards solutions to local, national and global problems of environmental justice

ENTR 2500

Creativity and Entrepreneurial Thinking SS

Credit hours: 3

Introduces the concepts of innovation and entrepreneurial creativity. Draws upon the inspired thinking and entrepreneurial pursuits of leaders in a variety of disciplines in order to understand the process of innovation and appreciate the role of creativity in making innovation possible. Includes topics such as the customer/problem/solution framework, design thinking, prototyping, intellectual property, creative idea development, lead user research methodology, peer feedback, new venture financing, and the lean start-up.

Course Learning Outcomes

1. Identify the characteristics of creative entrepreneurs.
2. Define entrepreneurial creativity.
3. Develop a new product or service.
4. Produce a prototype through an iterative process.
5. Validate new product/service concepts through feedback from lead users.
6. Measure value creation of a new product/service concept.

ENTR 3170

Entrepreneurship - Feasibility Analysis

Credit hours: 3

Analyzes experientially the feasibility of potential business opportunities. Provides opportunity to work on new ventures or existing businesses. Analyzes, evaluates, and develops opportunities using project-based learning. Applies the scientific method and design thinking to research the feasibility of the market, value proposition, financial model, and management team. Covers topics related to feasibility, including legal business entities, intellectual property, tax implications, ownership structures, and advisory boards. Uses secondary research to define and build hypotheses around feasibility. Uses primary research to test and validate customer expectations and product design. Lab access fee of \$13 applies.

Course Learning Outcomes

1. Create a multifaceted feasibility/validation analysis exploring the market, technical, human/team, and financial problems/potential for a new venture, potential business, or new product/service.
2. Validate a potential business opportunity using both qualitative and quantitative research to establish trust, credibility and confidence of potential stakeholders.
3. Examine, choose and communicate a complete business model for a potential business opportunity.
4. Identify potential legal issues for new ventures including the establishment of a legal entity, determining IP (Intellectual Property) and making implementation plans to factor these issues into a potential opportunity.
5. Create a complete financial model, based on well- researched assumptions that include revenue forecasting, potential/possible expenses, and potential funding options.
6. Create a monthly cashflow forecast, break-even analysis, and payback period analysis for a potential business opportunity.

ENVT 1110

Introduction to Environmental Management PP

Credit hours: 3

Surveys environmental issues and the impact of people on the environment. Covers how we can sustainably use our natural resources and how we can prevent and remediate the degradation of the environment while using these natural resources.

Course Learning Outcomes

1. articulate how the extraction and use of our natural resources can cause air, water, and soil pollution that harm the environment and impact humanity.
2. Describe how societies can sustainably use Earth's resources by reducing/preventing environmental degradation.
3. Summarize the environmental laws and policies that are designed to prevent environmental degradation, such as pollution.
4. Determine how environmental processes influence our everyday lives by analyzing how humanity impacts the environment and how societal issues are impacted by these processes.
5. Apply the scientific method by evaluating how to live a more sustainable lifestyle.
6. Apply life-long learning skills; such as metacognition, communication, quantification, information, and collaborative learning skills.

ENVT 1200

Environmental Worker Safety

Credit hours: 3

Discusses occupational safety and health for environmental management. Prepares students for future health and safety laws and regulation, training requirements, and the hierarchy of safety control. Covers management of a safety program, risk assessment, OSHA compliance, and development of a safety culture.

Course Learning Outcomes

1. Summarize approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
2. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents.
3. Summarize how Occupational Safety, Health, and Environment (OHSE) programs are typically organized, the roles and responsibilities of OHSE managers, and expectations of other OHSE stakeholders in the organization.
4. Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.

ENVT 1270

Environmental Microbiology

Credit hours: 3

Provides an understanding of microbiology tailored to the needs of water managers, public health workers, and environmental managers. Discusses the role microorganisms in water treatment, wastewater treatment, agriculture, environmental change, and others.

Course Learning Outcomes

1. Apply the basic principles of environment microbiology to solving problems in water and air quality, soils, and bioremediation.
2. Enumerate the types of micro-organisms found in soil, air and water and their roles in recycling and as pathogens.
3. Apply the scientific methods in environmental microbiology e.g. collection, isolation and investigation of microbial flora from various environments.
4. Enumerate the sterilization and disinfection procedures for combating pathogens and contaminating micro-organisms.
5. Analyze current peer-reviewed research in environmental microbiology by contextualizing the research through written communication.

ENVT 1300

Environmental Lab and Sampling

Credit hours: 2

Studies basic laboratory and environmental field techniques used by labs working on environmental projects and in sampling programs within the field. Covers safety, pH, dissolved oxygen, BOD, turbidity, organics, and others. Includes opportunities for undergraduate research. Course Lab fee of \$38 for supplies/materials/lab applies.

Course Learning Outcomes

1. Illustrate the use of the scientific method and the value of its use in assessing site environmental conditions
2. Summarize the process of developing comprehensive, statistically valid, and feasible site sampling plans
3. Examine methods of laboratory and field data collection, including the operation of standard sampling equipment and instruments
4. Examine standard procedures for collection and preservation of site samples, data recording and analysis, and reporting
5. Prepare a site assessment report that addresses investigation objectives, and documents investigation results in accordance with regulatory agency data collection, analysis, and reporting requirements

ENVT 2560

Environmental Health

Credit hours: 3

Addresses environmental health issues for multiple environmental-related degree programs. Benefits students pursuing careers in nursing, biology, and other related fields. Examines infectious and non-infectious diseases, vectors and their control. Discusses the fundamentals of environmental health, water and wastewater management, population pyramid and associated environmental concerns in developed and developing nations. Includes topics of solid and hazardous waste management, recreation safety, air quality and environmental regulations.

Course Learning Outcomes

1. Discuss the objectives, meaning, and history of environmental health
2. Categorize the fates of pollutants when released in the environment and their impacts on health
3. Summarize the fundamentals of environmental health and regulations used to promote a healthy environment
4. Discuss chronic and communicable diseases
5. Interpret environmental concerns associated with various types of population pyramids
6. Summarize water and wastewater treatment processes
7. articulate food protection principles used in the prevention of food borne illnesses
8. Describe factors affecting air quality and their control
9. Discuss environmental health in recreational areas

ENVT 2710

Environmental Careers

Credit hours: 1

Explores the career opportunities in environmental areas for students in environmental careers. Covers resumes, letters of inquiry, networking, interviews, and other methods of job seeking.

Course Learning Outcomes

1. articulate short-term and long-term career goals.
2. Develop a plan for effective career and educational planning (i.e. graduate school, internships, etc...) within the environmental field.
3. Define a plan to network with environmental science professionals.
4. Formulate how to successfully search and apply for positions in fields related to environmental issues.
5. Demonstrate oral communication skills to prepare students for job interviews.
6. Demonstrate written communication skills that help students display their skills, abilities, and experience in resumes and cover letters.

ENVT 2730

Introduction to Soils

Credit hours: 4

An introductory course for majors and non-majors. Covers basic topics such as soil classification, soil-water relations, fertility, soil strength, and soil conservation. Offers important background information for those involved in pollution prevention and remediation, environmental monitoring, and home gardening.

Course Learning Outcomes

1. Discuss the processes by which soils form, how soils are degraded, and how soils can be conserved.
2. Discuss the ecological implications of human impacts on soils.
3. Describe the characteristics of a productive agricultural soil and explain how to improve an unproductive soil.
4. Explain the engineering properties of soil and how to quantify those properties.
5. Perform basic lab analyses of soil properties.

ENVT 3210

Water Quality and Reclamation

Credit hours: 4

Covers identifying and analyzing the major pollutants and parameters related to water quality and remediation. Provides basic training to remediate and mitigate the potential contamination of water sources and how to treat and manage wastewater (i.e. primary treatment, biological treatment, and chemical treatment processes). Course lab fee of \$32 applies for field excursions and supplies.

Course Learning Outcomes

1. Explain the roles and responsibilities of public institutions and private organizations that relate to water and wastewater quality.
2. Analyze the common parameters (i.e. pH, temperature, dissolved oxygen, turbidity, color, solids analysis, alkalinity, hardness, and acidity) and pollutants related to point and nonpoint sources of water contamination.
3. Summarize the statutory, regulatory and institutional framework controlling water quality management activities in the U.S.
4. Evaluate point and nonpoint contaminant sources of water from both groundwater and surface water resources in both rural and urban settings.
5. Calculate basic process parameters for wastewater such as needed disinfection contact times, sizing of sedimentation basins, filter flow rates, number of membrane modules needed for treatment of a given feed flow rate, etc.
6. Establish a water quality plan that analyzes, mitigates, and treats water and wastewater for inorganic pollutants, organic pollutants, and microbial contaminants for both point and nonpoint sources of both surface water and groundwater sources.
7. Apply the scientific method by reviewing scientific literature and writing an academic style paper or technical report related to water quality and treatment.

ENVT 3280

Environmental Law

Credit hours: 3

Covers the Clean Water Act, the Safe Drinking Water Act, and the Clean Air Act. Reviews the Toxic Substances Control Act, the Resource Conservation and Recovery Act, the Superfund law, DOT regulations, and OSHA regulations.

Course Learning Outcomes

1. Describe the genesis of modern environmental law, the factors that shaped it, and the way today's political forces frustrate changing environmental law.
2. Summarize the complex relationship between environmental law and other areas of law (e.g., administrative law), and the dynamic relationship between domestic and international environmental law-making.
3. Explain the various levels of government and their relative roles so that you can navigate legal hurdles and find legal opportunities to achieve environmental objectives.
4. Explain the role that the rule of law plays in creating a stable society, economy, and environment and how this impacts people, particularly disadvantaged communities.
5. Appraise how the major and minor environmental law statutes (such as the National Environmental Policy Act, the Clean Air Act, the Clean Water Act, the Endangered Species Act, Resource Conservation and Recovery Act) influence the environment and human society.

ENVT 3290

Environmental Reporting WE

Credit hours: 3

Covers reporting frameworks and applications for environmental aspects of organizations. Focuses on reporting related to various aspects of environmental initiatives, including carbon, carbon credits, voluntary and mandatory reporting, buildings, products, and others. Introduces software and programs related to environmental reporting. Emphasizes systems thinking and holistic analysis.

Course Learning Outcomes

1. Critically analyze environmental and social governance materials.
2. Compare benchmark environmental performance goals.
3. Evaluate effectiveness of different sustainability and reporting frameworks.
4. Identify greenwashing and other strategies used by organizations.
5. Create an environmental report for an organization.
6. Write analytically about environmental issues.
7. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

ENVT 3790

Applied Hydrology WE

Credit hours: 4

Provides the students with a water budget approach to understanding how surface water applies to all aspects of the hydrologic cycle, including interactions with the atmosphere and geosphere. Reviews how surface water resources are managed by analyzing flood frequencies, intensity-duration-frequency curves for rain-fall/snowfall, estimation of gauged and ungauged stream locations, stream flow measurement techniques, analyzing consumptive use demands, watershed modeling, legal water rights, water contamination, and risk assessment in hydrologic design. Provides opportunities to investigate a specific problem, field site, and/or service learning project related to hydrology. Course fee of \$21 applies.

Course Learning Outcomes

1. Analyze basic hydrologic principles and processes governing the movement of water through the hydrologic cycle, including atmospheric moisture flow, surface runoff, infiltration, and basic groundwater flow.
2. Perform basic hydrologic calculations used in professional practice with special emphasis on unit conversions, manipulation of algebraic equations, and the use of spreadsheets and modeling software.
3. Explain how recent technologies, such as remote sensing, Geographic Information Systems, and integrative modeling approaches are applied in hydrology and water resource management.
4. Apply basic field and analytical methods to quantify flow and/or transfer of water in the hydrologic system.
5. Communicate hydrologic problems by presenting a professional presentation (oral/written) and writing quality technical and scientific reports.

ENVT 3850

Environmental Policy WE

Credit hours: 3

For upper-division students with an interest in environmental policy. Discusses the process by which policies are made and the factors that influence policy formation. Includes political factors, economics, international issues, public awareness and others.

Course Learning Outcomes

1. Apply proper forms of argument, statistics, and logical fallacies as used in the formation and manipulation of government policy and public opinion.
2. Describe the functions of federal and local governments in the formation of environmental policy.
3. Analyze effective scientific and social strategies for effecting environmental policy changes at the federal, state and local levels of government.
4. Compose a variety of disciplinarily-appropriate texts regarding the analysis of environmental policy and current events.
5. Demonstrate effective communication principles by competently and compellingly incorporating appropriate literature reviews, environmental data, and writing for various audiences.

ESAF 2100

Airport Firefighter

Credit hours: 3

Explores the theories and fundamentals associated with airport rescue fire fighting. Addresses safety, operations and agents associated with aircraft rescue and firefighting procedures. Provides an overview of communications, apparatus, tools and equipment specific to the aerospace emergency service delivery.

Course Learning Outcomes

1. Define the role and qualifications of the airport firefighter;
2. Discuss airport and aircraft familiarization;
3. Discuss safe practices associated with airport firefighting operations;
4. Describe aircraft rescue and firefighting apparatus and equipment;
5. Identify fire extinguishing agents associated with aerospace firefighting;
6. Discuss tactical objectives associated with aircraft emergency response;
7. Describe airport emergency planning;
8. Identify hazardous situations associated with aircraft fire rescue and fire suppression activities.

ESAF 2110

Aircraft Related Mass Casualty Incidents

Credit hours: 3

Involves the planning, response, mitigation and management of a mass casualty incident resulting from a crashed aircraft. Includes issues relating to medical treatment, triage and transportation. Examines how the command structure functions as well as how operations personnel work on the scene of mass casualty incident.

Course Learning Outcomes

1. Discuss the incident management systems;
2. Discuss the role of command, its structure and components;
3. Define the operation structures within the emergency response system;
4. Identify hazardous conditions and ways to mitigate situations.

ESAF 2120

Aircraft Mishaps

Credit hours: 3

Teaches how to locate and use past aircraft accident and mishap data from various government agencies in order to develop relevant lesson plans and training courses for emergency responders. Examines how to research and interpret aircraft mishap data to strengthen emergency service agencies involved in aircraft rescue firefighting. Includes developing or reviewing relevant guidelines, protocols, procedures, and training evolutions based on current mishaps and findings.

Course Learning Outcomes

1. Cite examples of databases pertaining to the aerospace mishaps
2. Discuss current mishaps within the aviation sector
3. Describe the investigation process associated with aircraft accidents
4. Describe how to properly use aviation database information
5. Report on database findings

ESAF 2140

Airport Operations for the Emergency Responder

Credit hours: 3

Provides an understanding of ground operations, communications, layout, movements and functions in order to operate effectively within the boundaries of an airport. Discusses the complex, unfamiliar setting responders face associated with daily operations of an airport.

Course Learning Outcomes

1. Discuss specific airport operation systems;
2. Describe the characteristics associated with airport operations;
3. Identify services at airports;
4. Review high hazard, emergency and security concerns at airports;
5. Describe airport accesses and movement;
6. Discuss terminal operations.

ESEC 1140

Emergency Medical Technician Basic

Credit hours: 9

Provides fundamental knowledge of the EMS system to include safety and well-being of the EMT. Includes medical, legal and ethical issues related to emergency care. Teaches entry level cognitive and kinesthetic skills including; medical and trauma assessment, basic pharmacology and EMS operations. Prepares students for certification as an Emergency Medical Technician-Basic through the Utah Bureau of EMS. Course lab fee of \$99 for disposables applies. Course fee of \$100 for materials applies.

Course Learning Outcomes

1. Identify medical, legal and ethical concepts of emergency care.
2. Discuss medications administered by the Emergency Medical Technician.
3. Conduct an appropriate patient assessment.
4. Interpret assessment data and patient medical history to determine a patient care plan.
5. Administer appropriate interventions based on patient care plan.
6. Demonstrate competency with EMT Basic skills.

ESEC 3210

Paramedic I-Operations

Credit hours: 3

Reinforces concepts and clinical skills students previously learned at the EMT level. Introduces advanced concepts in EMS Systems, illness and injury prevention, medical-legal issues, anatomy, physiology, pathophysiology, scene leadership and incident management for the paramedic. Course fee of \$406 for materials applies.

Course Learning Outcomes

1. Describe initial paramedic education, continuing education, and the attributes expected as a paramedic.
2. Characterize the EMS system's role in injury prevention, public education, injury surveillance and organizing a community prevention program.
3. Describe personal protection equipment, standard precautions used to prevent infection, post exposure management, and reporting of significant exposures to bodily fluids.
4. Describe the incident management system, scene safety, and the steps to prevent work-related injuries.
5. Distinguish between civil and criminal law, medical ethics and how these relate to paramedic practice.
6. Explain patient consent and refusals, advanced directives, negligence, and duty to act as a paramedic.
7. Compare homeostasis and pathophysiology to organs and systems in the human body.

ESEC 3220

Paramedic II-Cardiac and Respiratory Patient Care

Credit hours: 3

Reinforces concepts and clinical skills students previously learned at the EMT level. Introduces advanced concepts in Cardiology, Airway Management, Respiratory Distress and Resuscitation. Identifies patient assessment and management within the paramedic scope of care. Course fee of \$13 for text applies.

Course Learning Outcomes

1. Distinguish between various cardiac and respiratory illnesses, injuries and conditions.
2. Identify appropriate assessments necessary to diagnose and treat cardiac and respiratory patients.
3. Interpret assessment and objective monitoring data for cardiac and respiratory patients.
4. Formulate working diagnoses, evidence-based interventions, and outcomes for trauma patients, based on physiological and pathophysiological processes.
5. Identify treatment and transport priorities based on differential diagnoses for the cardiac and respiratory patient.
6. Identify pharmacotherapeutics, interactions, and adverse reactions of selected drugs for the cardiac and respiratory patient.
7. Calculate appropriate medication dosages for cardiac and respiratory patients.
8. Demonstrate effective communication and collaboration methods with an interdisciplinary health care team.

ESEC 3225

Paramedic II Lab-Cardiac and Respiratory Emergencies

Credit hours: 1

Reinforces concepts and clinical skills discussed in ESEC 3220. Emphasizes patient assessment, airway management, cardiac care, pathophysiology, pharmacology, critical decision-making skills and appropriate interventions while caring for cardiac, respiratory, or resuscitation emergencies. Assessment based management and evidenced based practices will be applied. Course fee of \$118 for supplies and certification cards applies.

Course Learning Outcomes

1. Practice basic therapeutic communication skills during patient assessments.
2. Conduct an appropriate patient assessment.
3. Use assessment data and patient medical history to determine differential diagnoses.
4. Administer appropriate interventions based on patient care plan.
5. Demonstrate competency with paramedic skills.
6. Demonstrate effective communication skills with interdisciplinary health care team.

ESEC 3230

Paramedic III-Trauma Patient Care

Credit hours: 3

Reinforces and expands upon the materials and clinical skills learned as an EMT. Integrates prior learning with enhanced advanced life support concepts and skills. Emphasizes patient assessment and recognition of significant findings, differential diagnoses and treatment strategies for trauma patients. Course fee of \$10 for text applies.

Course Learning Outcomes

1. Distinguish between various injuries and conditions for trauma patients.
2. Identify appropriate assessments necessary to diagnose and treat trauma patients.
3. Interpret trauma patient assessment and objective monitoring data.
4. Formulate working diagnoses, evidence- based interventions, and outcomes for trauma patients, based on physiological and pathophysiological processes.
5. Identify treatment and transport priorities based on differential diagnoses for the trauma patient.
6. Identify pharmacotherapeutics, interactions, and adverse reactions of selected drugs for the trauma patient.
7. Calculate appropriate medication dosages for the trauma patient.
8. Demonstrate effective communication and collaboration methods with an interdisciplinary health care team.

ESEC 3235

Paramedic III Lab-Trauma Emergencies

Credit hours: 1

Reinforces concepts and clinical skills discussed ESEC 3230. Emphasizes patient assessment, airway management, pathophysiology, pharmacology, critical decision-making skills and appropriate interventions during traumatic emergencies. Assessment based management and evidenced based practices will be applied. Course lab fee of \$156 for disposables applies.

Course Learning Outcomes

1. Practice basic therapeutic communication skills in performing patient assessments.
2. Conduct an appropriate patient assessment.
3. Use assessment data and patient medical history to determine differential diagnoses.
4. Administer appropriate interventions based on patient care plan.
5. Demonstrate competency with paramedic skills.
6. Demonstrate effective communication skills with interdisciplinary health care team.

ESEC 3240

Paramedic IV-Medical and Geriatric Patient Care

Credit hours: 3

Reinforces and expands upon the materials and clinical skills learned as an EMT. Integrates prior learning with enhanced advanced life support concepts and skills. Emphasizes patient assessment and recognition of significant findings, pre-hospital diagnosis and differential diagnosis, and treatment strategies for medical and geriatric patients. Course fee of \$49 for materials applies.

Course Learning Outcomes

1. Distinguish between various illnesses and conditions within the scope of paramedic care.
2. Identify appropriate assessments necessary to diagnose and treat patients.
3. Interpret patient assessment and objective monitoring data.
4. Formulate working diagnoses, evidence-based interventions, and outcomes for patients, based on physiological and pathophysiological processes.
5. Identify treatment and transport priorities based on the paramedic scope of care.
6. Identify pharmacotherapeutics, interactions, and adverse reactions of selected drugs for the patient.
7. Calculate appropriate medication dosages for the patient.
8. Demonstrate effective communication and collaboration methods with an interdisciplinary health care team.

ESEC 3245

Paramedic IV Lab-Medical Emergencies

Credit hours: 1

Reinforces concepts and clinical skills discussed in the ESEC 3240. Emphasizes patient assessment, airway management, pathophysiology, pharmacology, critical decision-making skills and appropriate interventions while caring for medically emergent patients. Assessment based management and evidenced based practices will be applied. Course lab fee of \$30 for disposables applies.

Course Learning Outcomes

1. Practice basic therapeutic communication skills during patient assessments.
2. Conduct an appropriate patient assessment.
3. Use assessment data and patient medical history to determine differential diagnoses.
4. Administer appropriate interventions based on patient care plan.
5. Demonstrate competency with paramedic skills.
6. Demonstrate effective communication skills with interdisciplinary health care team.

ESEC 3250

Paramedic V-Obstetric and Pediatric Patient Care

Credit hours: 3

Reinforces and expands upon the materials and clinical skills learned as an EMT. Integrates prior learning with enhanced advanced life support concepts and skills. Emphasizes patient assessment and recognition of significant findings, pre-hospital diagnosis and differential diagnosis, and treatment strategies for obstetric and pediatric patients. Course fee of \$74 for materials applies.

Course Learning Outcomes

1. Distinguish between various illnesses, injuries and conditions common to maternal health and pediatric populations.
2. Identify appropriate assessments necessary to diagnose and treat obstetric and pediatric populations.
3. Interpret patient assessment and objective monitoring data.
4. Formulate working diagnoses, evidence-based interventions, and outcomes for obstetric and pediatric patients based on physiological and pathophysiological processes.
5. Identify treatment and transport priorities based on differential diagnoses for obstetric and pediatric patients.
6. Identify pharmacotherapeutics, interactions and adverse reactions of selected drugs for the obstetric and pediatric patient.
7. Calculate appropriate medication dosages.
8. Demonstrate effective communication and collaboration methods with an interdisciplinary health care team.

ESEC 3255

Paramedic V Lab-Obstetric and Pediatric Emergencies

Credit hours: 1

Reinforce concepts and clinical skills discussed in the ESEC 3250. Emphasizes patient assessment, airway management, pathophysiology, pharmacology, critical decision-making skills and appropriate interventions while caring for patients with obstetrics and pediatric emergencies. Assessment based management and evidenced based practices will be applied. Course fee of \$25 for materials applies.

Course Learning Outcomes

1. Practice basic therapeutic communication skills during patient assessments.
2. Conduct an appropriate patient assessment.
3. Utilize assessment data and patient medical history to determine differential diagnoses.
4. Administer appropriate interventions based on patient care plan.
5. Demonstrate competency with paramedic skills.
6. Demonstrate effective communication skills with interdisciplinary health care team.

ESEC 4210

Paramedic VI-Research

Credit hours: 2

Provides opportunity to apply previously learned knowledge and skills in on-line scenario activities, research current EMS trends, as well as recognition assignments for clinical site preceptors.

Course Learning Outcomes

1. Conduct online research using academic databases.
2. Apply academic theories and knowledge to a unique research question.
3. Evaluate relevant research that supports a proposal.
4. Integrate appropriate research designs into a presentation.
5. Prepare a digitally formatted presentation.
6. Complete preceptor evaluations as required by the CoAEMSP accreditation board.

ESEC 4220

Paramedic VII-Clinical Internship Hospital and Field Phase I and II

Credit hours: 4

Provides the paramedic student with an opportunity to apply previously learned knowledge and skills while in a supervised clinical setting. Rotations include: Emergency Departments, Medical/Surgical Intensive Care Units, Labor and Delivery, Psychiatric, and Prehospital experiences with field-based internships. Course lab fee of \$173 for field mileage and materials applies.

Course Learning Outcomes

1. Apply therapeutic communication skills during patient assessments.
2. Conduct an appropriate patient assessment.
3. Utilize assessment data and patient medical history to determine differential diagnoses.
4. Administer appropriate interventions based on patient care plan.
5. Demonstrate competency with paramedic skills.
6. Demonstrate effective communication skills with interdisciplinary health care team.
7. Demonstrate effective triage and prioritization of care of emergent and non-emergent patients and conditions.
8. Successfully complete accreditation required field internships in preparation for entry into capstone phase.

ESEC 4230

Paramedic VIII-Practical Preparation and Testing

Credit hours: 3

Provides practical and small group lecture activities using current assessment and treatment techniques for cardiac, multiple system trauma, medical, and pediatric victims. Reinforces patient priority assessment and management concepts needed for successful patient outcomes. National Registry psychomotor preparation and testing included. Course lab fee of \$12 for text applies.

Course Learning Outcomes

1. Apply therapeutic communication skills during patient assessments.
2. Conduct an appropriate patient assessment.
3. Utilize assessment data and patient medical history to determine differential diagnoses.
4. Administer appropriate interventions based on patient care plan.
5. Demonstrate competency with paramedic skills.
6. Demonstrate effective communication skills with interdisciplinary health care team.
7. Develop an effective resume and cover letter.
8. Demonstrate proficiency with patient extraction from vehicles, patient movements supported by low angle rope systems, and self-aid and rescue in hostile situations.

ESEC 4240

Paramedic Capstone

Credit hours: 3

Provides opportunity to practice as a paramedic providing pre-hospital care for emergent and non-emergent patients. Integrates knowledge, behavior and skills from previous courses, labs and internships. Prepares students for national certification exam. Course fee of \$21 for field mileage applies.

Course Learning Outcomes

1. Demonstrate competent therapeutic communication skills during patient assessments and with interdisciplinary healthcare team.
2. Utilize assessment data and patient medical history to determine differential diagnoses.
3. Demonstrate competency with paramedic skills and patient care plans.
4. Demonstrate a prioritized approach to resuscitation and stabilization of emergent patients.
5. Demonstrate proficiency and professionalism during capstone field internship.

ESFF 1000

Introduction to Emergency Services

Credit hours: 4

Explores career opportunities and job requirements of fire and rescue emergency services. Discusses the various duties within emergency services, including structural fire fighting, wildland fire fighting, technical rescue, hazardous materials control, fire protection, fire investigations, and incident command. Explains the employment testing and selection processes of federal, state, municipal, and industrial emergency service organizations. Provides information, skills, and facilities to help students develop personal fitness plans in preparation for fire service physical ability testing.

Course Learning Outcomes

1. Describe the career opportunities within emergency services.
2. Describe the employment process and requirements of various emergency services organizations.
3. Choose an educational path that will lead towards career goals.
4. Identify the roles and responsibilities of emergency services.
5. Describe various firefighter physical ability tests.
6. Identify key factors for successful completion of various firefighter physical ability tests.
7. Describe the importance of a lifelong fitness program.
8. Create individual wellness and fitness plans.

ESFF 1120

Principles of Fire and Emergency Services Safety and Survival

Credit hours: 3

Introduces the basic principles and history that relate to the 16 national firefighter life safety initiatives. Focuses on the need for cultural and behavioral change related to health and safety throughout the fire and emergency services profession. Develops professional written communication skills as well as introduces the basics of research.

Course Learning Outcomes

1. Conduct basic research into responder safety issues.
2. Evaluate the need for behavioral and cultural change both organizationally and individually to increase responder safety, health and survival.
3. Communicate positions supported by research related to current issues effecting responder safety, health and survival.
4. Develop deeper literacy and professionalism in written communications.

ESFF 2100

Servant-Leadership for the Emergency Services

Credit hours: 3

Explores the aspiring and current emergency services learner's desire to serve and relates it to the theoretical constructs and characteristics of servant leadership. Discusses the roles and responsibilities of leadership/followership, internal and external, associated with the emergency services. Develops basic leadership/followership traits, based upon the philosophy of servant leadership.

Course Learning Outcomes

1. Define servant leadership and its characteristics
2. Identify commonalities between servant leadership and the fire and emergency services
3. Describe the constructs of servant leadership and their relationship to the fire and emergency services
4. Explain the importance of the leader/follower relationship within the fire and emergency services
5. Explain servant leadership to other aspiring and current fire and emergency services personnel

ESFF 250A

Firefighter Recruit Candidate Academy I

Credit hours: 8

Addresses the first part of the cognitive and psychomotor requirements of Firefighter I and Firefighter II certification. Includes basic firefighting topics and related skills, including fire behavior, building construction, personal protective equipment, tools, appliances, firefighter safety, forcible entry, and apparatus. Prepares students to certify at the Fire Fighter I and Fire Fighter II levels.

Course Learning Outcomes

1. Describe the fire fighter's role in a fire department;
2. Identify the mission and organization of a fire department;
3. Identify the types, use and maintenance of fire service tools and equipment;
4. Identify fighting hazards and describe proper protective measures and equipment;
5. Describe the hazards of fire behavior and building construction;
6. Meet Firefighter I & II requirements as listed in NFPA 1001;
7. Operate under extreme mental, physical, and emotional stress while responding to simulated emergencies.

ESFF 250B

Firefighter Recruit Candidate Academy II

Credit hours: 8

Addresses the second part of the cognitive and psychomotor requirements of Firefighter I, Firefighter II, and Hazardous Materials Awareness and Operations certification. Includes basic firefighting topics and related skills. Addresses the Hazardous Materials First Responder requirements of NFPA 470 and 29 CFR 1910.120. Includes definitions, classes of hazardous materials, physiological and toxicological considerations, and labeling and placarding systems. Prepares students to certify at the Fire Fighter I, Fire Fighter II, and Hazardous Materials Awareness and Operations levels.

Course Learning Outcomes

1. Describe the fire fighter's role in a fire department;
2. Identify the mission and organization of a fire department;
3. Identify the types, use and maintenance of fire service tools and equipment;
4. Identify fighting hazards and describe proper protective measures and equipment;
5. Describe the hazards of fire behavior and building construction;
6. Meet Firefighter I & II, and Hazardous Materials Awareness and Operations requirements as listed in NFPA 1001 and 470;
7. Identify hazardous materials containers, labels, and placards;
8. Respond to emergencies while under extreme mental, physical, and emotional distress.

ESFO 2030

Fire Inspector I

Credit hours: 3

For Fire Science and Building Inspection Technology students. Addresses the principles of fire inspection and application of the International Fire Code. Topics include identification of fire hazards, fire prevention measures, inspection techniques, and pre-fire planning. Includes classroom discussion and actual inspections of both under-construction and occupied buildings. Successful completers should be prepared to attain Fire Inspector I certification. Course fee of \$80 for state services & testing, materials applies.

Course Learning Outcomes

Please see the department for information.

ESMG 310G

Introduction to Homeland Security GI

Credit hours: 3

Introduces student to global and intercultural issues regarding homeland security at the national, regional, state and local levels. Discusses the history of homeland security, including its political history, and evolution, particularly as it relates to terrorism. Addresses demands state and local authorities must meet when dealing with national programs and requirements which affect funding and operations on the state and local level during natural or man-made disasters and emergencies.

Course Learning Outcomes

Please see the department for information.

ESMG 3150

Principles of Management for the Emergency Services WE

Credit hours: 3

Examines critical skills used in the management of emergency services operations. Proposes possible applications of the skills using real-life examples. Emphasizes the development process and analytical skills necessary to assess problems in the workplace and select appropriate solutions.

Course Learning Outcomes

1. Compare leadership and management principles and describe their use in emergency services;
2. Appraise various leadership skills and determine the best leadership approaches for emergency situations;
3. Construct principles to guide the relationships between personnel and first line / mid level managers in emergency services;
4. Develop a list of values involved in detecting, analyzing, and handling issues in the emergency services;
5. Apply the values to resolving problems in the emergency services.
6. Compose a variety of managerial-focused written works pertaining to multiple situations and for multiple audiences within the emergency services.

ESMG 3300

Emergency and Disaster Planning

Credit hours: 3

Provides practical skills relating to the development of emergency operations plans. Covers the legal foundation of planning. Explores principles and practices relating to risk assessment (i.e., hazard and vulnerability analysis) and federal/national, state and local emergency operations planning.

Course Learning Outcomes

1. Critique the legal framework of emergency management at the federal, state and local levels.
2. Assemble risk assessments to identify hazards, threats, vulnerabilities, probabilities and consequences.
3. Apply accepted standards relating to the development of disaster plans.
4. Argue for the incorporation of other organizations (e.g., preparedness councils and LEPCs) in risk assessments and the disaster planning process.

ESMG 3400

Critical Infrastructure Protection

Credit hours: 3

Explores the risks facing critical infrastructure and the interdependencies between government and private industry in creating, operating and protecting critical infrastructure. Identifies measures required to protect and secure power, water, chemical, computer and other sectors with an emphasis on addressing future vulnerabilities. Examines relevant mitigation, preparedness/planning, response and recovery considerations.

Course Learning Outcomes

1. Differentiate among the different types of critical infrastructure and who owns and operates the various sectors (e.g., power, chemical, transportation, financial, etc.).
2. Explain the international and domestic risks facing critical infrastructure and key resources (CI/KR), including natural, technological and anthropogenic sources.
3. Connect relevant policies, laws, regulations and programs to critical infrastructure protection (CIP) such as the Comprehensive Homeland Security Act, Chemical Facility Anti-Terrorism Standards and LEPCs.
4. Explore the critical organizational, engineering, operational, procedural, and financial components of CI/KR within the context of local, state, federal, and national governments and the business sector.
5. Determine the performance and level of protection of measures to prevent, mitigate, prepare for, respond to, and recover from threats to CI/KR.

ESMG 3600

Psychology of Emergency Services

Credit hours: 3

Examines the general psychological aspects of police, fire, and emergency medical services responders including dimensions of personality, family, organizational, cultural and diversity issues. Examines models of emergency and crisis decision making. Analyzes stress, anxiety, and trauma theories and clinical issues and examines current interventions being used for related disorders and building resilience.

Course Learning Outcomes

1. Identify common personality characteristics shared among emergency responders;
2. Correlate emergency responder lifestyle and family dynamics with occupational culture;
3. Identify and illustrate phases of personal and professional development of emergency responders;
4. Analyze the Incident Management System (ICS) and hierarchical organizations as social structures influencing personal and professional status among emergency responders;
5. Appraise organizational sources of stress and anxiety in emergency services organizations and their general psychosocial consequences for emergency responders;
6. Analyze and differentiate between naturalistic and analytical models of decision making in emergency services;
7. Interpret stress and anxiety related disorders associated with emergency services work and critical incident responses;
8. Appraise theories and modalities of stress/trauma related mental health interventions that are available to emergency responders.

ESMG 3710

Comparative Approaches to Homeland Security

Credit hours: 3

Identifies all types of terrorist threats and natural/technological hazards at the international level, and explores homeland security and emergency management systems around the world. Discusses the legal foundation of homeland security in other countries, and examines the unique nature of their emergency management organizations and practices. Compares how various nations prevent, prepare for, and react to terrorist attacks and disasters in diverse contexts.

Course Learning Outcomes

1. Explain the diverse threats and hazards that may impact countries around the world.
2. Compare and contrast the policies and institutions established by governments to counter threats to homeland security.
3. Differentiate among the similarities and differences of emergency management agencies and practices in diverse national contexts.
4. Critically evaluate the lessons learned from prior terrorist attacks and disasters in international settings and focus on strategies to solve future challenges in homeland security and emergency management.

ESMG 4200

Public Information and Disasters

Credit hours: 3

Prepares emergency services students to respond effectively to public information needs in both day-to-day emergency circumstances as well as in more extreme disaster conditions. Explores the theory and develops skills to effectively respond in crisis situations. Presents case studies in crisis response that demonstrate how information can help the public prepare, respond, and recover from disasters.

Course Learning Outcomes

1. Select information that the public will need in emergency situations and disasters;
2. Distinguish between kinds of disasters and the information the public will need in emergency situations;
3. Prepare disaster information and develop guidelines for its dissemination;
4. Examine the dynamics of an unfolding crisis and the role of emergency personnel in relation to the public;
5. Apply conflict resolution principles in an emergency;
6. Examine legal and ethical considerations in an emergency situation;
7. Establish guidelines for organizing and operating a Joint Information Center under NIMS;
8. Predict the challenges of various populations in an emergency situation.

ESMG 4300

Disaster Recovery and Hazard Mitigation

Credit hours: 3

Explores disaster recovery operations and hazard mitigation activities, including an emphasis on key participants in these important, but neglected phases of emergency management. Addresses numerous functions including damage assessment, disaster declarations, disaster assistance, risk assessments, land-use planning, and structural/non-structural mitigation. Concentrates on the needs of vulnerable populations and has the goal of promoting increased disaster resilience, proactive risk reduction measures and sustainability.

Course Learning Outcomes

1. Predict the numerous, diverse and long-term physical and social impacts of disasters on individuals, families, organizations, communities, states and the nation.
2. Appraise the policies, plans, functions, and procedures related to disaster recovery.
3. Implement important recovery activities.
4. Reduce risk through mitigation and pro-active community-wide programs.
5. Facilitate disaster resistance, resilience and sustainability by collaborating with government and non-government organizations (NGOs).

ESMG 4350

Disaster Planning and Business Continuity

Credit hours: 3

Identifies risks facing business operations. Focuses on planning and preparedness for disasters and other emergencies to assure continuity of business operations. Teaches processes that protect facilities, operations, employees, customers, and other stakeholders from the effects of a crisis. Identifies strategies that develop business resilience and protect business systems.

Course Learning Outcomes

1. Assess risks, hazards and vulnerabilities that have potential to harm or halt business operations.
2. Develop a plan that assures the continuity of business operations during and following a disaster or other emergency.
3. Provide strategies that establish resilience in the business supply chain.
4. Establish communications procedures that support the continuity of authority and business functions during a crisis.
5. Plan financial contingencies that determine the quick recovery of data and operations.
6. Develop procedures to protect vital records from cyberattack and harmful effects of disasters.

ESMG 445G

Human Factors in Emergency Management GI

Credit hours: 3

Introduces students to an emergency response approach to understanding hazards and disasters grounded in social vulnerability analysis. Examines historical, geographical, social, and cultural factors and conditions that put people differentially at risk before, during, and after disasters. Utilizes a multi-disciplinary approach. Focuses on global, national, regional, and local patterns of development. Explores how vulnerable social groups globally are affected by and cope with hazardous conditions and events, and strategies of justice, equity, diversity and inclusion for community-based mitigation engaging those most at risk.

Course Learning Outcomes

1. Determine how human factors in emergency management differ from traditional approaches to disasters and emergency management;
2. Identify root causes associated with human factors in emergency management, which tend to place some groups more at risk;
3. Identify parameters, constraints, and opportunities locally, nationally, and internationally that promote or limit strategies for addressing victim vulnerability;
4. Assess specific life chances and conditions arising from global, regional, national, and local patterns of development;
5. Assess the determinants of structural and situational human vulnerabilities in particular places, times, social, and cultural contexts;
6. Identify characteristics of a disaster-resilient neighborhood or community and apply principles of relating to justice, equity, diversity and inclusion to develop a community-based action plan increasing resilience;
7. Analyze the complexities inherent in global and/or intercultural issues related to human vulnerability in disasters;
8. Explain the impact of stereotypical cultural conceptions on disaster management decisions dealing with different cultural groups;
9. Evaluate how one's own cultural values impact those from different backgrounds in a disaster environment.

ESMG 4550

Emergency Preparedness and Disaster Response

Credit hours: 3

Identifies what emergency managers and other key actors in the public, private, and nonprofit sectors do to prepare for emergencies and improve immediate post-disaster operations. Covers the importance of the Emergency Management Accreditation Program, planning, equipping, training, exercises, and community education. Describes the Disaster Response Framework and NIMS along with how first responders and emergency managers may use ICS and EOCs to improve functions such as warning, evacuation, sheltering, firefighting, search and rescue, emergency medical care, mutual aid, public information, donations management, volunteer management, etc.

Course Learning Outcomes

1. Appraise the complexity and impact of disasters along with the urgency of life-saving and other immediate actions.
2. Describe who will respond to disasters and anticipate human behavior in these collective stress situations.
3. Defend diverse approaches to disasters and principles of emergency management.
4. Formulate successful preparedness and response operations.

ESMG 4600

Public Administration for the Emergency Services

Credit hours: 3

For Public Emergency Services Management students. Examines the relationship between the emergency management function in government and the professional field of public administration. Topics include public policy making, implementation and analysis, disaster analysis, problem solving and solution formulation.

Course Learning Outcomes

1. Demonstrate understanding of the policy making, policy implementation, and program administration processes in the American federal system;
2. Demonstrate understanding of the relationships among the public, nonprofit, and for-profit sectors in American society;
3. Develop problem-solving skills in the analysis of disaster events;
4. Analyze emergency management policy problems and formulate solutions.

ESMG 4650

Emergency Services Capstone WE

Credit hours: 3

Examines cutting-edge issues under the guidance of top professionals. Includes interviews with local and state officials to identify potential critical issues. Discusses personal leadership philosophy and strategies for decision making. Writing enriched course, which facilitates relevant communication in the discipline.

Course Learning Outcomes

1. Identify leadership traits and characteristics;
2. Explain the relationship between the administrator and emergency services personnel;
3. Demonstrate problem-solving and conflict resolution skills in the management of personnel;
4. Analyze the need for and development of "Codes of Conduct" for the Emergency Services;
5. Analyze interview responses from top- ranking professionals in the public services field;
6. Collaborate with other students/personnel in data gathering and analysis with respect to critical discipline issues;
7. Synthesize research data into a formal presentation, using writing and other media and develop strategies to deal with extant discipline issues.

ESMG 6110

Disasters/Vulnerability/and Impacts

Credit hours: 3

Evaluates the impact of natural and manmade disasters locally, nationally, and internationally. Analyzes historical disaster case studies in order to examine the aggregate costs of disasters.

Course Learning Outcomes

1. Examine historical disaster impacts on specific communities.
2. Evaluate the impact of disasters locally, nationally, and internationally.
3. Analyze the aggregate costs of disasters on society.
4. Assess government response to disasters.
5. Critique practices to minimize the impact of disasters.

ESMG 6120

Emergency Planning and Response

Credit hours: 3

Examines the need for emergency planning and response criteria associated with emergency services delivery. Teaches how to generate a community-wide emergency planning and response matrix. Identifies systems thinking within an emergency framework.

Course Learning Outcomes

1. Examine emergency planning and response criteria.
2. Evaluate current community emergency planning.
3. Analyze continuity and interoperability functions within emergency response criteria.
4. Assess emergency services operations within recent occurrences.
5. Generate an emergency planning and response matrix.

ESMG 6140

Homeland Security Fundamentals

Credit hours: 3

Explains the history, formation, and growth of the Department of Homeland Security (DHS) since September 11, 2001. Estimates impact homeland security has on local emergency service agencies. Appraises the current state of national and international homeland security operations. Evaluates the existing DHS structure and its ability to meet the organization's strategic mission.

Course Learning Outcomes

1. Explain the history and current structure of the Department of Homeland Security.
2. Estimate how national and international homeland security functions impact local jurisdictions.
3. Appraise both national and international homeland security operations.
4. Evaluate the mission of the Department of Homeland Security.

ESWF 1310

S131 Wildland Firefighter Type I

Credit hours: 0.5

Meets the training needs of a Type 1 Wildland Firefighter (FFT1). Presents several tactical decision scenarios designed to facilitate learning the objectives and class discussion. Introduces the student to the Fireline Handbook and provides an overview of its application.

Course Learning Outcomes

1. Apply principles of Operational Leadership found in the Incident Response Pocket Guide (IRPG), PMS 461.
2. Describe effective communication practices with appropriate personnel during wildland firefighting operations.
3. Apply the components of Lookouts, Communications, Escape Routes, and Safety Zones (LCES) as described in the IRPG.
4. Demonstrate appropriate tactical decision-making procedures during wildland firefighting scenarios.

ESWF 1330

Look Up Look Down Look Around

Credit hours: 0.5

Examines the wildland fire environment and the indicators firefighters should observe on the fire line in order to anticipate fire behavior.

Course Learning Outcomes

1. Identify environmental factors and indicators of hazardous fire conditions.
2. Apply these indicators when implementing the Risk Management Process.
3. Learn to anticipate fire behavior during extreme wildland fire conditions.
4. Apply Incident Command principles under hazardous fire conditions.

ESWF 1400

Wildland Firefighting Fundamentals

Credit hours: 4

Designed to meet the Wildland Firefighter I knowledge and skill requirements of NFPA 1051, Wildland Fire Fighter Professional Qualifications. Teaches students to recognize the "Situations That Shout Watchout," apply the appropriate Standard Fire Orders and how to deploy a fire shelter. Includes orientation to the Incident Command System. Teaches basic fireline construction, fire weather, and fire behavior. Each subject covered in this course meets and/or exceeds NWCG standards for the following classes: S-130, S-190, I-100, and L-180. Course fee of \$118 for materials, specialized clothing, equipment, and state services & testing applies.

Course Learning Outcomes

Please see the department for information.

ESWF 2010

Basic Incident Command System for Initial Response

Credit hours: 1

Introduces the principles of the Incident Command System (ICS) associated with incident-related performance. Includes leadership and management, delegation of authority, management by objectives, functional areas and positions, briefings, organizational flexibility, transitions and transfers. Built on the same lesson objectives and content as the NWCG I-200 course.

Course Learning Outcomes

1. Describe how the NIMS Management Characteristics relate to Incident Command and Unified Command.
2. Describe the delegation of authority process, implementing authorities, management by objectives, and preparedness plans and objectives.
3. Identify ICS organizational components, the Command Staff, the General Staff, and ICS tools.
4. Describe different types of briefings and meetings.
5. Explain flexibility within the standard ICS organizational structure.
6. Explain transfer of command briefings and procedures.
7. Use ICS to manage an incident or event.

EXSC 1097

Fitness for Life TE

Credit hours: 2

Provides information, tools, and skills to aid students in engaging in an active, healthy lifestyle throughout life. Offers the opportunity to learn about exercise program design, physiological adaptations that underlie fitness, and strategies to maintain an active lifestyle across the lifespan. Features access to high quality exercise facilities. Requires participation in exercise 2-3 days per week outside of the scheduled class activities. Stresses comprehensive principles in health, wellness, physical activity, and fitness assessment. Canvas Course Mats \$70/McGraw applies

Course Learning Outcomes

1. Identify the dimensions of wellness.
 2. Describe behaviors that are part of a wellness lifestyle.
3. Discuss physical activity recommendations for the development of health and fitness.
4. Evaluate concepts necessary for safe, effective, and successful fitness programs.
5. Describe how the cardiovascular system, muscular strength, flexibility, and body composition are impacted by physical activity.
6. Self-assess current cardiovascular fitness, muscular strength, flexibility, and body composition.
7. Develop a complete fitness program that addresses improvements in cardiovascular fitness, muscular strength, flexibility, and body composition.
8. Evaluate available sources of wellness information.

EXSC 2500

Sports Medicine

Credit hours: 3

Explores the field of Sports Medicine. Provides instruction on injury management, including knowledge, skills and abilities in preventing, identifying, treating and rehabilitating sport related injuries. Teaches appropriate vocabulary, injury mechanisms, and the nature of tissue response to training, trauma and treatment. Course fee of \$15 for supplies applies.

Course Learning Outcomes

1. Explain the term "Sports Medicine" and what it covers.
2. Explain the use of record keeping in athletic injury management.
3. Describe different imaging techniques and their uses.
4. Describe surgical considerations for specific injuries.
5. Explain the concept of tissue response to injury and how to determine the return to play timetable for an injured athlete.
6. Explain how to safely and effectively utilize prophylactic tape and bracing.
7. Examine the body on a regional basis and describe common injuries to each area.

EXSC 270G

Foundations of Exercise Science GI

Credit hours: 3

Introduces the study of the Exercise Sciences and discusses the global influence on the development of the field. Studies the national and international history and philosophy of the field of Exercise and sport science. Analyzes problems in areas covered under the umbrella of Exercise Science and Physical Education. Explores related career and employment opportunities in this area.

Course Learning Outcomes

1. Demonstrate understanding of the International history, philosophy, theory, and practice of Physical Education and Exercise Science and it's many allied fields in the local and global environment.
2. Demonstrate understanding of new perspectives and point of views about Exercise Science and Physical Education, as well as explore current global and local problems and issues in the broad field of Exercise Science and Physical Education
3. Identify career opportunities in sport, fitness, physical education and exercise science as well as all careers that fall under the sports medicine umbrella in the global arena
4. Employ greater knowledge and appreciation for the field of exercise science and understand it's place and international influence.
5. Demonstrate knowledge and recognition of complexities inherent in global and/or intercultural issues.
6. Interrelate knowledgably, reflectively, responsibly, and respectfully with a society of increasing intercultural connections.

EXSC 3500

Kinesiology

Credit hours: 3

Studies human movement. Includes the structure of the human body and fundamental mechanics. Emphasizes kinesiological and mechanical analysis.

Course Learning Outcomes

1. Identify on a human skeleton and/or a living subject the most important bones and bony features for the major joints of the body.
2. Label the important bones and bony features of the human body.
3. Identify major muscles of the human body.
4. Palpate the major muscles on a human subject.
5. Categorize the muscles that produce the primary movements for all the major joints and movements of the body.
6. Apply knowledge gained in class to movement related situations.
7. Analyze basic movements in terms of muscle actions.

EXSC 3550

Motor Learning and Control WE

Credit hours: 3

Examines motor and cognitive characteristics of individuals involved in learning or performing motor skills. Examines conditions that influence learning. Analyzes how humans learn complex movement skills and control voluntary, coordinated movement. Analyzes the basic psychological processes involved in learning and control of movement and their effect on instruction and practice conditions for the learner. Studies motor development and its effect on skill acquisition.

Course Learning Outcomes

1. Discuss the gross physiology related to voluntary movement
2. Examine the conceptual theories of voluntary movement
3. Distinguish how learners, tasks, and movement environments interact
4. Evaluate the basic principles of structuring practice for efficient task/skill learning
5. Apply knowledge of physiology and learning theory to real-life scenarios
6. Interpret the findings of peer-reviewed original research articles related to motor learning or motor development
7. Discuss knowledge of motor learning and/or motor control research through the interpretation, summarization, and organization of peer-reviewed original research articles

EXSC 3700

Exercise Physiology

Credit hours: 3

Studies acute and chronic physiological responses to exercise, as well as nutritional and environmental effects on these responses. Requires separate weekly laboratory. Canvas Course Mats \$70/McGraw applies.

Course Learning Outcomes

1. Evaluate factors that affect training success and factors purported to improve human performance.
2. Explain cardiorespiratory concepts relative to acute and chronic effects of exercise.
3. Identify neuromuscular concepts relative to acute and chronic effects of exercise.
4. Assess the physiologic consequences of training.
5. Explain nutrition as the foundation for physical performance, and energy transfer during light, moderate, and strenuous exercise.
6. Evaluate physical performance, including aerobic fitness, anaerobic fitness, cardiovascular and respiratory capacities, strength, and body composition.

EXSC 3705

Exercise Physiology Laboratory

Credit hours: 1

Investigates acute and chronic physiological responses to exercise, as well as nutritional and environmental effects on these responses. Provides a hands-on experience where students conduct a variety of testing procedures, as well as analyze and interpret the various physiological responses. Course Lab fee of \$28 for materials applies.

Course Learning Outcomes

1. Evaluate how different fitness levels and athletic types will respond, perform, and adapt to a variety of acute and chronic exercise bouts and environmental conditions.
2. Demonstrate appropriate equipment preparation and calibration procedures.
3. Administer appropriate exercise and performance-based activity assessments associated with Exercise Science.
4. Interpret assessment results in concise, informative visual and written mediums.

EXSC 3730

Biomechanics

Credit hours: 3

Emphasizes the application of engineering principles and technology in sports performance through interdisciplinary methodologies. Includes human gait analysis, locomotion, trunk biomechanics, computer modeling, and tissue biomechanics. Course fee of \$20 for equipment, supplies, and lab applies.

Course Learning Outcomes

1. Analyze mechanics of human motion.
2. Implement kinematic and kinetic principles of locomotion to human gait assessment and analysis of movements about the trunk.
3. Apply computer modeling to biomechanics.
4. Apply principles of tissue biomechanics to bones, muscles, ligaments, and tendons.
5. Explain the role of the nervous system in muscle function and control of human movement.

EXSC 3750

Psychosocial Aspects of Human Performance

Credit hours: 3

Provides students with the necessary skills and understanding to adequately deal with the psychological and social aspects of human and sport performance. Develops techniques and psychological skills to enhance performance and establish a learning and social environment that would enhance the effectiveness of coaches and maximize the skill and personal growth of athletes.

Course Learning Outcomes

1. Explain how social and psychological factors can influence athletic performance and related aspects of real life performance
2. Demonstrate techniques to enhance performance and positive learning environments
3. Explain concepts of sports psychology using specialized vocabulary/terminology that are important in the field
4. Present a review of research within sports psychology

EXSC 4300

Research Methods in Exercise Science and Outdoor Recreation WE

Credit hours: 3

Introduces students to key research in their field. Emphasizes analytical and interpretive skills. Develops scientific writing skills. Promotes design and utilization of comprehensive research methodologies commonly applied in Exercise Science and Outdoor Recreation.

Course Learning Outcomes

1. Critically analyze peer-reviewed publications.
2. Develop a research topic and proposal relevant to their field of study.
3. Create a literature review.
4. Evaluate research designs appropriate to Exercise Science and Outdoor Recreation.
5. Interpret statistical significance, the types of problems associated with statistical error, and the purpose and basis of statistics.
6. Participate in research projects.
7. Communicate a research proposal through written and oral communication methods.
8. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

FAC 1010

Survey of Facilities Management

Credit hours: 3

Orients Facilities Management (FAC) majors with core responsibilities in the industry. Uses case studies and theory to gain experience with problem solving and resource management.

Course Learning Outcomes

Please see the department for information.

FAMS 1150

Marriage and Relationship Skills SS

Credit hours: 3

Guides students in building a lasting intimate relationship of their own and in understanding and teaching relationship maintenance and improvement strategies based on large-scale scientifically derived marriage and relationship principles. Utilizes cutting edge research on factors and issues related to relationship success and outcome including whom and when to marry and how to build stable and happy relationships over time. Stresses increased understanding of desirable relationship outcomes and how to achieve them.

Course Learning Outcomes

1. Analyze the empirical evidence and importance of becoming emotionally and psychologically healthy before and during romantic relationships.
2. Define ethical and moral issues that underpin the study and intervention of marriage and other relationships.
3. Identify the dynamics of family background, gender, singlehood, sex, friendship, attraction dating, and mate selection, and how they influence and relate to romantic relationships.
4. articulate the roles of work and family as well as material resources.
5. Describe the influence of power, decision making, and communication.
6. Apply skills in conflict resolution within romantic relationships.
7. Examine the dynamics of divorce, remarriage, and step-parenting.

FAMS 1500

Human Development Life Span

Credit hours: 3

Explores genetic and environmental influences on human development and behavior from conception and birth through old age and death. Examines typical physical, cognitive, and psychosocial changes at each developmental stage throughout the lifespan. Explores major theoretical perspectives on human development.. Emphasizes how the context of family influences development of the individual.

Course Learning Outcomes

1. Evaluate human development research.
2. Describe typical human development across the lifespan.
3. Evaluate the influence of family in developmental processes within the three major areas: physical, cognitive, and psychosocial.
4. Explain major developmental theories and influences of biology and the environment on human development and behavior.
5. Outline the scientific process, and how it is used to study human development and behavior.
6. Assess how developmental issues may influence family life education or other family interventions.

FAMS 240G

Contemporary Family Relations GI

Credit hours: 3

Examines dynamics of the healthy family using family theory, individual life span development, research, and active learning experiences. Analyzes variations within families due to form, gender, socioeconomic status, culture, race, and other factors. Focuses on the diversity of family organization, interaction patterns, parenting practices, values, and prejudice in a multicultural society. Fulfills the Global/Intercultural requirement. Canvas Course Mats \$76/Sage applies.

Course Learning Outcomes

1. Identify the changing nature of today's families and variations in culture, structure and outcomes.
2. Assess variations in families in areas of structure, class, race, and ethnicity.
3. Examine cutting-edge scholarship regarding the study of families.
4. Analyze how factors such as class, race, ethnicity, or gender can influence family development.
5. Discuss trends within the family that have led to these variations.
6. Evaluate how one's own cultural rules and biases compare and contrast with those from different cultures.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Evaluate global or intercultural issues.

FAMS 2705

Ethics for Family Interventions WE

Credit hours: 3

Explores the ethical and legal responsibilities of the helping professional in various types of family intervention, including counseling, education, and case management. Examines the broad scope of these ethical and legal concerns and how they are applied in a variety of settings.

Course Learning Outcomes

1. Examine a process of ethical decision making.
2. Examine the influence of personal values and biases on professional identity and responsibilities.
3. Discuss scopes of practice for various roles in helping professions.
4. Explain the concept of confidentiality in the helping relationship.
5. Recognize special ethical concerns when working with couples, families, or groups.
6. Compose a variety of disciplinarily-appropriate texts for multiple situations and audiences.

FAMS 2800

Teaching Human Sexuality

Credit hours: 3

Introduces basic concepts of human sexuality and effective methods to teach these topics to adults, adolescents, and children. Discusses gender roles, sexual orientation, sexual dysfunction, and sexually transmitted disease. Examines sexuality from the perspective of ethics, religion, the law, and education. Requires students to assess their own sexual attitudes and acquire information that should enable them to make responsible sexuality decisions. Educates students in how to teach human sexuality effectively regardless of any biases or individual beliefs. Note: Due to Utah State Laws regarding sexuality education, students registering for FAMS 2800 must be 18 years of age or a high school graduate.

Course Learning Outcomes

1. Explain sexual anatomy and response patterns of adult males and females.
2. Describe the process of human reproduction.
3. Evaluate methods of contraception as well as prevention and treatment of STIs.
4. Define changes in sexuality across the life-cycle.
5. Define sexual orientation diversity.
6. Define the causes and treatments of sexual dysfunction.
7. Describe effective methods of teaching human sexuality in families and communities.

FAMS 3050

Clinical Skills for Helping Professions

Credit hours: 3

Introduces basic clinical skills for helping professionals, including biopsychosocial evaluation, psychometric screeners, and safety assessments for life and relational stress and general mental health symptomatology. Investigates best-practice skills for evaluating individual and family situations and outcomes. Explores self-compassion and self-care for competent and ethical practice. Examines new and evolving clinical approaches for individuals and families served by helping professions.

Course Learning Outcomes

1. Develop and implement intervention strategies based on empirical research, human behavior, assessment data, and the values of individuals.
2. Assess individuals using the biopsychosocial approach, including interviewing, psychometric screeners, and mental health histories.
3. Evaluate individual and family situations based on research-informed approaches, ethical practice behaviors, and strengths-based clinical intuition.
4. Implement appropriate measures of self-compassion to provide competent and ethical clinical practice.
5. Define the limits of the scope of practice for family life educators.
6. Recommend appropriate collaborative care resources for individuals who require a higher level of care.

FAMS 3250

Applied Parenting

Credit hours: 3

Exposes students to classical and contemporary parenting theory, research, and practice. Focuses on the application of the guidance of children. Includes the study of parenting concepts, challenges, risks, and alternatives while considering the social, physical, emotional, intellectual, and spiritual environments of the child.

Course Learning Outcomes

1. Describe positive and negative parenting strategies and the implications of each.
2. Apply parenting strategies and theories in practical situations.
3. Develop a variety of training and teaching methods.
4. Explain the dynamic process of parenting.

FAMS 4400

Family Policy

Credit hours: 3

Creates an understanding of the role of family professionals as advocates for the institution of the family. Covers family theories and research methods which aid in critically analyzing current policy development and implementation patterns in Utah and the United States. Utilizes the developmental theory in support of advocacy for family members in all their diverse structures, ages, and life stages. Canvas Course Mats \$53/VitalS applies.

Course Learning Outcomes

1. Recognize the definitions, approaches and issues in family policy across the life cycle
2. Analyze current family and consumer social policy areas
3. Examine theoretical orientations for conceptualizing family policy and connecting theories to research
4. Synthesize family literature relating to family social policy in Utah and United States
5. Identify the formal and informal democratic processes involved in public policy development
6. Interpret current societal trends which impact family and consumer policies

FAMS 4500

Family Life Education Methodology WE

Credit hours: 3

Explores the field of family life education. Includes the history, development, and theory of family life education, as well as discussing the types of family-life education programs. Develops the knowledge and practical skills that are required to identify needs, design programs, teach family-life education, facilitate groups, and evaluate participants and programs in a wide variety of settings with a broad range of populations. Develops an appreciation for the impact of diversity in family-life education, which includes an awareness of multicultural factors, family structure, culture, economics, gender, race, religion, disability, ageism, and sexual orientation.

Course Learning Outcomes

1. Describe what family-life education is, including its development and current role as a scientific discipline.
2. Analyze effective teaching and learning practices and skills.
3. Apply knowledge of family-life education program development.
4. Describe how culture and diversity impacts the process of family-life education.
5. Develop a family-life education program.
6. Compose a variety of discipline-appropriate texts for multiple situations and audiences.

FAMS 4660

Family Financial and Resource Management

Credit hours: 3

Introduces students to the fundamentals of family financial management. Focuses on norms, roles, values, and traditions of financial management in family systems. Evaluates emotional, subjective, and unstructured patterns, which contribute to financial mismanagement. Considers personal and social influences, including, marketing, holidays, spending pressure, goal definition, and debt accumulation.

Course Learning Outcomes

1. Evaluate personal definitions of money and its distribution.
2. Evaluate family of origin's definition of money and its distribution.
3. Analyze newly-formed families as products of family financial cultures.
4. Identify how the family system shapes the use or misuse of resources.
5. Evaluate current marriage and family therapy paradigms on money management.
6. Perform debt-to-income ratio family analysis.
7. Analyze current and future trends in debt recovery.
8. Define Utah bankruptcy procedures and consequences.
9. Identify life-span development paradigm for resources management and retirement planning.

FAMS 4670

Family Dynamics and Systems

Credit hours: 3

Introduces the fundamentals of family dynamics and systems as they relate to family structure and function. Focuses on historical development, theoretical underpinnings, and applied utility of dynamics and systems. Includes boundary management, infraction, and renewal in contemporary family systems.

Course Learning Outcomes

1. Evaluate personal definition of family structure and function.
2. Examine the history and development of the family systems approach.
3. Describe the family systems paradigm.
4. Evaluate other family paradigms used in counseling.
5. Compare family systems with other family paradigms.
6. Formulate an enhanced definition of family structure and function.
7. Discuss current and future trends in the family systems paradigm.

FIN 1060

Personal Finance SS

Credit hours: 3

Designed as elective credit toward a business degree and for individuals interested in acquiring personal financial planning skills. Covers personal financial management with emphasis on decision making, budgeting, financial institutions, personal and family risk management, credit management, and estate planning. Methods include lectures, guest speakers, films, tapes, computer simulations and research. Completers should be able to prepare complete personal budgets and other family financial planning instruments. Lab access fee of \$13 for computers applies. Canvas Course Mats \$73/Wiley applies.

Course Learning Outcomes

Please see the department for information.

FIN 3060

Introduction to the PFP Profession

Credit hours: 3

Introduces the processes appropriate for entry into the personal financial planning (PFP) profession. Provides an overview of the skills and knowledge sets required to be a PFP professional including an outline of business models and practice management issues within the industry. Includes a review of basic PFP process such as the time value of money, cash and debt management, personal financial statement analysis, education funding, and related issues.

Course Learning Outcomes

1. Describe the knowledge and skill sets that a Personal Financial Planning (PFP) professional should have to succeed in the industry.
2. Demonstrate understanding of practice standards and codes of ethics of the CFP Board and the vocabulary and terminology of PFP activities.
3. Gather data and analyze issues related to the development of personal financial statements and related financial programs.
4. Describe personal financial issues related to debt management, value of money, education funding, and related issues.
5. Develop personal financial plans including reviews of alternative methods and concepts.

FIN 3100

Principles of Finance

Credit hours: 3

Examines financial management in the business environment; time value of money; fundamentals of security valuation; the capital asset pricing model and capital budgeting. Introduces finance terminology and quantitative techniques used in financial analysis. Covers financial ratios and financial statement analysis, cost of capital, working capital policies, dividend policy, and a brief overview of international finance. Lab access fee of \$13 for computers applies. Canvas Course Mats \$85/Cengage applies.

Course Learning Outcomes

1. Apply the basic terminology of finance;
2. Evaluate financial performance, and compare performance to appropriate benchmarks;
3. Evaluate financial decisions using time value of money;
4. Describe characteristics of debt and equity securities;
5. Analyze debt and equity securities using time value of money principles;
6. Compute the required return appropriate for an investment using the capital asset pricing model;
7. Analyze the basics of capital budgeting;
8. Calculate the weighted average cost of capital for a firm or proposed project.

FIN 3150

Financial Management

Credit hours: 3

Examines financial aspects of firm decisions. Presents theoretical concepts for corporate financial management, together with quantitative techniques used to analyze financial questions. Covers financial analysis and planning, valuation methods, determination of required rate of return, effective capital structure decisions, funding alternatives, and corporate risk management. Requires analysis of a capital budgeting problem, including a written paper, quantitative analysis, and presentation. Lab access fee of \$13 for computers applies. Canvas Course Mats of \$52/Cengage applies.

Course Learning Outcomes

1. Explain the theories that form the basis for financial management;
2. Perform a detailed analysis of a capital budgeting proposal;
3. Evaluate the required return that is appropriate for a proposed project;
4. Analyze a proposed project using multiple valuation techniques;
5. Describe alternative methods to fund a proposed project and the effect the funding has on expected project value;
6. Develop a risk management proposal appropriate for a proposed project.

FIN 3200

Financial Counseling

Credit hours: 3

Prepares students to be effective financial counseling practitioners. Trains students to begin their role as effective financial counselors and planners. Develops counselor and client relationships skills as well as communication techniques to help identify and assist clients in an integrated financial planning environment. Provides an overview of the learning process needed to recognize the financial issues and concerns of many individuals and families and how to appropriately recommend solutions to help clients help themselves, while focusing on counselor sincerity and effectiveness in client reality.

Course Learning Outcomes

1. Utilize counseling strategies to motivate clients to change negative behaviors and/or adopt positive behaviors
2. Utilize advanced communication skills in financial counseling or planning situations
3. Provide processes to assist clients work through negative financial behaviors and financial problems
4. Identify appropriate personal financial resources for individuals and families

FIN 3220

Risk Management and Insurance

Credit hours: 3

Examines risk management and insurance planning for individual clients as well as employers of small corporations. Teaches the development of risk management and insurance plans with economic and behavioral theory. Uses a case study approach to apply and integrate the material. Emphasizes evaluation of financial alternatives. Provides learning activities that facilitate growth and development in written and oral communication skills.

Course Learning Outcomes

1. Identify various types of financial and non-financial risks associated with financial planning.
2. Explain the need for and use of various types of property and liability insurance products in the financial planning process,
3. Explain the need for and use of health, disability, long-term care, life and social insurance products in the financial planning process.
4. Determine methods for treating financial and non-financial risks.

FIN 3400

Investment Management

Credit hours: 3

Overviews the field of investments. Introduces stocks, bonds, put and call options, commodity and financial futures. Emphasizes both theory and practical aspects of investment management. Includes security valuation, market hypothesis, capital asset pricing, strategies of portfolio construction, performance measures, and risk/return relationships. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Develop the necessary skill set to become professional investment managers;
2. Describe alternative investment instrument vocabulary and concepts;
3. Describe the processes necessary to effectively manage investment and security instruments;
4. Evaluate the application of concepts to become professional and successful in the industry.

FIN 3410

Introduction to Venture Capital Skills

Credit hours: 3

Uses cases, supplemented with classroom instruction, to illustrate the various forms of financing a company can obtain. Provides insight into identifying and assessing investable opportunities using both qualitative and quantitative methods. Prepares students for more advanced coursework in venture capital and for professional roles after graduation in venture capital and private equity.

Course Learning Outcomes

1. Explain the roles and incentives of different participants of the venture capital industry.
2. Perform due diligence to assess the commercial viability and likelihood of success of high- growth-potential start-ups.
3. Implement valuation methodologies as a basis for negotiation between venture capitalists and entrepreneurs.
4. Create a detailed analysis for a potential venture investment.
5. Present an assessment of the attractiveness of a potential venture investment.

FIN 4100

Management of Financial Institutions

Credit hours: 3

Studies the U.S. financial system and its primary institutions and markets. Includes the role of the Federal Reserve System, American and international financial markets. Explores the impact of monetary policy on financial institutions and financial intermediation. Presents the term structure of interest rates, money, capital and mortgage markets, and management of thrift institutions and insurance companies. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Describe in broad perspective of how financial institutions are structured in the US economy;
2. Describe the basic concepts and processes important to financial institutions operations;
3. Explain the significant interaction of financial issues that function with the structure of financial institutions;
4. Describe the varied types of financial institutions that exist in the US economy.

FIN 4180

International Finance Management

Credit hours: 3

Examines financial aspects of firms operating in an international business environment. Includes currency valuation and forecasting; international flow of funds; foreign and international capital markets; valuation of multinational enterprises; and the effect of decisions about structure of the business and its transactions on firm value; and management of currency, political, and other risks arising from multinational operations. Canvas Course Mats of \$85/McGraw applies. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Explain the factors that affect a currency's value;
2. Describe the operation of the currency market;
3. Describe the various currency regimes and mechanisms to regulate currency value;
4. Predict future exchange rates;
5. Describe international money and capital markets and the securities that trade in them;
6. Develop the skills to evaluate how a multinational business environment affects corporate financial management, investment and portfolio management, and financial institutions.
7. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Appreciate the opportunities and risks inherent in multinational business.

FIN 4270

Wealth Management Seminar

Credit hours: 3

Introduces investment theory, literature and theories which describe the unique process of household investment decision making. Introduces quantitative investment analysis and the instruments used to construct an efficient household portfolio. Uses quantitative and theoretical material which will require a basic knowledge of economics and finance, and the ability to work with spreadsheets. Applies practical concepts to prepare students to work as wealth managers in financial planning firms.

Course Learning Outcomes

1. Analyze investments as an economic concept;
2. Identify investment instruments available to a financial planner;
3. Explain the differences in tax treatment and return characteristics among investment alternatives;
4. Analyze appropriate use of investments within a household portfolio;
5. Analyze investment theory as it applies to client objectives and appropriate wealth management techniques;
6. Analyze the concepts of behavioral economics, regulatory policy, manager selection, asset allocation, philosophy, and fiduciary responsibility of wealth management.

FIN 4290

Technological Applications in Personal Financial Planning

Credit hours: 3

Introduces various financial planning software packages. Includes both goal based and cash flow based financial planning software, client relationship management software, investment research software, portfolio management software, and office support software. Provides access to a variety of premier software companies in the U.S. and Canada. Certification in core software packages is required. Includes training material and standards as outlined by software companies.

Course Learning Outcomes

1. Explain the process of creating a comprehensive personal financial plan
2. Obtain certification in appropriate software packages. Where the software provider has not established a certification program, students will turn in a completed plan or similar project.
3. Analyze the integration of software packages into a business model and complete an integration project based on a mock business model.
4. Explain the strengths and weaknesses of different software packages based on variables in output.
5. Explain the processes related to lead team projects and be graded based on the organization they provide.

FIN 4310

Real Estate Investment and Securities

Credit hours: 3

Examines real estate investments and debt and equity capital markets linked to real estate assets. Focuses primarily on real estate investments and valuation of debt and equity securities, including commercial and residential mortgages, real estate investment trusts, and mortgage-backed securities, and some related instruments such as CDOs. Examines the process of securitization and the secondary markets for real estate securities, together with the role of financial institutions in this sector. Provides an overview of real estate investment, measurement of prices, and fundamental determinants of value with particular attention given to the effect of interest rate risk, default risk, and the embedded prepayment options on the value of mortgages and mortgage-backed securities.

Course Learning Outcomes

1. Explain the economic and legal foundations of real estate capital markets.
2. Calculate the value of real estate securities to measure value and associated risks and returns.
3. Apply the process of securitization in a real estate portfolio.
4. Calculate the value of real estate portfolios to measure value and associated risks and returns.

FIN 4320

Real Estate Development

Credit hours: 3

Examines the real estate development process including urban design, entitlements, and project management. Incorporates principles of design, architecture, and construction. Focuses primarily on real estate development from raw land through construction completion including working with local and state governments. Examines the integration of design, construction and development from a financial perspective for large scale projects. Provides an overview of the role that cities, counties and governments as well as construction companies play in the development process.

Course Learning Outcomes

1. Apply the entitlement process to real estate development.
2. Apply the urban design process from a practical perspective.
3. Explain the process of working with local and state governments to secure building permits for large scale commercial and residential projects.
4. Explain the role of project managers in real estate development.
5. Calculate the costs associated with architects, engineers, and construction companies that impact the development process.

FIN 433R

Real Estate Fund

Credit hours: 3

Provides a hands-on learning experience in real estate investing. Provides opportunity alongside investment partners for the investment of donated funds in current real estate development/investment opportunities. Uses evaluation methods including market, cash flow, and financial analysis, to analyze investment opportunities. Builds skills in real estate finance, market analysis, planning, and design. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Evaluate real estate investment opportunities as presented by industry partners.
2. Calculate expected returns based on market analysis, cash flow analysis, and financial modeling.
3. Prepare and defend multiple investment proposals to a board of real estate investors.
4. Present before peers and professionals with industry-level proficiency.

FIN 4340

Real Estate Markets and Brokerage

Credit hours: 3

Examines real estate from the brokerage perspective. Incorporates principles of market analysis and the brokerage process, including market growth and financing change opportunities for real estate transfer. Prepares students to become residential and commercial real estate brokers. Focuses on the skills necessary to enter the brokerage world and execute real estate transactions. Deals with commercial and residential licensing. Examines the challenges associated with real estate transactions. Provides an overview of the brokerage process.

Course Learning Outcomes

1. Explain the real estate brokerage process from the perspective of a buyer and a seller.
2. Analyze how market forces impact real estate transactions.
3. Demonstrate knowledge of core real estate licensing concepts.
4. Explain the differences between commercial and residential real estate brokers.
5. Calculate the commissions and fees for residential and commercial real estate transactions.

FIN 4350

Real Estate Mortgage and Lending

Credit hours: 3

Examines the role of lenders and mortgages in the real estate market. Incorporates industry principles and practices in preparing students for careers in mortgage and lending. Prepare students for licensing requirements in mortgage and lending. Explores the legal and regulatory requirements that govern mortgages and lending. Deals with both commercial and residential lending. Examines the challenges and opportunities of real estate financing in various economic conditions.

Course Learning Outcomes

1. Explain the mortgage and lending process from the perspective of both a buyer and a seller.
2. Calculate how market forces and interest rate fluctuations impact mortgage demand and lending opportunities.
3. Demonstrate knowledge of core lending concepts required for obtaining mortgage and lending licenses.
4. Analyze the differences between commercial and residential mortgage products.
5. Calculate transactions from the perspective of a lender, including legal and regulatory requirements.

FIN 481R

Personal Financial Planning Internship

Credit hours: 2 to 8

Provides supervised, practical, and professional experience for students preparing for careers in Personal Financial Planning. May be repeated for a maximum of 8 credit hours. May be graded Credit/No Credit.

Course Learning Outcomes

1. Apply academic skills to a practical professional setting.
2. Reflect on how classroom experience applies to a professional setting.
3. Develop and maintain professional relationships with coworkers, supervisors, and clients.
4. Recognize and refine personal career interests relative to their internship experiences.
5. Further explore career opportunities in Personal Financial Planning.

FIN 483R

Colloquium in PFP Professionalism

Credit hours: 1

Prepares PFP Program students for internships and other professional development activities. Features industry professionals who interact with students and discuss opportunities within the industry and their specific professional practices. Covers special topics such as business etiquette, dressing for success, preparing professional resumes, correspondence, etc. May allow students to experience extended personal interaction with visiting professionals by hosting them, providing transportation to/from the airport, escorting them to local points of interest, and more. May be repeated for a maximum of 3 credits toward graduation.

Course Learning Outcomes

1. Apply academic skills to professional settings.
2. Participate in interactive meetings with financial planning and other industry professionals who visit as guest lectures.
3. Apply professional experiences in an actual setting by participating in simulations, discussions, and related activities.
4. Explore additional career choices in the personal financial planning industry.

FIN 4900

Strategic Financial Management Capstone

Credit hours: 3

Examines the role of the chief financial officer (CFO) and the financial concepts, analysis, and tools used to achieve the financial goals of the firm. Analyzes, investigates, and completes complex problems and case studies in the areas of financial analysis, forecasting, modeling, capital budgeting, valuation, securities analysis, portfolio analysis, international finance, and economic analysis as it relates to the financial management of the firm. Combines the strategy, theory, concepts and topics taught in other finance courses and uses them in a strategic real-world setting. Includes effective communication, both written and oral, of any analysis, results, and recommendations. Uses Excel or other similar spreadsheet and analysis software.

Course Learning Outcomes

1. Describe the strategic role and responsibilities of the chief financial officer (CFO).
2. Apply financial tools and analysis to achieve the strategic financial goals of the firm.
3. Apply financial theory in complex real-world applications in the areas of financial analysis, financial forecasting, capital budgeting, valuation, investment and securities analysis, portfolio analysis, and international finance.
4. Prepare financial spreadsheets and complete complex financial analysis and modeling using appropriate spreadsheet or modeling software.
5. Create professional financial reports explaining the analysis performed, its relevance, meaning, and appropriate recommendations or actions.

FIN 5210

Retirement Planning

Credit hours: 3

Examines the topics of retirement planning and retirement plans from both employer and individual client settings. Uses a case study approach to apply and integrate the material. Emphasizes the evaluation of financial alternatives. Provides learning activities that will facilitate student growth and development in written and oral communication skills.

Course Learning Outcomes

1. Review changes in retirement systems planning as a result of lifestyle, age, gender, and other related demographics.
2. Evaluate advantages and challenges of "qualified" versus "non-qualified" retirement plans from the perspective of self-employed, employers, employees, etc.
3. Describe impact of taxes, regulatory concerns, IRS code, and other related concepts on retirement planning and implementation.
4. Identify time value of money as it relates to savings and retirement planning using varied methods including spreadsheet analysis processes.
5. Develop comprehensive retirement plan activities such as goal development, data gathering, data analysis, developing recommendations, etc.

FIN 5260

Estate Planning Fundamentals

Credit hours: 3

Teaches gift, estate, and generation skipping transfer taxation, including financial and estate planning applications. Applies gift, estate, and generation skipping transfer taxation rules to personal financial planning scenarios. Studies financial regulations and taxation policy. May be delivered hybrid.

Course Learning Outcomes

1. Describe basic concepts in estate planning including gift, basic estate, and generation skipping tax procedures.
2. Review the tools and process of estate planning.
3. Identify the variety of processes in estate planning designed to meet specific client needs.
4. Implement advanced estate planning alternatives based on client needs.

FIN 5300

Tax Planning for Personal Financial Planners

Credit hours: 3

Examines the topic of income tax planning and forecasting for individual clients and small business owners. Uses a case study approach to integrate the material and apply it to personal financial planning situations. Emphasizes the evaluation of financial alternatives. Provides learning activities that will facilitate student growth and development in written and oral communication skills. Works with local practitioners to provide an engaged learning experience.

Course Learning Outcomes

1. Review alternative tax planning strategies for individuals and small business owners.
2. Describe the advantages of tax strategies for "qualified" and "non-qualified" estate plans, investment options, and insurance products.
3. Evaluate alternative strategies based on improved tax efficiency within a long-term planning process.
4. Develop a specific tax management plan based on the needs of an individual client.

FIN 5800

Personal Financial Planning Capstone

Credit hours: 3

Develops the concept of a comprehensive plan. Reviews each of the major aspects of financial planning in the context of a comprehensive case. Analyzes the financial planning profession and the various types of financial planning models. Provides an overview of software applications as well as interview skills, data gathering, working with clients, presentation skills, and the creation of a comprehensive financial plan.

Course Learning Outcomes

1. Analyze all financial aspects of a client case to build a comprehensive financial plan.
2. Identify the types of information required to develop a comprehensive financial plan including personal, financial, legal and other contextual considerations.
3. Create a written financial plan appropriate for a financial planning client.
4. Present financial planning recommendations verbally to a client.

FIN 6060

Financial Planning for Professionals

Credit hours: 3

Provides an overview of personal financial planning. Presents a framework for how financial planners assist clients in effectively planning to achieve their goals. Applies financial concepts to households, including time value of money, capital needs analyses, and risk management. Examines concepts related to education funding, insurance products, and professional ethics.

Course Learning Outcomes

1. Apply time value of money and risk management concepts to a household's financial situation
2. Calculate savings required to meet financial goals, including educational goals
3. Analyze key insurance policy terms, coverage, conditions, and exclusions
4. Calculate a capital needs analysis for life insurance
5. Apply CFP Board's Code of Ethics and Standards of Conduct to a financial planning professional

FIN 6130

Financial Statement Analysis and Modeling

Credit hours: 3

Develops fluency with the three primary financial statements including income statement, balance sheet, and cash flow statement. Projects statements for companies in three primary sectors and conducts a full enterprise valuation for projected companies. Conducts a mock merger, acquisition, and initial public offering valuation.

Course Learning Outcomes

1. Use the primary financial statements to analyze a company's financial position.
2. Explain how the income statement, balance sheet, and cash flow sheet are integrated.
3. Use financial ratios to diagnose company problems, challenges, and opportunities.
4. Assess target companies within the context of the financial markets and their operating sectors.
5. Project companies' financial statements by year and quarter.
6. Use a Bloomberg terminal to acquire and analyze financial data.

FIN 6140

Regulatory Policy in Financial Services

Credit hours: 3

Describes the functions and purposes of regulatory policy within the financial services industry. Outlines alternative philosophies which influence regulatory policy development including implementation of public policy for these purposes. Reviews varied government, industry, and other agencies responsible for regulatory policy in the financial service industry.

Course Learning Outcomes

1. Describe the financial services industry environment and the need for appropriate regulatory policy.
2. Describe the varied agencies extant within the financial services industry and the role(s) those agencies take in managing regulatory policy.
3. Evaluate the appropriateness of varied regulatory policies currently in place, including recommendations for expanding, modifying, or removing those regulatory activities.
4. Assess the effectiveness of financial services regulatory activities and make recommendations for change.
5. Write critical recommendations for improving financial services regulatory processes.

FIN 6150

Financial Management

Credit hours: 3

Discusses corporate financial management cases and analyses dealing with problems of working capital management, capital budgeting, cost of capital evaluation, and corporate restructuring. Canvas Course Mats \$85/Cengage applies.

Course Learning Outcomes

1. Conduct financial analysis to determine a firm's liquidity, efficiency, leverage, profitability, and market value using financial ratio analysis
2. Analyze and complete a capital budgeting analysis
3. Apply the concepts and tools of working capital management, modern portfolio theory, business valuation, and international finance
4. Effectively communicate complex financial concepts
5. Apply problem solving and critical thinking skills

FIN 6160

International Financial Management

Credit hours: 3

Offers a financial perspective treating international business. Focuses on international corporate finance transactions and the currency implications of financial statement translations. Provides a global context for cultural differences of financial concepts and practices around the world.

Course Learning Outcomes

1. Implement the stages of expansion of domestic operations abroad which are common in multinational corporations.
2. Describe the international monetary system and the foreign exchange markets as they apply to international financial management.
3. Explain the use of derivatives for risk management in international financial markets.
4. Apply the processes and instruments used in the financing of international trade.
5. Use Bloomberg Terminals to analyze international financial issues.
6. Prepare written analyses and reports on significant international projects.

FIN 6170

Investment Analysis and Portfolio Analysis

Credit hours: 3

Provides an introduction to the global securities market and its role in capital formation, wealth-creation, economic development, risk mitigation, wealth management, and other finance-related goals. Uses Bloomberg Terminals in the development of company and industry analyses. Canvas Course Mats \$85/Cengage applies.

Course Learning Outcomes

1. Describe the global securities market.
2. Assess the role of the stock market and market indices.
3. Explain how computer technology shapes investing.
4. Apply current investment strategy.
5. Use securities evaluation techniques to determine security values.
6. Apply asset allocation concepts in the investing environment for individuals and institutional investors.
7. Analyze data using the Bloomberg Terminals.

FIN 6210

Retirement Planning

Credit hours: 3

Examines topics of retirement planning and retirement plans at the graduate level from both employer and individual client perspectives. Uses case study approach to apply and integrate the material. Emphasizes the evaluation of financial alternatives. Provides learning activities that will facilitate student growth and development in written and oral communication skills.

Course Learning Outcomes

1. Review changes in retirement systems planning as a result of lifestyle, age, gender, and other related demographics.
2. Evaluate advantages and challenges of "qualified" versus "non-qualified" retirement plans from the perspective of self-employed, employers, employees, etc.
3. Describe impact of taxes, regulatory concerns, IRS code, and other related concepts on retirement planning and implementation.
4. Identify time value of money as it relates to savings and retirement planning using varied methods including spreadsheet analysis processes.
5. Develop comprehensive retirement plan activities such as goal development, data gathering, data analysis, developing recommendations, etc.
6. Evaluate retirement income management strategies.

FIN 6260

Estate Planning

Credit hours: 3

Describes elements of estate planning including gift, estate, generation skipping, tax implications and other relevant issues financial planners need to identify client needs. Identifies planning concepts, tools, and varied processes important to meet needs of individual clients.

Course Learning Outcomes

1. Describe basic concepts in estate planning including gift, basic estate, generation skipping tax procedures.
2. Apply academic and professional industry knowledge necessary to assist clients make decisions about estate issues.
3. Review the tools and process of estate planning.
4. Identify the variety of processes in estate planning designed to meet specific client needs.
5. Implement advanced estate planning alternatives based on client needs.

FIN 6300

Income Tax Planning

Credit hours: 3

Examines the topic of income tax planning and forecasting for individual clients and small business owners. Executes a case study approach to integrate material and apply it within a personal financial planning context. Implements materials to facilitate student growth and development in written and oral communication skills. Organizes activities with local practitioners to provide an engaged learning experience.

Course Learning Outcomes

1. Review alternative tax planning strategies for individuals and small business owners.
2. Describe the advantages of tax strategies for "qualified" and "non-qualified" estate plans, investment options, and insurance products.
3. Describe impacts of taxes on small business structure.
4. Evaluate alternative strategies based on improved tax efficiency within a long-term planning process.
5. Develop a specific tax management plan based on the needs of an individual client.

FIN 6340

Analytics and Advanced Statistics

Credit hours: 3

Describes processes and methods that statisticians use to analyze business, financial, and related issues. Teaches how to determine types of data required to address specific problems, how to gather, analyze, and report that information to suggest solutions to identified problems. Evaluates the effectiveness of varied statistical processes in applying those techniques to address specific types of issues. Practices the application of statistical methods to the evaluation of identified problems.

Course Learning Outcomes

1. Describe processes and methods statisticians use to evaluate business and social data information.
2. Describe the alternative characteristics of populations and samples including how each impacts statistical decision making.
3. Describe the concepts of hypothesis testing, evaluating regression outcomes, and correlation concepts used in statistical analysis.
4. Describe the concepts used to evaluate data statistically.
5. Write reports that meet appropriate standards of statistical theory and practice.

FIN 6800

Financial Planning Capstone and Case Analysis

Credit hours: 3

Reviews each of the major aspects of financial planning in the context of a comprehensive case. Analyzes the financial planning profession and the various types of financial planning models. Provides an overview of client servicing and management, including data gathering, working with clients, presentation skills, and the creation of a comprehensive financial plan.

Course Learning Outcomes

1. Analyze all financial aspects of a client case to build a comprehensive financial plan.
2. Identify the types of information required to develop a comprehensive financial plan including personal, financial, legal and other contextual considerations.
3. Synthesize financial recommendations into a cohesive plan.
4. Create a written financial plan appropriate for a financial planning client.
5. Present financial planning recommendations verbally to a client.

FIN 6820

Research Methods

Credit hours: 3

Describes graduate level research methods, processes, and skills appropriate to the analysis of applied business projects. Reviews scientific methods analysis, research design, measurement and scaling, testing reliability and validity, communication of research results, and other relevant concepts.

Course Learning Outcomes

1. Describe research methods, processes, literature of research techniques, and appropriate processes for conducting research activities;
2. Describe the appropriate processes for using data to support decision making;
3. Analyze consumer and financial research reported in academic, trade and professional publications, as well as internal reports;
4. Apply evaluation and research concepts in the development of verbal and written articles relevant to research;
5. Analyze consumer research reported in trade and professional publications, as well as internal reports;
6. Write research results in appropriate reports, publications, and other mediums.

FIN 6840

Behavioral Finance Seminar

Credit hours: 3

Explores how deviations from the classic model of rationality impact decision making processes and outcomes. Evaluates the assumptions of human decision making. Analyzes the various biases and heuristics that can influence decision-making, especially about financial decisions. Applies behavioral finance research to the practices of financial planning and financial analytics.

Course Learning Outcomes

1. Contrast the behavioral theories used to model financial decision making, including prospect theory, loss aversion, and various dual-self models
2. Analyze behavioral heuristics and biases involved in making financial decisions, including anchoring, overconfidence, the endowment effect, and framing
3. Analyze defined contribution plan design considerations that can influence plan participant savings and accumulation
4. Analyze the relationship between choice and satisfaction, including the role of nudges in choice architecture
5. Apply behavioral finance concepts to case studies

FREN 1020

Beginning French II LH

Credit hours: 4

Completes the first year of study. Includes the remaining grammar, language concepts, and culture associated with the beginning language sequence. Introduces students to literature in French. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Participate in simple conversations in French at the Novice High Proficiency level.
2. Demonstrate listening comprehension at the Novice High Proficiency level through appropriate oral response.
3. Express meaningful opinions in writing related to cross-cultural studies.
4. Create grammatically correct sentences at the Novice High Proficiency level.
5. Compare cultural practices among the various Francophone countries.

FREN 2010

Intermediate French I LH

Credit hours: 4

Reviews grammar, reading, writing, and conversation skills learned throughout the first year. Introduces readings and discussions on the history, culture, and literature of the French world. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken and written conversations at the Intermediate Mid proficiency level.
2. Present information, orally and in writing, at Intermediate Mid proficiency level.
3. Summarize the main idea within informational and fictional texts that are spoken and written at Intermediate Mid proficiency level.
4. Reproduce aspects of French grammar at Intermediate Mid proficiency level.
5. Recognize aspects of French and Francophone cultural heritages, society, and everyday life.
6. Express feelings or opinions on a given topic at Intermediate Mid proficiency level.

FREN 202G

Intermediate French II HH GI

Credit hours: 4

Emphasizes reading, writing, and conversational skills through socio-cultural studies in history, literature and art. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Discuss, in French, the importance and content of a limited number of literary works at an Intermediate High proficiency level.
2. Discuss level appropriate literary texts at an Intermediate High proficiency level.
3. Implement correct grammar, as well as an increasingly broad vocabulary, in speaking and writing on a variety of topics at an Intermediate High proficiency level.
4. Show a general knowledge of the development of literature in French at an Intermediate High proficiency level.
5. Recognize of many of the complexities present in French-speaking societies at an Intermediate High proficiency level.
6. Analyze global or intercultural issues.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Evaluate how one's own cultural values compare with those from different backgrounds.

FREN 3050

Advanced French LH

Credit hours: 3

Building upon lower-division courses, continues to emphasize reading, writing, and conversational skills through studies in literary and other texts, including films dealing with Francophone cultures. Includes an in-depth review of grammar. Lab access fee of \$12 applies.

Course Learning Outcomes

1. articulate a variety of grammatical concepts in French by writing in the target language.
2. Respond, both in writing and orally, to current events in the Francophone world.
3. Analyze literary passages by studying both content and grammar through close and interpretive readings and discussions.
4. Identify cultural differences among French-speaking countries to better understand the diversity of the Francophone world.

FREN 3610

French Literature to 1700

Credit hours: 3

Introduces chronologically to 1700 representative French authors. Emphasizes literary analysis and criticism. Completers should develop knowledge of literary history, acquire skills in interpreting literary texts, and deepen understanding of the French language. Presentations and class instruction conducted entirely in French.

Course Learning Outcomes

Please see the department for information.

FREN 3620

French Literature from 1700 WE

Credit hours: 3

Introduces representative French authors chronologically from the year 1700. Emphasizes literary analysis and criticism. Focuses on literary history, interpretation of literary texts, and deeper understanding of the French language. Presentations and class instruction conducted entirely in French. Emphasizes writing skills.

Course Learning Outcomes

1. Interpret 19th, 20th, and 21st century literary texts in French
2. Critique writers' views of culture and society as portrayed in texts studied
3. Defend opinions on target themes of course including religion, power, and gender roles
4. Create models of language production through oral and written expression, with a focus on literary analysis

FREN 4050

Special Topics in Grammar Usage and Style

Credit hours: 3

Focuses on understanding French grammar in context. Uses various literary texts and other print materials in an effort to underscore the grammar concepts studied.

Course Learning Outcomes

1. Analyze the grammar concepts studied
2. Discuss the relationship between grammar and effective communication
3. Identify narrative components of literary texts
4. Speak the target language more efficiently and fluidly
5. Write compositions that reflect an advanced understanding of French grammar usage and style

FREN 4100

Teaching French Grammar

Credit hours: 3

Focuses on the fundamental concepts and practices of teaching French grammar in context. Prepares students to teach French language in secondary school settings. Requires a portfolio of best teaching practices as related to grammar instruction.

Course Learning Outcomes

1. Discuss the lexico-grammatical structures of the French language
2. Implement the fundamental concepts of teaching French grammar in secondary school settings
3. Communicate the relationship between grammatical accuracy and communicative teaching practices
4. Demonstrate knowledge of French and Francophone cultures through grammar-in-context
5. Teach French grammar to an audience of secondary school students

FREN 4900

French Capstone Seminar

Credit hours: 3

Provides the opportunity to showcase language abilities through various oral and written assignments. Culminates in a final research project in the target language. Requires a selected subject to explore for the capstone project. Possible research areas include literary, film, and gender studies.

Course Learning Outcomes

1. Demonstrate in writing an overarching knowledge of French Studies
2. Defend a research project and respond to questions related to area of research
3. Critically analyze the thematics of the seminar
4. Analyze the relationship between cultural and language studies in French and Francophone contexts
5. Contribute to continuing conversations on the importance of French Global Studies

FSCI 3300

Forensic Photography

Credit hours: 3

Explains the basic concepts of Forensic Photography while exploring the fundamental skills for the selection and use of photography equipment. Identifies the basic principles and fundamentals of using photography with regard to crime scenes, forensic evidence, and identification photography. Illustrates skills utilizing a DSLR camera with various types of lighting, camera settings, and common camera accessories. Explains techniques involving surveillance, impression, close up, alternate light sources, infrared photography, and the legal aspects of forensic photography as it pertains to criminal investigations. Course fee of \$155 applies. Lab access fee of \$15 applies.

Course Learning Outcomes

1. Explain operation of camera, lenses, set up, and settings.
2. Demonstrate how to properly expose photographs under various environmental settings and lighting situations.
3. Show proper crime scene and evidence photographic documentation.
4. Explain the importance of photography in the law enforcement community.
5. Evaluate the legal issues of digital imaging in the criminal justice system.

FSCI 3400

Criminalistics

Credit hours: 3

Introduces entry-level forensic skills instrumental in conducting a complete and thorough criminal investigation. Discusses effective crime scene management as well as types of information, which can be gleaned from physical evidence as result of laboratory analysis. Applies scientific and technical methods used in the examination and analysis of physical evidence. Course Lab fee of \$142 for materials applies. Lab access fee of \$15 applies.

Course Learning Outcomes

1. Summarize the functions and role of the crime laboratory in processing evidence.
2. Differentiate between the various types of equipment utilized in a standard crime laboratory.
3. Evaluate the principles and techniques of crime scene processing and laboratory analysis to actual criminal cases.
4. Discriminate between methods of documentation, collection and preservation of physical evidence in criminal investigations.
5. Contrast the procedures for scientific analysis of various types of physical evidence commonly found at crime scenes.

FSCI 3700

Fingerprint Processing

Credit hours: 3

Teaches professional conduct in fingerprint processing. Explains the differences in latent fingerprints as they relate to the physical condition in which they are found. Describes and utilizes the equipment needed for fingerprint development, lifting, and comparison. Course fee of \$143 for materials applies. Lab access fee of \$15 applies.

Course Learning Outcomes

1. Explain the science of fingerprints.
2. Discuss the importance of scientific methodology in regards to friction ridge processing.
3. Demonstrate the techniques used to process and capture images of items of evidence for fingerprints, both at the crime scene and in the laboratory.
4. Participate in procedures used for latent fingerprint processing on porous, non-porous and semi-porous surfaces.
5. Explain latent print documentation.
6. Document finger print evidence for courtroom testimony.

FSCI 3720

Fingerprint Examination

Credit hours: 3

Presents the history of fingerprint examination. Teaches recent technical advances in fingerprint development and examination. Describes the theory and make-up of fingerprints, palm prints, and footprints. Explores charting and comparison techniques. Teaches criteria used to determine successful identification versus non-identification. Lab access fee of \$15 for computers applies. Course fee of \$30 materials applies.

Course Learning Outcomes

1. Explain the history of fingerprint examination.
2. Discuss latent print composition, chemistry, and methods of identification.
3. Identify the theory and make-up of fingerprints, palm prints, and footprints.
4. Analyze different charting and comparison techniques to make successful identification versus non-identification decisions.
5. Demonstrate statistic-based measurements of individuality and various strategies in systematic fingerprint and palm print identification.
6. Explain the most recent abilities of automated Fingerprint Identification and Imaging Systems.

FSCI 3780

Bloodstain Pattern Analysis

Credit hours: 3

Teaches the basics of handling blood evidence typically encountered at a crime scene. Explains terminology and the techniques of documentation as it relates to the analysis of bloodstain patterns. Presents the physical properties of blood as they apply to forensic investigation. Identifies characteristic patterns and computer applications to interpret the impact patterns of spattered blood. Illustrates the concepts of motion, directionality, area of convergence, and the area of origin of impact bloodstain patterns. Teaches traditional and modern techniques in crime scene reconstruction for documenting and reconstructing the crime scene. Describes guidelines for presenting bloodstain evidence at trial. Course lab fee of \$75 for materials applies. Lab access fee of \$15 applies.

Course Learning Outcomes

1. Demonstrate the proper identification, documentation and preservation of bloodstain evidence.
2. Evaluate the most effective methods of processing scenes of a crime involving bloodstain evidence.
3. Explain the use of forensic equipment and chemical processes pertaining to blood evidence.
4. Discriminate between various bloodstain patterns that may be encountered at a crime scene.
5. Evaluate the proper techniques used for documenting bloodstain patterns at a crime scene.

FSCI 3820

Crime Scene Investigation Techniques I WE

Credit hours: 3

Explains the fundamental goals of crime scene investigation and the importance of physical evidence. Teaches fundamental crime scene documentation skills including note taking, sketching, and photography. Teaches evidence identification, collection, and packaging procedures. Provides experience in evidence identification, documentation, collection, and packaging procedures. Course Lab fee of \$145 applies

Course Learning Outcomes

1. Explain the fundamental goals of crime scene investigation.
2. Evaluate the nature and importance of physical evidence.
3. Apply fundamental crime scene documentation skills including note taking, sketching, photograph, and crime scene reports.
4. Identify types of physical evidence commonly encountered at crime scenes.
5. Compose procedural reports describing individual processing techniques for various types of physical evidence commonly found at crime scenes.
6. Demonstrate proper documentation, collection, and packaging procedures to avoid contamination and loss of evidence.
7. Explain the skills required to testify in a crime scene investigation.

FSCI 3830

Crime Scene Investigation Techniques II WE

Credit hours: 3

Teaches computer-based crime scene measurement and diagram tools utilized to properly document crime scenes including clandestine human graves, scattered human remains, and under water, fire, and arson scenes. Provides instruction in proper approach, documentation, and analysis of complex crimes scenes. Teaches crime scene reconstruction techniques in bloodstain patterns and shooting incident scenes. Course fee of \$155 for materials applies. Course fee of \$30 applies.

Course Learning Outcomes

1. Evaluate the techniques required for approach, documentation, and analysis of complex crime scenes.
2. Use computer based measurement and diagramming programs to document crime scenes.
3. Evaluate the overall purpose of crime scene analysis and reconstruction.
4. Evaluate the importance of analysis and reconstruction in the legal system.
5. Compose a technical analysis report articulating reconstruction efforts, relevant forensic evidence, data collected and the scientific method used for a crime scene analysis.

FSCI 3860

Forensic Microscopy

Credit hours: 3

Lays the foundation of forensic microscopy. Describes the major variants and functions of the compound microscope including the stereo, polarized light and comparison varieties. Establishes acceptable performance criteria and image quality as it relates to compromises among resolution, magnification, and visibility. Presents the use of specialized contrast enhancement methods and illumination techniques. Explains the theory and use of the polarized light microscope in the examination of crystalline materials. Describes the use of the microscope as a quantitative measuring tool. Introduces instrument systems calibration methods for both the microscope as well as imaging software. Describes the collection and examination of micro-traces and the use of micro-trace catalogs. Lab access fee of \$15 for computers applies. Course fee of \$152 for materials applies.

Course Learning Outcomes

1. Distinguish practical use for acceptable systems in forensic microscopy.
2. Explain the foundation of proper instrumentation and software calibration.
3. Summarize major contrasting methods used in forensic microscopy, including proper setup, usage and value.
4. Prepare a sample collection, avoiding contamination factors and including instrumentation.
5. Describe practical knowledge of firearms, bullet, tool marks, hair and fiber characteristics.

FSCI 3880

Forensic Experts/Professional Practices and the Legal System

Credit hours: 3

Explores the legal environment pertaining to forensic expert witnessing. Teaches the litigation process and aspects of courtroom testimony. Discusses forensic expert qualifications, ethics and credibility. Teaches the processes and importance of training, certification, periodic proficiency testing and review. Evaluates the role of professional organizations within forensic science. Examines national guidelines and reports affecting the practice, methodology and scientific validity within forensic disciplines.

Course Learning Outcomes

1. Summarize the role of the expert witness.
2. Analyze the litigation process, key legal cases and precedents affecting expert witnesses.
3. Explain the preparation process, effective methodologies and ethical standards for testifying in a court of law.
4. Assess the importance of protocol adherence, data interpretation and ethics in the overall credibility of a forensic practitioner.
5. Differentiate between various types of bias and how they apply to forensic practitioners.
6. Summarize training, certification, periodic proficiency and review processes required of the forensic expert.
7. Evaluate the roles of forensic professional organizations.
8. Relate the findings of the 2009 National Academy of Science and President's Council of Advisors on Science and Technology reports and how they affected change within forensic science.

FSCI 4100

Forensic Pathology

Credit hours: 3

Teaches the fundamentals of scientific techniques used by forensic pathologists in medicolegal investigations. Differentiates between sudden or unexpected deaths, homicides, suicides, accidental deaths, and trauma.

Course Learning Outcomes

1. Discuss the role of the forensic pathologist in the legal system.
2. Identify traumatic death and sudden natural death.
3. Evaluate various anatomic abnormalities, including injuries caused by various physical agents.
4. Analyze data in order to correlate autopsy findings and cause of death.

FSCI 4200

Medicolegal Death Investigations

Credit hours: 3

Discusses the foundation for understanding death scene analysis by an investigator in conjunction with a medical examiner. Teaches the integration of medical, scientific, and legal methodology to medicolegal death investigations. Examines various techniques used in the study of forensic science and medicine. Teaches the interpretation of the facts and evidence to help determine and reconstruct the sequence of events at a variety of classic death scenes.

Course Learning Outcomes

1. Evaluate the purposes and approaches to medicolegal death investigation.
2. Differentiate causes of traumatic death, sudden natural deaths, and their respective death investigation procedures.
3. Interpret autopsy procedures, reports, and documentation.
4. Apply results of autopsy and pathological findings to death investigations.

GEO 1010

Introduction to Geology PP

Credit hours: 3

Studies planet earth: its materials, structure, dynamics, and surface features. Taken alone it is designed for non-science students who want a broad introduction to earth science and a greater appreciation of their physical surroundings. Taken in conjunction with laboratory exercises in GEO 1015, the class is sufficiently rigorous to articulate as an introductory geology class.

Course Learning Outcomes

1. Identify major rock types and rock forming minerals.
2. Explain the role of different rock types and rock forming minerals in plate tectonics, the rock cycle, and surficial and interior geological processes.
3. Describe the geologic time scale.
4. Explain the ways in which geologic resources and geologic data benefits society.
5. Critically evaluate popular news articles and proposed policies related to Geology and the Earth Sciences.
6. Apply the laws and principals of relative and absolute dating to evaluate geologic cross sections and maps.
7. Apply the scientific method, including multiple working hypotheses, to analyze and evaluate geologic data and problems outside of the classroom.

GEO 1015

Introduction to Geology Laboratory

Credit hours: 1

Designed to be taken in conjunction with GEO 1010. Includes the identification of rocks, minerals, basic land forms and structures. Studies geologic processes occurring in desert, glacial, mountainous and other environments. Taken with GEO 1010, the class will articulate as an introductory earth science class. Course Lab fee of \$10 for transportation, lab applies.

Course Learning Outcomes

Please see the department for information.

GEO 1220

Historical Geology

Credit hours: 3

Examines the physical and biological evolution of the Earth from its origins 4.6 billion years ago up to present day. Reviews fundamental processes and principles of geology and biology. Develops tools for interpreting rocks and the fossil record. Explores important changes through geologic time, including plate tectonics, paleogeography, mountain building, geochemical cycles, climate, sea level, and the origin and evolution of the great diversity of life on Earth.

Course Learning Outcomes

1. Explain the fundamental concepts in geology, including plate tectonics, geologic time, and the rock cycle
2. Explain the fundamental concepts in biology, including cells, metabolism, systematics, ecology, and evolution
3. Apply the tools for interpreting the rock record in terms of changes in the physical environment as well as the evolution of life seen in the fossil record
4. Describe the major mountain-building events for North America during the Phanerozoic Eon
5. Describe evolutionary trends in biological diversity, origination, and extinction
6. Analyze changes in plate tectonics and paleogeography
7. Analyze global and regional trends in geochemical cycles, climate, and sea level, including the impacts on life and the rock record
8. Evaluate characteristics of major fossil groups of life in terms of ecology and evolutionary relationships

GEO 1225

Historical Geology Laboratory

Credit hours: 1

Reviews fundamental processes and principles of geology and biology. Develops skills for identifying main types of minerals, rocks, and fossils. Develops tools for interpreting Earth history through analysis of rocks, fossils, and paleoclimate data. Develops skills for correlating strata and reading geologic maps. Includes field trips to study local outcrops. Course lab fee of \$10 applies.

Course Learning Outcomes

1. Explain the fundamental concepts in geology, including plate tectonics, geologic time, and the rock cycle
2. Explain the fundamental concepts of biological systematics, ecology, and evolution
3. Identify main types of minerals, rocks, and fossils
4. Analyze paleoclimate data
5. Describe rock properties and relationships accurately in field notes and discussions
6. Correlate stratigraphic sections across space using lithology, fossils, and geologic principles
7. Interpret geologic maps to make inferences about Earth history

GEO 2500

Introduction to Field Geology

Credit hours: 3

Introduces students to qualitative and quantitative methods used for field geology building upon introductory courses in physical geology and historical geology. Provides students an opportunity to learn and apply field geology skills at a lower-division level, and prepares students for upper-division classes, such as Earth Materials, Sedimentary Geology, Structure and Tectonics, Geomorphology, Paleontology, and Field Experience. Includes a weekly lecture, introducing students to geologic mapping concepts, and several practical field-based experiences occurring outside of normal class schedules. Course lab fee of \$311 applies for transportation and accommodations.

Course Learning Outcomes

1. Identify the different rock types using observations made in the field.
2. Apply geologic note taking and measurement skills to record observations about sedimentary, igneous, and metamorphic rocks and minerals, sedimentary structures, secondary structures, and fossils.
3. Interpret a stratigraphic column, geologic map, and geologic cross section.
4. Construct a stratigraphic column, geologic map, and geologic cross section.
5. Synthesize geologic processes in the field based on observations and hypotheses.
6. Analyze data collected in the field.

GEO 3080

EArth Materials WE

Credit hours: 3

Investigates the physical characteristics, chemical properties, formation, and distribution of geologically significant igneous and metamorphic rocks and minerals. Develops ability to examine rocks and minerals, and analyze their chemical properties to understand geologic processes. Involves field trips, including the possibility of weekend trips. Course lab fee of \$22 for transportation, lab applies.

Course Learning Outcomes

1. Explain the processes controlling the genesis and evolution of common minerals and rocks.
2. Apply the basic optical properties of minerals to identify and classify minerals and classify rocks in thin section using current classification methodologies.
3. Formulate testable hypotheses regarding the genesis and occurrence of minerals and rocks.
4. Analyze chemical data from minerals and rocks in the context of plate tectonics using common database software.
5. Synthesize data collected in the field from minerals and rocks in the context of plate tectonics.
6. Communicate about minerals and rocks, and the corresponding Earth processes, both verbally and in writing through low and high stakes assignments.

GEO 3085

EArth Materials Laboratory

Credit hours: 1

Focuses on identification and classification of common rocks and minerals in hand sample and introduces optical mineralogy and petrography. Investigates the occurrence and formation of common rocks and minerals through direct observation of their properties and occurrence. Involves field trips, including the possibility of weekend trips.

Course Learning Outcomes

1. Identify common and geologically significant rocks and minerals based on their physical properties in hand sample.
2. Use a polarizing petrographic microscope to identify minerals and classify rocks using their optical properties.
3. Use knowledge of rocks and minerals in the field to form and test hypotheses regarding formation and occurrence of rocks and minerals.
4. Use spreadsheets to work with large geochemical datasets to find correlations and investigate geologic processes.
5. Communicate in writing observations and results of analyses of mineral assemblages and other rock and mineral properties.

GEO 3700

Structure and Tectonics

Credit hours: 4

Investigates the fundamentals of global plate tectonics and rock deformation. Includes applications to petroleum geology, environmental geology, and engineering geology. Explores geometric techniques of structural analysis in the laboratory. Involves field trips, possibly including weekend trips. Course lab fee of \$21 for transportation, lab applies.

Course Learning Outcomes

1. Utilize basic geometric techniques and laboratory tools of structural geology, including 3-point problems, stereonet, and structure contour maps, to solve common geologic problems.
2. Identify, measure, and describe common geologic structures including bedding, folds, faults, foliations, and lineations in the field and laboratory; describe deformational history and style of rocks and crust.
3. Measure and calculate strain in deformed rocks and crust from secondary structures; estimate principal stress orientations in rocks and the crust; estimate mechanical properties of rocks in varying crustal conditions of pressure, temperature, and strain rate.
4. Collect structural data in the field, including using a geologic compass.
5. Describe, draw, and analyze plate motions, and plate boundaries and their structural features.

GEO 4500

Sedimentary Geology WE

Credit hours: 4

Explores the origin, classification, and spatiotemporal distribution of sedimentary rocks. Examines the fundamental principles of sedimentology, petrology, and stratigraphy. Reviews weathering processes and soil formation. Develops analytical skills regarding particle erosion, transportation, and deposition. Develops skills for identifying and classifying sedimentary rocks. Develops tools for describing stratigraphic sections and interpreting the rock record. Develops skills for correlating strata and reading geologic maps. Develops critical thinking and writing skills. Includes field trips to study various outcrops in the state of Utah. Lab access fee of \$21 applies.

Course Learning Outcomes

1. Explain essential aspects of weathering processes and soil formation
2. Analyze processes of erosion, transportation, and deposition of particles
3. Identify main types of sedimentary rocks
4. Describe details of sediments and sedimentary rocks under the microscope, in hand sample, and in the field
5. Evaluate hypotheses of depositional environments
6. Analyze sedimentary structures
7. Interpret sedimentary rocks in terms of Earth history
8. Correlate sedimentary strata using lithologic, fossil, geophysical, and geochemical data
9. Communicate results and arguments related to sedimentary geology by utilizing field/lab data, critiquing academic literature, writing short essays, compiling field reports, and going through the peer-review process to produce a final academic style paper

GEO 4600

Field Experience

Credit hours: 6

Is an intensive field course giving students hands-on experience with several aspects of Earth Science field work. Involves 8 to 10 hours of field work per day, for three to five days per week, for four to six weeks. Is the required capstone experience for Geology majors. Course lab fee of \$650 for practical experience applies.

Course Learning Outcomes

1. Define geologic units
2. Create stratigraphic columns with unit thicknesses and unit descriptions
3. Map sedimentary, igneous, and metamorphic rocks
4. Map geologic structures and hazards
5. Construct geologic cross sections from a geologic map and structural data.
6. Collect field-based geologic data such as orientations, kinematic indicators, potential geologic hazards, metamorphic and igneous mineral reactions, and other types of field data.
7. Synthesize geologic maps, stratigraphic columns, and other types of geologic data to interpret the geologic history of an area in the context of plate tectonics and surface geology

GEO 480R

EArth Science Seminar

Credit hours: 0.5

Exposes students to current research topics in Earth Science and related fields. Provides an opportunity for students to attend bi-weekly lectures presented by department faculty and invited speakers. Incorporates lectures that are usually a summary of the speaker's recent research results, or investigative projects in an earth science industry. May be repeated for a maximum of 1 credits toward graduation.

Course Learning Outcomes

1. Examine the scientific practices applied to Earth science research problems.
2. Discuss methods of data collection, analysis, and interpretation in Earth sciences.
3. Critique applications of Earth science scientific practices.
4. Assess techniques for presenting Earth science research.

GEOG 1000

Introduction to Physical Geography PP

Credit hours: 3

Explores the world through each of the major components of physical geography: climatology, hydrology, geomorphology, and biogeography, focusing on how they are interrelated. Emphasizes the dynamic interactions among climate, vegetation, soils, and landforms. Can be taken in conjunction with laboratory exercises in GEOG 1005.

Course Learning Outcomes

1. Describe the major components of physical geography, including climatology, hydrology, geomorphology, and biogeography.
2. Explain the major spatial patterns and interrelationships among components of physical elements at the Earth's surface.
3. Employ basic skills and tools used in physical geography research.
4. Analyze the Earth's surface in regards to scale, pattern, and processes.
5. Evaluate human-environment interactions.
6. Explain science as an iterative process driven by empirical observation and experimentation, as well as its sensory, physical, and technical limits.
7. Apply scientific methods by quantitatively investigating and assessing situations extracted from ordinary experience or from societal or environmental problems related to modern science.
8. Describe the fundamental unifying principles of physical sciences, including the nature of forces, motion, and the flow of matter and energy through systems on different scales.

GEOG 130G

Survey of World Geography GI SS

Credit hours: 3

Explores the world in which we live. Studies major countries of the world with special emphasis on location, physical environment, culture, resources, and current events. May be delivered online.

Course Learning Outcomes

1. Describe patterns of physical and human geographies of different regions of the world.
2. Identify cultural elements of contemporary globalization, including their controversial aspects and list several ways in which globalization is changing world geographies.
3. Describe political, economic, cultural, and physical aspects of globalization and explain their interconnectedness.
4. Compare and contrast aspects of cultural practices and hybridization of world regions, including language, religion, economics, and development.
5. Identify problems facing populations and environments in different regions of the world.
6. Analyze current events in world regions according to their specific geographic contexts.
7. Analyze and evaluate global or intercultural issues.
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
9. Evaluate how one's own cultural rules and biases compare and contrast with those from different cultures.

GEOG 140G

Introduction to Human Geography SS GI

Credit hours: 3

Examines the theoretical, spatial, and relational aspects of human activity across the Earth's surface. Discusses the analytical frameworks for understanding the interactions of social, cultural, economic and political systems. Includes topics of population dynamics, culture, language, religion, international development, human conflicts, and urbanization.

Course Learning Outcomes

1. Interpret spatial data using maps and charts using a social science approach.
2. Analyze cultural differences and concepts of identity at multiple scales, including patterns of language, religion, ethnicity, gender, music, and food.
3. Explain uneven patterns of development across the globe.
4. Analyze population patterns, including key demographic indicators and migration, and the factors that shape these patterns at different scales.
5. Interpret the political, economic, cultural, religious, and environmental aspects of uneven development and country variations.
6. Apply key social science theories and methods to contemporary issues in human geography.
7. Analyze global or intercultural issues.
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
9. Evaluate how one's own cultural values compare with those from different backgrounds.

GEOG 2000

Sustainability and Environment SS

Credit hours: 3

Explores relationships of human and natural systems, how cultural groups experience nature, and global sustainability. Examines different ways of perceiving nature, resources, the environment, and society. Critically analyzes links between social, economic, political, historical, cultural, and environmental processes. Discusses environmental problems and ways to build more sustainable futures. Includes participation in locally sustainability issues.

Course Learning Outcomes

1. Analyze the intersections of human and natural systems.
2. Discuss social science theories in relation to environmental behaviors.
3. Explain the multifaceted aspects of sustainability.
4. Describe the links between individual environmental practices and greater environmental sustainability.
5. Compare ways that the environment is viewed across cultures and societies.
6. Evaluate environmental problems and their possible solutions.

GEOG 3000

Climate Change in Science and Society

Credit hours: 3

Offers a fundamental understanding of the science behind contemporary climate change and what to expect in a warming world. Examines observational and other scientific data of different aspects of climate science and the predicted impacts on natural systems around the world. Explores societal and human responses to impacts of climate change. Investigates possible solutions and the politics of climate negotiations.

Course Learning Outcomes

1. Explain the fundamentals of climate change science.
2. Communicate climate change science to the general public.
3. Analyze predicted impacts of climate change on natural systems.
4. Assess the impacts of climate change on human systems, societies, and people in particular places.
5. Evaluate social and political responses to climate change and how these impact future environmental issues.
6. Create potential solutions to climate change problems which take into account both natural and social systems.

GEOG 3110

Urban Geography WE

Credit hours: 3

Focuses on the origins, growth, structure and function of cities. Examines social and political dimensions of urban life and the emergence of new urban spaces around the world. Includes case studies in the decline of urban industrial America and the rise of Sunbelt and Edge Cities.

Course Learning Outcomes

1. Explain different urban geography epistemologies and research methods.
2. Describe models of urban form and dynamics.
3. Compare cities on the basis of urban origin, physical site, economic situation and political regimes.
4. Explain the dimensions urban social difference and problems associated with class, race, ethnicity, etc. in urban places.
5. Discuss recent changes and new development in urban North American and compare them to other urban developments, globally.
6. Analyze the processes of urban decline, suburban growth and the growth of the world cities.
7. Write analytically about urban issues.
8. Compose a variety of disciplinarily- appropriate texts within multiple situations and for multiple audiences.

GEOG 3200

Geography of Utah

Credit hours: 3

Applies principles and methods of physical, cultural, and human-environment geography to the study of Utah's people, places, and environments; considers problems of adjustment, including natural hazards, environmental concerns, and human problems.

Course Learning Outcomes

1. Describe the physical geography of Utah.
2. Explain the historical evolution of different social groups in Utah.
3. Discuss the relationships between people of differing ethnic and religious backgrounds and their local natural environments in Utah.
4. Analyze Utah's demographic growth and the implications of this growth for environmental, social, and political issues.
5. Identify issues that Utah and its citizens will face in the next 50 years.

GEOG 3400

Environmental Remote Sensing

Credit hours: 3

Introduces the history, theory, and operation of remote sensing software. Includes an introduction to the electromagnetic spectrum and signals, sensors, image processing, and classification techniques. Provides a survey of the concepts and techniques of remote sensing and image analysis for mapping and monitoring natural resources, environment and land use, and an array of geoscientific applications at different scales. Software fee of \$18 applies. Lab access fee of \$35 applies.

Course Learning Outcomes

1. Describe and explain the electromagnetic spectrum and signals and the major concepts and sensors used to record them;
2. Utilize remote sensing software for digital image processing and analysis;
3. Utilize remote sensing techniques to address applied environmental problems/research questions;
4. Develop a remote sensing research project to answer a scientific question about the environment.

GEOG 3500

Geomorphology WE

Credit hours: 4

Examines the geologic processes operating at the Earth's surface to understand the origin of our planet's varied landscapes. Explores how landforms respond to climate change, tectonic forcing, and changes in land use. Addresses common geomorphic processes including weathering, soils, hill slope processes, fluvial processes and landforms, aeolian transport, glacial and periglacial environments, karst, and coastal processes.

Course lab fee of \$21 applies.

Course Learning Outcomes

1. Identify the processes that form fluvial, hill slope, eolian, glacial and other prominent terrestrial landscapes.
2. Describe the processes involved in physical and chemical weathering of soils.
3. Hypothesize how landscapes may respond to changes in geomorphic driving forces (climate, tectonics, human land use).
4. Compare traditional and emerging tools and methods in geomorphology in terms of their use and application.
5. Describe how geomorphology is utilized by other disciplines including ecology, geoarcheology, geo-engineering, watershed management, environmental science, and land-use planning.
6. Utilize quantitative approaches such as algebra, trigonometry, GIS, statistics, and/or calculus concepts to address basic geomorphic questions.
7. Communicate results and arguments related to geomorphology content using digital and field data sets, writing short essays, compiling technical reports, and presenting orally.
8. Write both competently and compellingly in the field of geomorphology utilizing data, observations, and/or literature reviews.

GEOG 3600

Introduction to Geographic Information Systems

Credit hours: 4

Introduces the history, theory, and operation of Geographic Information Systems (GIS). Includes an introduction to GIS data sources, database design, data input, spatial analysis, and map production. Offers valuable preparation for careers in geology, geography, geographic information systems, geomatics, planning, surveying, marketing, environmental technology, biology, engineering, and other related fields. Lab access fee of \$35 for computers applies. Software fee of \$18 applies.

Course Learning Outcomes

1. Describe the major concepts and applications of Geographic Information Systems (GIS);
2. Use GIS software to solve spatial problems
3. Use GIS to address applied problems/research questions.
4. Analyze data using GIS software.
5. Troubleshoot to independently resolve GIS software problems.
6. Create maps that effectively convey data and intended messages.

GEOG 3650

Advanced Geographic Information Systems

Credit hours: 4

Expands on GEOG 3600, Introduction to Geographic Information Systems (GIS), and reviews advanced GIS functions and applications to the sciences. Fundamental topics include spatial analysis, geostatistical analysis, 3-D modeling, and project development and implementation. Lab access fee of \$35 applies. Software fee of \$18 applies.

Course Learning Outcomes

1. Apply modeling and analysis skills in spatial analyst and 3-D analyst extensions;
2. Apply GIS knowledge to spatial problems;
3. Obtain and import into GIS software digital data, including data for use in a research project;
4. Develop and implement a research project using GIS;
5. Describe and explain at an advanced level the theory and application of GIS.
6. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Conduct GIS spatial, geostatistical, and 3-D analysis functions; 2 - Utilize GIS as a problem-solving tool; 3 - Have the confidence and ability to find new techniques and solutions. 2 - Utilize GIS as a problem-solving tool; 3 - Have the confidence and ability to find new techniques and solutions

GEOG 489R

Student Research in Geography

Credit hours: 1 to 4

Provides the opportunity to conduct research under the mentorship of an Earth Science department faculty member. Includes any combination of literature reviews, original research, and/or participation in ongoing departmental projects. Involves students in the methodology of original geographic research. Requires preparation and presentation of oral and/or written reports, typically presented in a public forum. May be repeated for a maximum of 4 credits toward graduation.

Course Learning Outcomes

1. Apply academic theories and knowledge to identify a unique question or problem.
2. Apply appropriate research methods.
3. Analyze data and results from research.
4. Create a professional presentation of research results.

GER 1020

Beginning German II LH

Credit hours: 4

Provides a second-semester introduction to the language and culture of German-speaking countries. Emphasizes listening, speaking, reading, and writing skills along with basic grammar and vocabulary within the cultural context of modern German-speaking societies. Uses an eclectic method of instruction, with extra attention given to oral and written proficiency. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Speak German at an Intermediate Low proficiency level.
2. Show listening comprehension at an Intermediate low proficiency level.
3. Demonstrate reading and writing skills at an Intermediate low proficiency level.
4. Show familiarity with the structure of the language.
5. Demonstrate knowledge and recognition of some of the complexities present in German-speaking society.
6. Demonstrate the ability to interrelate knowledgeably and respectfully within the context of German-speaking cultures.

GER 2010

Intermediate German I LH

Credit hours: 4

Reviews and builds upon the grammar, reading, writing and conversational skills learned in the first year courses. Introduces readings and discussions on the history, culture, and literature of the German speaking world, maintaining a focus on oral proficiency. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken German at an Intermediate mid proficiency level.
2. Demonstrate listening comprehension at an Intermediate low proficiency level.
3. Summarize the main idea in informational and fictional texts that are spoken and written at intermediate Mid proficiency level.
4. Demonstrate knowledge and recognition of some of the complexities present in German-speaking society.
5. Produce aspects of German grammar at intermediate Mid proficiency level.
6. Demonstrate the ability to interrelate knowledgeably and respectfully within the context of German-speaking cultures.

GER 202G

Intermediate German II HH GI

Credit hours: 4

Studies fourth-semester conversational German that is used in daily settings. Includes culture study, pronunciation, reading, and grammar. Emphasizes conversation in real life situations. Uses field trips and guest lecturers. Prepares students to enter the advanced level of German. Completers should be able to converse enough to visit or work in a German speaking country. Lab access fee of \$12 applies.

Course Learning Outcomes

Please see the department for information.

GER 3050

Advanced German LH

Credit hours: 3

Designed for non-native German speakers who have lived in a German speaking country for at least one year. Includes a review of grammar and an introduction to German literature, art, music, and expository writing. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Speak German at the "Intermediate High" to "Advanced Low" level according to the ACTFL proficiency standards.
2. Master a variety of grammatical concepts in German.
3. Comprehend a variety of literary and cultural texts written in German.
4. Describe a variety of cultural topics orally and in writing.
5. Write expository essays with correct grammar and usage.

GIS 2640

Fundamentals of Geographic Information Systems

Credit hours: 3

Introduces the concepts and components of a Geographic Information System (GIS). Includes the essential skills of operating a functional GIS through the use of ArcGIS 10.x software. Explains the operational processes of spatial data acquisition, editing, file geodatabase design, spatial query and display, spatial analysis, map layouts and various visualizations, preliminary application development, and project applications. Describes various GIS data sources. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the value of GIS for governance, commerce, and society
2. Identify sources of quality geospatial data
3. Define raster and vector geoprocessing
4. Describe how GIS is integrated with Geovisualization and remote sensing
5. Produce maps using topography and spatial data and models based on particular themes
6. Describe the implementation and project management principals involved in producing maps

GIS 2800

Geographic Information Systems

Credit hours: 3

Explains the history, theory, and operation of Geographic Information Systems (GIS) in many disciplines. Teaches geospatial data sources, database design, data input, and geospatial data analysis. Prepare typical maps using cartographic production principles and practices. Includes valuable preparation for careers in the geospatial sciences. Uses ArcGIS Pro.

Course Learning Outcomes

1. Describe history, theory, and operation of Geographic Information Systems (GIS) as applicable to many disciplines.
2. Analyze various geospatial data sources.
3. Use standard practices for database design and input.
4. Create maps using cartographic production principles and practices.
5. Recognize various careers in the geospatial sciences.
6. Use GIS software to solve real-world geospatial problems.

GIS 3620

Advanced Geographic Information Systems

Credit hours: 3

Presents Geospatial data and modeling principles and techniques using raster and vector geoprocessing. Teaches Geovisualization and Geospatial information sources, digital terrain modeling, spatial data analysis, and mapping project implementation. Describes concepts of real property related to land registration and information systems and the value of maps for governance, commerce, and research of social and environmental systems regionally, nationally, and globally. Software fee of \$18 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the value of GIS for governance, commerce, and society
2. Identify sources of quality geospatial data
3. Define raster and vector geoprocessing
4. Describe how GIS is integrated with geovisualization and remote sensing
5. Produce maps using topography and spatial data and models based on particular themes
6. Describe the implementation and project management principals involved in producing maps

HIST 1500
World History to 1500 SS

Credit hours: 3

Serves as an introduction to pre-modern world civilization. Surveys cultural, economic, intellectual, and social history up to the year 1500, with special attention to the rise of world religions.

Course Learning Outcomes

Please see the department for information.

HIST 151G
World History from 1500 to the Present SS GI

Credit hours: 3

Serves as an introduction to modern world civilization. Surveys cultural, economic, intellectual and social developments from 1500 to the present. Emphasizes global, comparative, and intercultural issues.

Course Learning Outcomes

Please see the department for information.

HIST 1700

American Civilization AS

Credit hours: 3

Stresses movements and developing institutions that are important for an appreciation of American History from the Pre-Columbian period to the present. Analyzes developing political, economic, and social institutions and their interrelationships with, and impact upon, the geographical features of the land. Includes book reports, oral response, research papers, media presentations and applications to current events.

Course Learning Outcomes

1. Identify the significance of historical events, figures, institutions, and processes in US history from the Pre-Columbian period to the present.
2. Discuss the influence of various social, ethnic, and religious groups and ideologies in US history and their relationship with the federal government.
3. Examine significant topics and sources in US history in class discussions and academic writing using information from primary and secondary sources.
4. Describe the role of historical context in shaping both past and present events in the US.
5. Evaluate the perspectives and biases of primary and secondary sources gathered using library resources.

HIST 2700

US History to 1877 AS

Credit hours: 3

Surveys the origins of the United States from the Pre-Columbian era and early colonization through Reconstruction. Focuses on encounters among indigenous, African and European peoples; gender, race, and Atlantic slavery; the causes and consequences of the American Revolution; the westward expansion of the United States; and the sectional crisis that lead to the American Civil War.

Course Learning Outcomes

1. Demonstrate knowledge of chronology, key terms, themes, patterns, individuals, and turning points in American History to 1877;
2. Differentiate between primary and secondary sources and understand their value in the study of history;
3. Demonstrate the ability to read, understand, and analyze an historical document in an informed manner;
4. Develop critical thinking, writing, and oral communication skills in the content area;
5. Demonstrate an understanding of the different perspectives, interpretations, and methodologies that appear and have been used in the study of American history to 1877.

HIST 2710

US History since 1877 AS

Credit hours: 3

Surveys the making of a modern United States, beginning with the promises and failures of Reconstruction and concluding with contemporary American issues. Emphasizes diverse American experiences at the intersections of race, gender, and class while tracing social, cultural, political and diplomatic developments during this period.

Course Learning Outcomes

1. Demonstrate knowledge of key issues, themes, patterns, events, individuals, and turning points in United States history since 1877.
2. Differentiate between primary and secondary sources and understand their value in the study of history.
3. Demonstrate critical reading, thinking, writing, and public speaking in the content area.
4. Demonstrate an understanding of the different perspectives, historiography, and methodologies that appear and are used in the study of United States history.
5. Recognize how race, ethnicity, class and other cultural differences have affected experiences in the United States since 1877.
6. Understand the political, economic, social, and cultural processes critical to the transformation of the United States since 1877.

HIST 3010

The Historians Craft WE

Credit hours: 3

Develops methodological skills to prepare students for Junior/Senior-level coursework. Teaches historical research skills, including information and library literacy skills. Refines analytical writing skills using primary and secondary sources. Introduces debates in the field of history.

Course Learning Outcomes

1. Appraise the methodological, historiographical, and philosophical issues within the discipline of history.
2. Develop critical research and analysis skills for primary and secondary sources.
3. Formulate their own historical interpretations in accordance with professional standards.
4. Interpret historiography and its importance in the field of history.
5. Conduct historical research using current techniques and technology in libraries, archives, collections, and via the internet.
6. Compose a variety of discipline-appropriate texts for multiple situations and audiences.

HIST 3260

History of Utah

Credit hours: 3

Surveys the history of Utah and its peoples from prehistoric times to the present, covering cultural, social, economic, political, and religious topics. Places Utah history within regional and national contexts. Can be used for teacher education and re-certification requirements.

Course Learning Outcomes

1. Analyze major interpretive issues, questions, topics, and theories in the study of Utah History;
2. Explain how social, economic, political, and cultural forces have affected the development of Utah;
3. Interpret Utah History using historical resources and methodologies from different disciplines;
4. Analyze the impact of diverse cultures in the development of the state of Utah.

HIST 4250

Teaching History in the Secondary Curriculum

Credit hours: 3

For students majoring in secondary education. Examines teaching methodology as related to teaching history and learning teaching strategies to prepare students for secondary education certification. Utilizes various group projects, classroom exercises, and an actual teaching project at the end of the semester. Evaluated by participation, teacher evaluation, written evaluation, exams, personal journal, and a final teaching project.

Course Learning Outcomes

Please see the department for information.

HIST 4320

History of Scientific Thought

Credit hours: 3

Explores development of Western scientific context from 6th century B.C. Greece to modern times. Emphasizes how our understanding of nature is influenced by a scientific approach. Examines technological impact of science on our lives.

Course Learning Outcomes

1. Discuss the historical development of the scientific process.
2. Evaluate the impact of science and technology in history.
3. Analyze the major ideas, concepts, and processes associated with scientific thought.
4. Assess primary and secondary sources in scientific thought and history.

HIST 4980

Senior Research Thesis Research Component WE

Credit hours: 3

First half of the capstone experience for Majors. Requires students to work with a faculty member in a directed and extensive research and writing project. Topics vary according to thesis director. Honors students should consult Honors Program for thesis options.

Course Learning Outcomes

1. Explore research using a number of primary and secondary sources in libraries, archives, and manuscript collections.
2. Develop a sophisticated analytical historical argument that supports a solid thesis statement.
3. Apply the methodologies used in current historical research.
4. Interpret the historiographical background of a topic.
5. Compose a complete draft of research paper.

HIST 4990

Senior Research Thesis Writing Component

Credit hours: 3

Second half of the required capstone experience for History Majors. Student continues to work on and complete the extensive research, analysis, and writing project developed in Hist 4980 under faculty direction. Honors students should consult Honors Program for thesis options.

Course Learning Outcomes

1. Competently conduct original research in libraries, archives, and manuscript collections.
2. Produce a substantial, argumentative research paper of high quality on an historical topic, using original research from a variety of sources and engaging the reader through the use of a strong thesis and highly developed historical arguments.

HLSC 1200

First Aid

Credit hours: 3

Provides first aid and emergency care training as well as instruction with Automated External Defibrillators. Structured to meet National Safety Council First Aid requirements with successful completers being certified in First Aid and CPR. Includes lectures, hands-on experience with mannequins, audiovisuals, discussions, and field trips. Course lab fee of \$15 applies.

Course Learning Outcomes

1. Describe basic emergency care/CPR
2. Demonstrate basic emergency care/CPR
3. Describe the signs and action steps for severe airway obstruction in the responsive and unresponsive victim
4. Describe the links in the Chain of Survival
5. Describe the signs & symptoms of cardiac arrest, choking, stroke and heart attack
6. Describe how to properly respond to school or workplace shooting situations

HLSC 1300

Medical Terminology I

Credit hours: 3

Helps students read and understand the language of medical terminology and functional anatomical structures. Stresses terminology usage and accuracy. Studies elements, abbreviations, spelling, pronunciation, and logic of medical terminology. Includes lectures and audiovisual presentations. Canvas Course Mats \$86/Pearson applies.

Course Learning Outcomes

1. Analyze the component parts of medical terminology.
2. Relate the terminology to the names, locations, and functions of the major organs of the body systems.
3. Identify the basic structure and function of the human body at the cellular, tissue, organ, and system levels.
4. Describe basic anatomy and physiology using correct medical terminology.

HLSC 2400

Concepts of Stress Management

Credit hours: 3

For those interested in developing skills and techniques necessary to work with clients in stress reduction programs. Includes identifying, managing, and eliminating stress in individuals, families, and communities. Examines effects of stress on the immune, endocrine, and nervous systems and the relationship to disease. Teaches stress reduction application and methods in wellness and health care settings. Canvas Course Mats \$49/Cengage applies.

Course Learning Outcomes

1. Define the construct of stress.
2. Identify the sources of stress or stressors and the implications on wellness and health from those sources
3. Determine personal reactions to stress.
4. Distinguish between emotional-response and behavioral-response with regards to coping skills.
5. Describe the effects of stress on physical, psychological, emotional, and social individual well-being.
6. Demonstrate a variety of stress management techniques and their applications.
7. Discuss the processes required to plan, implement, and evaluate a wellness program, especially focused on stress and anxiety.
8. Explain how stress is assessed through various instruments.
9. Analyze journal articles focused on stress-related topics.

HLSC 2450

Health Coaching

Credit hours: 3

Provides an evidence-based introduction to the role of a health coach as an educator and motivator for change. Connects theory to behavior change and understanding the three main core coaching skills to help necessitate change in clients. Examines the communication skills necessary for health coaching and motivational interviewing.

Course Learning Outcomes

1. Define the role of a health and wellness coach as part of the healthcare system.
2. Describe the coaching process.
3. Identify essential skills for a coaching-client relationship including: mindful listening, open-ended inquiry, perceptive reflections, establishing trust and building rapport.
4. Analyze how strong coaching relationships relate to self-determination theory.
5. Discuss the choices, frameworks, and practices that support masterful coaching.

HLSC 2550

Health Coaching II

Credit hours: 3

Applies evidence-based learning as a continuance of Health Coaching I. Explores different communication styles and how they are used in motivational coaching. Focuses on the utilization of appropriate assessment tools, SMART goals, readiness to change models, positive psychology, generative moments, and how to create a coaching session. Practices the use of health coaching as a guide to support and motivate clients to make lasting lifestyle changes.

Course Learning Outcomes

1. Describe the process of designing a coaching agreement with the client.
2. Assess client needs by utilizing appropriate assessments to identify needs or barriers.
3. Demonstrate health coaching skills of positive psychology, non-violent communication (NVC), appreciative inquiry (AI), generative movements, and motivational interviewing (MI).
4. Describe models related to readiness to change.
5. Outline the process for conducting coaching sessions following an evidence-based coaching model.

HLSC 2600

Drugs Behavior and Society SS

Credit hours: 3

For students interested in drug abuse prevention. Studies substance mis-use and abuse. Discusses addictive behaviors, dependence, and treatment modalities. Examines common substances of abuse and dependence and effects upon individuals and society. Investigates the use of psychotherapeutic drugs in the treatment of mental illness. Promotes awareness of personal and social decisions concerning drugs, behaviors, and habits.

Course Learning Outcomes

1. Describe the history of drug use and abuse in the U.S.
2. Identify the main categories of illicit and over the counter drugs and their physiological effects
3. Describe behavioral theories of drug use and addictions
4. Discuss drug prevention programs and their strengths and weaknesses
5. Discuss current laws and proposed legislation concerning various drugs
6. Examine the need for law in an orderly society
7. Describe how drug dependence occurs, the treatment necessary to break the dependence, and the reasons it could have been prevented
8. Explain risk factors contributing to drug use and why individuals choose to continue using drugs

HLSC 2750

Supervised Coaching

Credit hours: 1

Provides health coaching sessions with clients in a monitored teaching environment. Critically evaluates experiences and facilitates change, in a low stakes environment. May be Graded Credit/No Credit.

Course Learning Outcomes

1. Develop client assessments to use in a coaching setting.
2. Practice health coaching through one-on-one coaching sessions.
3. Implement coaching mentor feedback into client practice.
4. Analyze coaching sessions for client progress.

HLSC 2800

Human Sexuality SS

Credit hours: 3

Interdisciplinary course in human sexuality, exploring topics in biology, health, psychology, and sociology. Introduces basic concepts of human sexuality, including anatomy, reproduction, and sexual response across the life-cycle. Studies gender roles, sexual orientation, dysfunction, and sexually transmitted disease. Examines sexual behavior from the perspective of ethics, religion, the law, and education. Students assess their sexual attitudes and should be able to make responsible sexuality decisions.

Course Learning Outcomes

1. Describe human sexuality as it relates to biology, psychology, health and sociology.
2. Discuss human sexuality from historical and multicultural perspectives.
3. Define major theoretical perspectives influencing the scientific study of human sexuality.
4. Describe human sexual anatomy and physiology, arousal and response, conception and contraception and sexually transmitted diseases.
5. Explain the issues related to sexual lifestyles, orientation, dysfunction, and gender roles.
6. Interpret sexual behavior in relation to ethics, religion, the law and education.

HLSC 282R

Health Coaching Experience

Credit hours: 1 to 6

Provides practical application of the skills learned in the health coaching courses, by allowing students to meet one-on-one with clients. Helps students coach others to create lifestyle change programs. May be repeated for a maximum of 6 credits toward graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Analyze wellness assessments obtained from health coaching clients.
2. Develop health coaching plans with and for clients.
3. Apply health coaching skills during one-on-one coaching sessions.
4. Make appropriate recommendations for clients based on their specific needs.
5. Analyze coaching sessions for client progress.
6. Implement feedback by coaching mentors to improve overall coaching practice.

HLSC 2900

Health Education for Elementary Teachers

Credit hours: 2

For Elementary Education majors. Emphasizes the role of the teacher as a health educator and team member in providing a healthy school environment. Studies the basic Utah health core curriculum. Develops learning activities applicable to the health needs of the elementary school student. Canvas Course Mats of \$70/McGraw applies.

Course Learning Outcomes

1. Describe comprehensive school health education.
2. Describe the basic health core curriculum for the State of Utah.
3. Formulate learning activities applicable to the health needs of the elementary school student.
4. Use health curriculum that can be integrated into basic general curriculum, i.e., reading, writing and math.
5. Describe educational principles influencing and modifying the health behaviors of elementary school students.
6. Use health curriculum helping elementary school students develop decision-making skills, coping skills, and positive self- esteem.
7. Describe the contributions a teacher can make to the healthy environment of the school.
8. Identify health and safety problems relative to elementary school students.
9. Identify emergency situations in the school occasioned by sudden illness or accident.

HLSC 3050

Healthcare Quality and Safety

Credit hours: 3

Develops a foundation of skills and techniques for understanding quality and safety. Analyzes current issues of improving clinical and service quality in healthcare organizations.

Course Learning Outcomes

1. Assess quality methods in the healthcare setting
2. Identify techniques for improving patient safety
3. Distinguish between clinical and customer service quality
4. Analyze adverse clinical events in a healthcare setting and mitigation strategies

HLSC 3230

Professional Development

Credit hours: 3

Provides students with preparation for an internship, job, or graduate school in public health, healthcare administration, or school health.

Course Learning Outcomes

1. Identify lead health education agencies and professional organizations.
2. Explain the need to strategize short and long-term professional goals, including certifications and graduate school.
3. Apply for health education internships/job postings.
4. Apply principles of effective communication to develop employment documents, interview skills, and a professional portfolio.

HLSC 3400

Human Diseases

Credit hours: 3

Introduces the study of human disease including general principles of disease and major diseases of body systems and organs. Applies genetic, behavioral and environmental issues to the study of human diseases.

Course Learning Outcomes

1. Analyze the chain of infection and how it related to communicable disease.
2. Identify the differences between disease transmission methods.
3. Distinguish how disease are classified and recognize common significant disease etiology and prevalence.
4. Create educational materials to teach common public health diseases and concerns.
5. Assess major chronic diseases and their related risk and protective factors.
6. Differentiate different systems of the body and common biological breakdowns causing disease.
7. Integrate common disease terminology into the major chronic and infectious diseases.

HLSC 4100

Health Education Curriculum for Secondary Teachers

Credit hours: 3

For secondary education majors. Emphasizes the role of the teacher as a health educator and team member in providing a healthy school environment. Examines comprehensive school health education and studies the basic Utah health core curriculum for secondary education. Develops learning activities applicable to the health needs of secondary education students. Course fee of \$10 for materials applies.

Course Learning Outcomes

1. Describe comprehensive school health education
2. Implement the basic health core curriculum for the State of Utah
3. Formulate learning activities applicable to the health needs of secondary education students
4. Describe education principles influencing and modifying the health behavior of secondary education students
5. Utilize health curriculum helping secondary school students develop life-long decision making skills, coping skills and positive self-esteem
6. Identify the contributions a teacher can make to the health environment of the school
7. Assess the need of individuals to be responsible for their own health

HLSC 4200

Health Education Teaching Methods WE

Credit hours: 3

For secondary education school health majors. Examines teaching methods, materials and techniques. Studies secondary education health curriculum, program planning, development, implementation, and evaluation. Helps students develop lesson plans and present them in secondary education settings.

Course Learning Outcomes

1. Plan for school health education instruction.
2. Select appropriate teaching methods through a systematic approach.
3. Develop measurable learning goals and objectives.
4. Conduct evaluative processes in the classroom.
5. Identify methods of intervention.
6. Use media and common audiovisual equipment.
7. Plan for the special needs of target population.
8. Compose a lesson plan based on the UVU School of Education and EDTPA guidelines.

HLSC 4250

Health Organization and Policy WE

Credit hours: 3

Focuses on U.S. health policy and policy analysis. Describes the basic machinery of policymaking and legal processes that underpin the individual health care and public health systems. Analyzes the fundamental problems and contemporary issues in health policy and teaches students how to properly develop and analyze health policy.

Course Learning Outcomes

1. Analyze the organization, financing, and performance of the U.S. healthcare delivery system.
2. Analyze differences between the U.S. healthcare system and major global models of healthcare organization and financing.
3. Evaluate domestic and global system performance outcomes with standardized measurements.
4. Analyze policy impact and management approaches that aim to promote health, prevent disease, and improve health services delivery.
5. Explain the impact of the various determinants of health upon the distribution of health and disease.
6. Compose a policy brief directed at improving a significant health threat in the community.

HLSC 4330

Healthcare financial management

Credit hours: 3

Introduces students to the specifics of healthcare financial management including healthcare systems and payment models. Develops students' understanding of cost, quality, and access as it relates to the healthcare world.

Course Learning Outcomes

1. Identify key components of healthcare financial systems
2. Analyze differences in healthcare payment models
3. Design a functional healthcare payment system based on models
4. Analyze advanced healthcare financial management in a project-based setting

HLSC 4500

Healthcare Administration

Credit hours: 3

Gives individuals a working and practical look at numerous aspects of healthcare administration and management. Increases knowledge of the foundations of healthcare administration including the importance of culture, communication, and diversity as it relates to healthcare.

Course Learning Outcomes

1. Analyze healthcare organization and system structures.
2. Identify differences in healthcare payment models.
3. Evaluate management strategies in a healthcare setting.
4. Identify methods of behavior change in healthcare.

HLSC 4560

Introduction to Healthcare Systems

Credit hours: 3

Examines the history, structure, operation, function, major components, and direction of healthcare systems. Highlights national systems and explores how systems across the U.S. are addressing healthcare issues. Assesses operational components such as physician issues, billing, and common terminology. Explores global models of healthcare.

Course Learning Outcomes

1. Assess current healthcare trends and the impact of these trends.
2. Compare the structure of various national and global healthcare systems.
3. Evaluate how government regulations influence healthcare systems.
4. Analyze the operational and financial components of the U.S. healthcare system.
5. Assess physician governance, recruitment, and payment.
6. Evaluate the impact of the billing process within the healthcare system.

HLSC 4640

Population Health and Strategic Management

Credit hours: 3

Examines the determinants of population health, outcomes in a community, payment models, and strategies to improve management of healthcare resources. Highlights the importance of quality improvement, health insurance (commercial and government), concepts of risk in insurance, utilization management, patient engagement, accountable care organizations, and social determinants of health. Uses basic data analysis to apply course concepts.

Course Learning Outcomes

1. Evaluate social determinants and their impact on population health.
2. Explore the impact of population health outcomes upon a community.
3. Analyze aspects of quality improvement programs including waste elimination.
4. Explain commercial and governmental health insurance and how they influence health.
5. Define the function of an accountable care organization.
6. Assess the impact of patient engagement.
7. Develop a strategic management plan based upon an analysis of quality improvement data.

HLSC 4780

Strategic Planning and Operations Management

Credit hours: 3

Introduces strategic planning and operations management in relation to current and future topics and trends in healthcare. Examines historical and current quality improvement models and applies them to current industry topics. Discusses the relationship between industry and healthcare.

Course Learning Outcomes

1. Assess current and future issues and trends faced by healthcare administrators.
2. Depict barriers to consumers, providers, and administrators.
3. Explain historical and current quality improvement models.
4. Implement strategic planning into operations management.
5. Analyze data using quality improvement methods and basic statistics.

HLSC 480R

Healthcare Administration Internship

Credit hours: 2

Provides field experience and enhanced knowledge in healthcare administration, under the preceptorship of an individual qualified by education and/or experience. May be repeated for 6 credits towards graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Apply advanced healthcare administration concepts and coursework into practice.
2. Analyze the roles of healthcare administrators in different healthcare settings.
3. Identify effective means of communication in a healthcare setting.
4. Describe key concepts from healthcare administration in a variety of applied settings.

HLSC 4840

Healthcare Law WE

Credit hours: 3

Explores the impact of laws, regulations, and social policies on the management and delivery of healthcare. Includes provider liability, managed healthcare contracts, HIV-related concerns, assisted suicide, and other issues.

Course Learning Outcomes

1. Analyze legal and ethical issues facing healthcare managers today
2. Apply legal and ethical principles to practical management problems frequently found in the healthcare setting
3. Analyze the differences between ethical principles and legal principles in the healthcare environment
4. Develop critical thinking skills in the context of the synopsis and analysis of health law cases involving a variety of issues
5. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences

HLTH 1100

Personal Health and Wellness TE

Credit hours: 2

Examines the challenges to individual and community health, and encourages students to become actively engaged in preserving, protecting, and promoting health at all levels. Develops a greater appreciation for bodies and understanding of requirements to maintain or achieve good physical, mental, emotional, social, and spiritual health. Includes lecture, discussion groups, guest lecturers, media, and role-playing. Canvas Course Mats \$42/Pearson applies.

Course Learning Outcomes

1. Assess personal behavior in various health dimensions with a focus on the prevention of disease and injury across the lifespan.
2. Identify the components of psychological health and steps to enhance psychological well-being.
3. Identify stress-management and stress reduction strategies.
4. Identify characteristics of successful relationships and how to maintain healthy relationships.
5. Identify various methods of contraception.
6. Identify the process of alcohol, tobacco and other drug addiction and the treatment and recovery from addiction.
7. Identify the six classes of nutrients and the role of physical activity as a strategy for wellness and maintaining weight.
8. Review types of cancers and heart disease.
9. Illustrate the function of the immune system and the process of infection.

HLTH 3200

Principles of Community Health

Credit hours: 3

For students in health and behavioral sciences who wish to work in community health settings. Presents the role and function of various community health services and agencies and how they interface. Examines health care models and agencies, health care reform, health objectives for the nation, and health planning and promotion. Explores life style risk reduction, environmental issues, ethical health issues, and other appropriate topics.

Course Learning Outcomes

1. Describe political, economic and social factors influencing the organization and delivery of community health services.
2. Describe the use of epidemiology in community health.
3. Identify the major health problems and influences upon health in the nation, as well as efforts to deal with these problems.
4. Explain the major health problems of special groups and populations and the programs designed to help them improve their health and wellbeing.
5. Describe health-related ecological and environmental challenges affecting the nation and the world.
6. Explain how a community can examine its own health services, problems and resources.

HLTH 3220

Foundations of Health Education

Credit hours: 3

Examines the history and role of health education in today's society. Covers the philosophical principles and models utilized in the delivery of health education. Analyzes types of health information available in health journals and on the internet. Introduces the major health associations and describes the competencies necessary for certification as a Health Education Specialist.

Course Learning Outcomes

1. Define Health Education as a discipline and a profession.
2. Name the primary goals of Health Education.
3. Identify variations in Health Education according to setting.
4. Differentiate among various behavioral change theories and models.
5. Describe the major responsibilities of the Health Educator in practice of Health Education.
6. Describe the major models utilized in the Health Education profession.
7. Identify factors that influence an individual's acceptance of health information and services.
8. Identify behaviors that tend to promote or compromise health.
9. Determine the range of health information requisite to a given program of instruction.

HLTH 3260

Health Behavior Theory and Practice

Credit hours: 3

Introduces the contribution of various academic fields to the development of historical and contemporary health and behavior change theories and models. Discusses historical contributions of various behaviorists. Examines the role of behaviorist, cognitive, humanistic, and social psychology approaches to behavior change. Applies constructs from individual, social/environmental, and multilevel health theories. Contrasts attractions and critiques of various models and theories. Discusses anthropologic, social normative, political, and communication approaches to behavior change. Applies health behavior theory to assessment, intervention, and evaluation strategies for personal health behavior change.

Course Learning Outcomes

1. Analyze personal health behavior using theoretical constructs and focus on improving aspects of personal health.
2. Practice using the Health Belief Model, Theory of Planned Behavior, and Transtheoretical Model for intervention planning.
3. Apply concepts related to social/environmental and multi-level models and theories.
4. Design assessment, implementation, and evaluation strategies for public health intervention planning.
5. Justify the effectiveness of existing approaches to health behavior change related to social norms, cultural competency, policy, and communication campaigns.

HLTH 3450

Public Health and the Environment

Credit hours: 3

Examines the relationship of people to their environment as well as public health environmental issues. Develops an understanding of the causes of those issues, and possible future approaches to control major environmental public health problems. Includes environmental epidemiology, public health policy and regulation, zoonotic and vector-borne diseases, toxic materials, radiation, water quality, air quality, food safety, solid and liquid wastes, occupational health, injuries, and emerging global environmental public health problems.

Course Learning Outcomes

1. Analyze the major issues and concepts in the field of environmental public health
2. Examine the transportation and spread of environmental threats
3. Identify vectors promoting the transfer of threats from the environment to humans
4. Describe how these agents interact with biological systems, and the mechanisms by which they exert adverse health effects
5. Explain how factors, such as community perceptions, public health law, traditions, socioeconomic conditions, politics and interpersonal communications, may influence the practice of environmental health
6. Examine the basic responsibilities, programs and problems addressed by the major agencies and organizations involved in environmental health protection
7. Synthesize data in the field of environmental health

HLTH 3750

Biostatistics for Public Health

Credit hours: 3

Introduces the use of statistics for research purposes in health-related fields. Teaches principles of probability and statistical inference. Covers descriptive and inferential statistics, including measures of central tendency, variability, correlation, and various inferential techniques such as t-tests, analysis of variance, regression, post-hoc tests, and non-parametric statistical tests.

Course Learning Outcomes

1. Explain what biostatistics is and its application in health-related fields.
2. Distinguish between levels of data measurement.
3. Produce the appropriate tables, figures, and graphs for visualizing categorical and quantitative data.
4. Interpret calculated measures of central location and variability.
5. Apply the basic principles of probability and statistical inference related to biostatistics.
6. Implement the steps of hypothesis testing.
7. Design survey questions appropriate for answering a given research question.
8. Prepare data for analysis using appropriate software.
9. Execute analyses of a dataset using statistical software.

HLTH 3800

Epidemiology

Credit hours: 3

Introduces epidemiologic principles and methods. Examines the historical and theoretical bases of epidemiology; statistical methods; distribution of disease over person, place, and time; research methods utilized in epidemiology; and the application of epidemiology to the prevention of disease and the promotion of health.

Course Learning Outcomes

1. Identify the common terms of epidemiology as well as the concepts and principles that are the basis of epidemiological practice.
2. Illustrate the epidemiological approach to problem solving in the health sciences.
3. Illustrate the role of epidemiology in disease prevention and promotion.
4. Apply epidemiological methods to specific cases.
5. Discuss the scientific method as it applies to epidemiological research design.
6. Identify the characteristics and objectives of disease surveillance.
7. Demonstrate critical thinking and problem solving skills.

HLTH 4140

Assessment and Program Development WE

Credit hours: 3

Intended for Public Health majors. Covers building a rationale, gaining support of stakeholders, selecting an appropriate model or theory, conducting a needs assessment, developing goals and objectives, and determining appropriate public health education strategies. Helps students develop the skills to successfully begin the program planning process.

Course Learning Outcomes

1. Identify models commonly used in planning health promotion programs;
2. Conduct a needs assessment within a given population;
3. Investigate evidence based interventions;
4. Select an appropriate behavior change theory to drive the health intervention;
5. Create an intervention for a health promotion program;
6. Compose a health education/health promotion program plan including a rationale, planning model, needs assessment, goals, and measurable objectives.

HLTH 4160

Program Implementation and Evaluation WE

Credit hours: 3

Intended for Public Health majors. Builds upon HLTH 4140 and develops the knowledge, skills, and abilities to conduct health program implementation and evaluation. Includes a systematic approach to the implementation and evaluation of health education programs.

Course Learning Outcomes

1. Identify strategies, phases, and concerns for program implementation
2. Develop a health promotion budget
3. Explain the marketing mix and the relationship between a needs assessment and a marketing program
4. Carry out a plan for implementing a health education program
5. Monitor the delivery of an effective health education program through appropriate evaluation methods
6. Develop a report on the impact and outcome of an effective and efficient health program
7. Compose a health education/health promotion program plan including intervention strategies, a budget and timeline, an implementation plan, and an evaluation report

HLTH 4300

Health Ethics WE

Credit hours: 3

Applies ethics theories and principles to healthcare ethics. Explores historical and contemporary topics related to autonomy, beneficence, non-maleficence, justice, and confidentiality. Explains the Belmont Report, HIPAA rules, and the role and function of Institutional Review Boards. Examines various healthcare issues related to ethics such as: healthcare allocation, costs, maternal-fetal conflict, death and dying, patient rights, informed consent, biomedical research, and organ transplant.

Course Learning Outcomes

1. Identify core values and develop a personal code of ethics.
2. Discuss ethical dilemmas, paradigms, and resolution principles.
3. Apply ethics theories such as utilitarianism, deontology, natural law, and virtue ethics.
4. Explain ethical rules and regulations surrounding principles of autonomy, informed consent, beneficence, non-maleficence, justice, truthfulness, and confidentiality.
5. Discuss ethical conflicts surrounding health care choices, decision making, and administration.
6. Describe the historical context behind key health ethics developments such as the Nuremberg Code, Belmont Report, Institutional Review Boards, and ethics committees.
7. Explain guidelines relating to denunciations, whistle-blowing, and personal conscience in professional health ethics.
8. Discuss ethical issues relating to death and dying, distribution, maternal-fetal conflict, new methods of reproduction, organ transplant, testing and screening, and biomedical research.
9. Compose a variety of disciplinary-appropriate texts.

HLTH 440G

Health and Diversity GI

Credit hours: 3

Provides students with a specific set of skills and knowledge in cultural competence. Focuses on understanding the public health system, identifying one's own cultural biases, understanding biases regarding one's own cultural identity, and developing culturally competent approaches and tools. Enables students to be more effective public health professionals whether they work with diverse populations within the United States or in international settings.

Course Learning Outcomes

1. Analyze one's own cultural identity, individual heritage, and personal and cultural biases
2. Identify historical events underlying culture, health behaviors, and health inequities of various groups
3. Identify appropriate terminology and communication for interacting with persons from various demographic backgrounds
4. Explain how demographic factors such as race, ethnicity, gender, age, sexual orientation, and disability relate to health disparities
5. Discuss unique needs of populations such as veterans, refugees, and those affected by homelessness and addiction
6. Identify how the needs of diverse populations relate to HHS CLAS and Joint Commission standards

HLTH 4950

Senior Capstone

Credit hours: 1

Assesses both content knowledge and skills developed during the course of the Public Health program. Provides students an opportunity to reflect on their learning and demonstrate the program outcomes through the development and presentation of a professional electronic portfolio, and the completion of a cumulative post-test. For seniors in their last semester.

Course Learning Outcomes

1. Apply knowledge and skills acquired throughout the program of study
2. Compile evidence of academic performance
3. Compile evidence of personal and professional accomplishments
4. Complete a post-test of Community Health program content with a score of 70% or higher

HM 1010

Introduction to Hospitality Industry

Credit hours: 3

Designed for hospitality management majors and as elective credit for other business majors. Provides a basic understanding of the lodging and food service industry by tracing the industry's growth and development. Analyzes management's functions and responsibilities in such areas as administration, organization, communications, accounting, marketing, and human relations. Examines industry opportunities and future trends. Includes lecture, field trips, guest speakers, film, and tapes. Completers should have a knowledge of career opportunities and basic hospitality management principles. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

Please see the department for information.

HM 1180

Food and Beverage Management

Credit hours: 3

Designed for hospitality management majors and as elective credit for other business majors. Studies management principles of menu planning, purchasing, storage, food and beverage production, service, and sanitation. Includes lecture, case studies, guest speakers, field trip and project. Completers should understand the basic structure of a hospitality unit and how management principles relate to a restaurant. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

Please see the department for information.

HM 2500

Statistics for the Hospitality Industry

Credit hours: 3

Provides a step-by-step approach to gathering, analyzing, and using numeric market, operating, and financial data in the hospitality management industry. Hospitality/industry scenarios and hands-on exercises and labs are used to build student skills in data analysis as a platform to practice data-gathering and analysis for projects in business planning, market research, revenue management, or designing customer- employee satisfaction surveys. Canvas Course Mats \$78/Wiley applies

Course Learning Outcomes

1. Identify applications in which statistical analysis will improve firm performance in the hospitality industry setting.
2. Apply the appropriate graph for a given data set in the context of hospitality industry.
3. Gather hospitality industry data using appropriate data collection methods.
4. Apply descriptive statistical tools to hospitality industry data using median, mean, and standard deviation.
5. Apply commercially available analytical tools (such as Excel's display and graphs functions, pivot tables, descriptive statistics, regression analysis, and optimal problem solutions).

HM 281R

Cooperative Work Experience

Credit hours: 2 to 9

Provides opportunities to apply classroom theory on the job. Students work as paid employees in a job that relates to their careers while enrolled at the College. Credit is determined by the number of hours a student works during the semester. Completers meet individually set goals. A total of six credits may be applied toward graduation with a diploma or AAS degree and three credits toward Certificate programs. May be graded credit/no credit.

Course Learning Outcomes

1. Obtain a meaningful job in a marketing industry-related area;
2. Establish skills in setting individual work objectives;
3. Improve human relations skills;
4. Enhance written communication skills through weekly reports;
5. Develop student's ability to establish social skills in the work environment;
6. Develop student's understanding of proper work habits and work ethics;
7. Develop student's ability to evaluate their own performance objectively and take corrective action where needed.

HM 3000

Hospitality Industry Foundations

Credit hours: 3

Focuses on lodging, food, and event planning operations in the hospitality industry. Identifies career tracks offered in the hospitality industry and assists students to make academic and career decisions. Delivers content through lectures, guest speakers, site visits (both class and individual), and group projects to facilitate student learning.

Course Learning Outcomes

1. Describe the social, economic and environmental context within which the hospitality industry operates
2. Identify the structure, nature and operating characteristics of the different sectors of the hospitality industry, including food service, lodging and tourism
3. Analyze the interrelationships among marketing, finance, and human resource management in the context of hospitality management
4. Identify the principal responsibilities of managers in the hospitality industry, including guest relations, employee management and facility management
5. Create a career path which suits individual abilities, lifestyle goals, and career interests

HM 3020

Hospitality Managerial Accounting I

Credit hours: 3

Presents managerial accounting concepts and explains how these concepts apply to specific operations within the hospitality industry. Utilizes lectures, demonstrations, and case studies in class. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Use spreadsheet software to perform various types of real world analysis.
2. Perform financial statement preparation, review, interpretation, and evaluation.
3. Perform various types of cost identification, classification, standardization, measurement, allocation, evaluation, and forecasts.
4. Use inventory to accurately calculate cost of goods sold.
5. Use industry standard techniques to determine standard costs on a unit and cumulative basis.
6. Implement effective expense management, revenue optimization, and profit maximization strategies.

HM 3030

Hospitality Managerial Accounting II

Credit hours: 3

Integrates principles of operations and managerial accounting as they relate to the hospitality industry. Emphasizes developing competencies in analyzing real world hospitality industry scenarios using spreadsheet software. Includes cost volume profit analysis and applications, forecasting, production controls, budget creation and uses, flexible budgets, depreciation, taxation, time value of money basics, capital budgeting, evaluating and financing investments, and cost benefit analysis.

Course Learning Outcomes

1. Interpret spreadsheet software to perform various types of real world analysis.
2. Perform cost volume profit analysis.
3. Forecast revenues, related volumes, production quantities, expenses, profit and cash flows.
4. Create an operations budget.
5. Use flexible budgeting principles to evaluate performance.
6. Describe how depreciation and taxes are calculated.
7. Calculate time value of money principles to perform capital budgeting.

HM 3100

Hospitality Law

Credit hours: 3

Teaches rights and responsibilities that the law grants to or imposes upon a hotelkeeper, and illustrates the possible consequences of failure to satisfy legal obligations. Explains the issues surrounding the need for individualized security programs; examines a wide variety of security and safety equipment and procedures, and discusses guests safety. Presents a systematic approach to the legal issues affecting human resource management. Includes lecture, case studies, videos, and site visits. May be delivered online and/or hybrid. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Describe the basic scope and implications of major employment laws focusing on the effect of the Americans with Disabilities Act on employment and employment-related practices.
2. Describe the process and possible outcomes of the collective bargaining process.
3. Discuss legal concerns in providing safe and secure accommodations for guests.
4. State the various methods of security staffing, noting the potential strengths and weaknesses of each method.
5. Identify the functions of a wide variety of security equipment, including physical security systems, surveillance systems, communications systems, alarm systems, and guestroom security equipment such as locks.
6. Contribute to the development of an emergency management program that deals with bombs and bomb threats, fires, hurricanes, tornadoes, floods, earthquakes, blackouts, robberies, medical emergencies, and terrorism.
7. Describe the development of rules regarding the rights and liabilities of innkeepers under the common law system.
8. Identify the steps a hotel must take to limit its liability for loss of guest valuables.
9. Identify OSHA's major functions.

HM 3150

Hospitality Finance

Credit hours: 3

Presents the general conceptual framework for understanding and applying techniques of value creation for a hospitality firm. Includes risk and value, timing and value of cash flows, valuation and required rates of return, capital expenditure analysis, project valuation criteria, capital structure management, and financial markets. Introduces financial topics and practices application techniques. Includes lecture, demonstration, case studies, and guest speakers. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Interpret spreadsheet software to perform various types of real world analysis.
2. Perform cost volume profit analysis.
3. Forecast revenues, related volumes, production quantities, expenses, profit and cash flows.
4. Create an operations budget.
5. Use flexible budgeting principles to evaluate performance.

HM 3210

Event Venue and Convention Management

Credit hours: 3

Analyzes and explores the conventions and meetings market, event venue management, and the corresponding relationship with convention and visitors bureaus. Covers various procedures in site selection, site layout and logistics, operations, negotiations and contracts, food and beverage service, and convention sales.

Course Learning Outcomes

1. Summarize the history, scope, and importance of the meetings and convention industry, emphasizing its economic impact.
2. Organize conventions and events.
3. Prepare a business plan to be used by an independent contractor in the convention and event industry.
4. Provide quality customer service and product management to the client.
5. Coordinate the use of sales tools appropriate to the market mix of a property.
6. Develop a marketing plan for convention and group business that includes research, planning, execution, and measurement to secure, service and satisfy the best possible business mix.
7. Determine appropriate service, logistics, and menus for food and beverage functions and special events.
8. Anticipate a meeting planner's requirements for meeting facilities and the planning and management of a meeting or catered event.

HM 3400

Hotel Industry Analytics

Credit hours: 2

Familiarizes students with key hotel analytics, such as, foundational hotel industry dynamics, industry standard key performance indicators (KPIs) and their calculation, industry standard property level reporting, and various other industry standard performance reports. Prepares students to earn the Certification in Hotel Industry Analytics (CHIA).

Course Learning Outcomes

1. Describe the structure of the hotel industry
2. Classify hotels using various geographic and non-geographic categories
3. Identify standard hotel industry benchmarks and explain how they are used to evaluate performance
4. Interpret industry data relating to hotel properties and competitors
5. Calculate various hotel industry key performance indicators (KPIs)
6. Analyze hotel industry standard reports to make proposals for changes in strategy
7. Identify the data needed hotel industry reports to accurately measure and communicate hotel and industry performance

HM 3710

Marketing of Hospitality Services

Credit hours: 3

Provides basic knowledge and practical experience which will enable students to develop strategic marketing plans for hotel/motel properties. Focuses on practical sales techniques, proven approaches to selling to targeted markets, and advertising's role in sales. Includes lecture, role play, case studies, simulations and projects. Lab access fee of \$13 for computers applies. Canvas Course Mats \$29/Wiley applies.

Course Learning Outcomes

1. Develop a marketing study of hospitality unit.
2. Describe sales and advertising techniques.
3. Develop hotel/motel marketing strategies and techniques.
4. Develop target market platforms for hotel industries.

HM 4200

Event Planning

Credit hours: 3

Introduces the event industry, its scope and responsibilities, and the multidimensional nature of an event experience. Develops needs assessment, feasibility studies, and project management techniques to help students understand events in greater detail. Explores the interaction between attendee and the environment that enhances the event experience. Provides experience managing food and beverage services, technical services, ancillary activities, and marketing for events.

Course Learning Outcomes

1. Define the breadth of event types and opportunities for professional event coordination.
2. Develop a strategy for creating and coordinating a comprehensive event experience.
3. Appraise the scope, concept, components, and feasibility of an event project.
4. Explain the needs, available resources, and constraints of an event project.
5. Develop site plans that utilize the space in an efficient and effective manner to meet the goals and objectives of an event.
6. Develop the structure of an effective and progressive event experience.
7. Prepare response plans for risks associated with the event project.
8. Construct efficient record-keeping systems utilizing appropriate technology for the gathering, storage, retrieval, and security of information.

HM 4250

Advanced Event Production

Credit hours: 3

Explores advanced techniques and procedures to effectively execute an event production. Includes creating feasible site plans, lighting and sound designs, table-top and stage décor, menu and food set-up designs, and event marketing plans. Focuses on how to successfully manage an event from inception to implementation to evaluation. Provides hands-on experience in event production and the creation of a professional event portfolio.

Course Learning Outcomes

1. Manage an event from inception to implementation to evaluation.
2. Develop site plans that utilize space and resources in an efficient and effective manner to meet the goals of an event and the needs of the audience.
3. Create effective and aesthetically pleasing lighting designs and scripts for event production.
4. Build decor elements for tables, stages, and other event space needs.
5. Develop menus as well as food set-up and service plans to meet the needs of the event and attendees.
6. Create a marketing plan and needed design elements for an event marketing strategy.
7. Compile a professional event portfolio for career advancement.

HM 4550

Hospitality Strategic Management WE

Credit hours: 3

Examines delivery of the organization's product or service. Includes investigative and production planning, scheduling of operations, allocation of resources, manpower and equipment decisions, inventory control, production planning, and quality. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Execute key elements in the strategic management process.
2. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.
3. Evaluate various social responsibility examples.
4. Analyze key dimensions of formal organizational structures including the degree of specialization, formalization, centralization, and levels of authority.
5. Construct strategic plan for multidomestic, global, and transnational expansion.

HM 481R

Internship

Credit hours: 1 to 9

For upper-division students working toward a Bachelor of Science Degree in Hospitality Management or Event Management. Provides a transition from school to work where learned theory is applied to actual practice through meaningful on-the-job experience. May be repeated for a maximum of 9 credits. May be graded credit/no-credit.

Course Learning Outcomes

1. Locate a meaningful job in an industry-related area;
2. Develop individual work objectives;
3. Recognize importance of human relations skills;
4. Develop written communication skills through weekly reports;
5. Formulate social skills in the work environment;
6. Develop proper work habits and work ethics;
7. Evaluate own performance objectively and take corrective action where needed.

HR 3430

Introduction to Human Resource Management

Credit hours: 3

Covers labor and management relations, legal issues, job analysis and design, recruiting and selecting, job placement and orientation, training, career planning, EEO, performance appraisal, and employee benefits. Presents tools for the implementation of a human resource management program. Includes class discussions, case studies, videos, oral presentations, written assignments, group projects, and guest speakers. Canvas Course Mats \$50/VitalS applies. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Describe human resource management terms and use them in oral and written mediums.
2. Summarize the organization and functions of a human resource department.
3. Calculate the value of HR processes to the organization (e.g., turnover costs, training programs).
4. Analyze business challenges and situations from a human resource management perspective.
5. Explain the impact of equal employment opportunity laws, affirmative action, and diversity programs on organizations.

HR 3530

Employment and Labor Law

Credit hours: 3

Covers employment and labor law, cases, and policy. Includes employment discrimination along with labor relations statutes exploring the link between employment discrimination and traditional labor relations law. Presents tools necessary to formulate and write policy for profit and non-profit organizations. Includes lecture, class discussions, case studies, a service learning project, and guest speakers. Lab access fee of \$25 for computers applies.

Course Learning Outcomes

1. articulate the need for policy and procedure manuals in organizations to communicate employment and labor law to employees.
2. Use policy and procedure manuals efficiently to implement current employment and labor law.
3. Formulate and write policy for an organization that reflects current employment and labor law.
4. Evaluate the need for new policy directions as employment and labor law changes.
5. Develop interpersonal communication skills and apply skills to team policies and procedures.

HR 3550

Organization Development

Credit hours: 3

Studies the process of ensuring skills, knowledge, abilities, and performance of the workforce meet current and future individual, team, and organizational needs. Includes the development, implementation, evaluation activities, interventions, and programs that focus on customized organization development (change), performance management, training and development, career development, and other unique employee or employee group needs.

Course Learning Outcomes

1. Identify and discuss human resource development theories and applications (including career development and leadership development).
2. Identify and discuss organizational development theories and applications.
3. Describe applicable international, federal, state, and local laws and regulations regarding copyrights and patents.
4. Complete a detailed job and task/process analysis.
5. Understand and utilize various adult learning theories and applications.
6. Identify general training methods, programs, and techniques.
7. Design a performance appraisal document and performance management system.
8. Discuss techniques to assess HRD program effectiveness (e.g., satisfaction, learning and job performance of program participants, and organizational outcomes).
9. Determine and discuss applicable international issues related to human resource development (i.e., organization development, training and development, performance management, career development).

HR 3570

Training and Development

Credit hours: 3

Studies current models, methods, and skills for training and development designed to improve individual, group, and organizational performance. Examines the organizational role of the training specialist, identifying training needs, maximizing the trainee's learning, evaluating training programs, on-site training methods, off-site training methods, developing and training leaders, management and executive development, and societal concerns. Includes teaching techniques such as lecture, class discussions, small group activities or projects, oral presentations, written assignments, guest speaker, and scholarly dialogue. Includes a semester-long training and development academic service-learning project.

Course Learning Outcomes

1. Describe how a trainer can maximize a trainee's learning (adult learning theory).
2. Use a needs analysis to identify training and development needs.
3. Develop a training program, lessons, and all the related materials, supplies, and processes.
4. Assist an organization in implementing a training or development program.
5. Design and implement evaluation components to a training or development session or program.
6. Develop and improve skills, abilities, and/or understanding of written and oral communication, critical thinking, ethical decision-making, computer, diversity, and globalization.

HR 4000

Total Rewards

Credit hours: 3

Studies total reward systems in private and public organizations, which includes examining these systems' wage, salary, and benefits elements. Provides a comprehensive overview of total reward strategies in organizations, discuss relevant compensation models, and review various benefits influences, including laws and regulations. Explores the relationships between employee performance the different intrinsic and extrinsic rewards in total reward systems. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Explain total reward strategies, including base, incentive compensation, and benefits.
2. Analyze strengths and benefits of pay systems.
3. Analyze strengths and benefits of benefit systems.
4. Implement strategies of total reward systems.
5. Apply HRIS systems to total reward mechanisms.
6. Analyze and respond to issues, problems, and the opportunities faced in organizations through practicing the following skills: analytical thinking, problem solving, ethical awareness and decision-making, oral and written communication, enhancing abilities to integrate theory and practice, and teamwork skills.

HR 4050

Human Resource Information Systems

Credit hours: 3

Provide students with introductory knowledge of Human Resource Information Systems. Examines HR information system adoption, implementation, and the assessment and building of management support to achieve HR strategic objectives.

Course Learning Outcomes

1. Demonstrate knowledge of HR information technology infrastructures including basic networks, cloud computing, and HRIS application software.
2. Demonstrate the ability to manage a HRIS selection project. 3 - Create a business case for (or against) a HRIS project.
3. Identify major HRIS trends (e.g. Software as a Service, Cloud Computing, Shared Service Centers, Centers of Excellence, Business Intelligence, Web 2.0, HRO) and be able to critically analyze these trends and their implications for HRM.
4. Design, create, and populate a basic relational database.
5. Apply understanding of relational database structure and function to HR MS software and to be able to 1) access and update HR information, 2) critically evaluate a HR database modules functionality.
6. Analyze and respond to issues, problems, and the opportunities faced in organizations through practicing the following skills: analytical thinking, problem solving, ethical awareness and decision-making, oral and written communication, enhancing abilities to integrate theory and practice, and teamwork skills.

HR 4060

HR Analytics

Credit hours: 3

Explores key metrics, analysis, interpretation and communication tools necessary in developing comprehensive human capital strategies. Enables students to identify, analyze and interpret data to make human resource recommendations for individuals and organizations. Includes exploration of data analysis and presentation skills for human capital research and decision-making for planning, employee selection, compensation, employee survey data, organizational effectiveness and utilization analysis. Canvas Course Mats \$79/Cengage applies.

Course Learning Outcomes

1. Use core HR analytical concepts to develop robust data-driven solutions for human resource management problems.
2. Research current trends in workforce analytics to increase stakeholder value.
3. Apply analytical acumen encompassing data legitimacy, defined correlations, and forecasting of quantitative information.
4. Develop optimal competitive advantage metrics for strategical HR alignment of policies, processes, performance management, and procedure alignments to operating strategies.
5. Present complex data effectively in oral, written, graphical and other visual formats to key stakeholders.

HR 4610

Talent Acquisition and Performance Management

Credit hours: 3

Addresses the key HR functions of planning, staffing, and maintaining a quality workforce. Includes identifying critical specifications for filling positions, recruiting a pool of talent, developing selection methods, and creating desirable person/job matches. Teaches how to evaluate and manage employee performance once individuals enter the organization. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Create and conduct a staffing analysis.
2. Create a staffing strategy under consideration of legal limitations.
3. Evaluate organizational responses to environmental influences on staffing needs.
4. Identify and design the components of an effective performance management system.
5. Develop a customized performance appraisal processes for an organization.
6. Coach supervisors and managers in how to establish valid performance expectations and provide effective employee feedback and performance coaching.

HR 4800

Strategic Human Resource Management

Credit hours: 3

Facilitates students' understanding of the total alignment of human resource management (HRM) and business strategies. Provides an overview of the role of HRM as a capstone course.

Considers the overall design of the HRM infrastructure to enable optimal employee performance relative to the strategic goals of the organization, to achieve competitive advantages. Examines the techniques, policies, processes, strategies, and practices used by companies and / or managers to effectively and efficiently utilize human resources. Teaches theories and practices in multiple HRM areas, including staffing, performance evaluation, work and job design, training, total compensation, the legal environment, labor relations, and megatrends in the external labor market. Provides extensive training to prepare for the aPHR (Associate Professional of Human Resources) exam as a professional certification from the Human Resource Certification Institute (HRCI).

Course Learning Outcomes

1. Define how a human resource professional can be a vital tool for her / his organization in the alignment of human capital behind the company's objectives
2. Interpret thought-leading HR strategy topics as presented by your professor, guest presenters and material carefully selected for reading
3. Define the entire scope of the HR Competencies as identified by both the Human Resource Certification Institute / David Ulrich and the Society for Human Resource Management
4. Synthesize HR Generalist knowledge from all prior HR topics prior to graduation
5. Develop a summary of your learnings in the HR Major / Minor program, including your consulting projects for public display to local business leaders

HUM 1010

Humanities Through the Arts HH

Credit hours: 3

Studies the media and compositional elements of the various art forms (literature, music, visual arts, theater, film, dance, and architecture), for greater understanding and enjoyment. Teaches how to interpret artistic meaning by analyzing artworks formally as well as in their historical contexts, such as the predominant subject matters and styles of their period. Encourages students to integrate the arts into their daily lives habitually, so that they become lifelong learners and educators.

Course Learning Outcomes

1. Identify the major art forms and the materials of which they are constructed.
2. Explain the ways in which artists use the elements of artistic media and composition to communicate to others. Recognize the elements of aesthetic composition and apply this knowledge to interpret the meaning of art.
3. Recognize and interpret the contextual elements of artistic creation. Recognize the time periods in which works of art were created, as well as the style of many major artists. Integrate textual and contextual ways of reading across the arts.
4. Demonstrate a greater command of intellectual and practical skills including written and oral communication, qualitative reasoning (while employing all the senses), and information literacy.

HUM 3500

Approaches to Humanities WE

Credit hours: 3

Surveys recent critical and aesthetic theory for each art form and teaches students how to apply theoretical approaches to the interpretation of individual texts, films, artworks, buildings, performances, etc. Includes readings of seminal works by philosophers, academic or professional critics, and practicing artists. Studies examples where the apparent divide between theory and practice is collapsed, where, for instance, an artistic product in itself may have provided a new approach for future artistic productivity and interpretation, or where a theoretical contribution has been made in such a way as immediately to demonstrate a certain creative practice.

Course Learning Outcomes

1. articulate the debates surrounding critical theory;
2. Apply approaches or theories as interpretive tools;
3. Apply critical skills in dealing with assertions about the arts;
4. articulate critical understanding of the relationship between artistic theory and practice.
5. Compose a variety of discipline-appropriate texts for multiple situations and audiences.

HUM 400R

Humanism and Posthumanism

Credit hours: 3

Explores Humanism or Posthumanism across the arts and their diverse cultural history. Defines humanism as varieties of the traditional view that Man is the measure of all things, and Posthumanism as an umbrella term for recent theoretical approaches within the humanities that challenge this view, for instance by placing humanity in the context of global or universal, intrinsically diverse and self-generating, scientific, technological, or ecological systems. May compare aspects of humanism throughout space and time, in its diverse cultural manifestations, or may focus on a twenty-first-century view of these long traditions. May also choose the example of the humanistic or posthumanistic aspects of a single time period, culture, or interdisciplinary oeuvre. Offers an opportunity to advanced students to synthesize, critique, and strengthen their own viewpoints, and to expand their interdisciplinary understanding of human expression, in response to the most fundamental or recent currents within intellectual history. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Deepen overarching understanding of the humanistic tradition throughout the arts and their diverse cultural history;
2. Critically engage with the humanistic tradition in light of recent or current theoretical approaches and historical developments;
3. Critically reflect on the whole field of humanities with regard to the interactive role of its disciplinary components;
4. Demonstrate understanding of the interrelations of the humanities and the natural and social sciences.

HUM 4910

Humanities Capstone WE

Credit hours: 3

Instructs Humanities majors in their last year of the program on how to conduct research, develop a complex critical argument, and write and defend a senior thesis. Encourages students to explore their desired professional or graduate research interests.

Course Learning Outcomes

1. Critically survey Humanities and the various disciplines it combines.
2. Develop original research using a number of primary and secondary sources.
3. Develop a sophisticated analytical argument that supports a solid thesis statement.
4. Apply the methodologies used in current Humanities research.
5. Produce a substantial, argumentative research paper of high quality on a Humanities topic.
6. Defend a thesis in conversation with a small committee.
7. Write thesis abstracts, CVs, and personal statements for a professional portfolio.

HWC 2000

Lifestyle Medicine for Health Coaching

Credit hours: 2

Examines the use of lifestyle medicine practices in health coaching. Focuses on health biometrics, evidence-based health practices, wellness and well-being concepts, chronic disease, health behaviors, social, and behavioral risks factors such as healthy weight, optimal nutrition and hydration, physical activity and sedentary lifestyle, sleep, stress and emotional wellness, and substance use.

Course Learning Outcomes

1. Analyze how lifestyle medicine is used in health coaching.
2. Evaluate health biometrics (blood pressure, fasting glucose, hemoglobin A1c, BMI, waist circumference, HDL, LDL, etc.).
3. Analyze current practices in health behavior change related to exercise, nutrition, sleep, stress, mindfulness, social health, and substance use.
4. Utilize evidence-based current practices to create health recommendations for clients.

ICCS 1010

Self Determination I

Credit hours: 2

Introduces self-management and self-determination skills contributing to personal effectiveness in the workplace, academic environments, and independent living. Addresses understanding of differences among people, disability disclosure, expressing preferences, making informed choices, goal setting, and self-advocacy.

Course Learning Outcomes

1. Provide examples of self-determination as it applies across contexts.
2. Set personal goals in order to identify the component steps and resources available to support goal attainment.
3. Identify appropriate contexts and communication strategies for disability disclosure.
4. Identify situations in which self-advocacy is required.
5. Demonstrate communication strategies to support self-advocacy.

ICCS 1020

Living and Working in the Community I

Credit hours: 2

Provides instruction in the development of independent living skills including identifying and evaluating housing options, care and maintenance of a home, meal planning, and household budgets. Develops skills for navigating the community and accessing resources.

Course Learning Outcomes

1. articulate critical variables in achieving independent living.
2. Demonstrate home care skills including safety, maintenance, resources, and supports.
3. Identify the variety of public transportation options to access community resources to support independent living.
4. Plan a household budget.

ICCS 1030

Social Skills, Sexuality, and Mature Relationships

Credit hours: 2

Addresses the development of social skills to support adult friendships and intimate relationships. Includes an analysis of contextual variables affecting social skills, understanding of the boundaries of various adult relationships, and appropriate behavior in intimate relationships. Introduces the critical concepts of consent, and safety in relationships.

Course Learning Outcomes

1. Identify the characteristics of, and boundaries associated with, a variety of adult relationships.
2. Apply the concept of consent to a variety of common adult scenarios.
3. Demonstrate the application of safety skills to adult relationships.
4. Explain technical and common slang terms associated with sexuality and relationships.

ICCS 110R

Career Development I

Credit hours: 1 to 3

Explores career options through the use of videos, printed material, and personal contact with professionals and vocational experts. Focuses on equipping students with skills and information used for job hunting, resume preparation, job applications, and interviewing. May be repeated for a maximum of 9 credits toward graduation.

Course Learning Outcomes

1. Identify strategies for successful job hunting focusing on the use of technology.
2. Demonstrate social and communication skills for job interviewing.
3. Apply core components of a competitive resume.
4. Complete a variety of job applications including on-line and paper.
5. Compose cover letters appropriate to a variety of job descriptions.

ICCS 120R

Career Development Practicum I

Credit hours: 1 to 3

Engages in a variety of internship/practicum experiences of varying lengths to identify personal strengths and abilities and the possible career paths that match these skills. Identifies areas for personal development to increase career options and promote employment success. May be repeated for a maximum of 9 credits toward graduation.

Course Learning Outcomes

1. Identify personal strengths and abilities associated with a variety of jobs.
2. Identify areas for personal growth to increase employment options.
3. Demonstrate strategies for communicating successfully in a variety of work environments.
4. Apply problem solving skills to promote success in a variety of work environments.

ICCS 2010

Self Determination II

Credit hours: 2

Focuses on the application of self-determination to everyday challenges. Introduces the application of personal goal setting and self-advocacy to achieve career and independent living goals. Supports the development of self-awareness and self-reflection as tools to move toward individual goals.

Course Learning Outcomes

1. Identify the steps and barriers to achieving a personal goal.
2. Demonstrate appropriate self- advocacy across a variety of contexts.
3. Identify opportunities for responsible personal choice.
4. Advocate for accommodations to support performance at school and work.

ICCS 2020

Living and Working in the Community II

Credit hours: 2

Explores the wide variety of community supports and services available for living and working independently. Identifies necessary supports such as banking, healthcare, government agencies, businesses, and recreational options in the local community and teaches appropriate communication and social skills to demonstrate the ability to access necessary services and supports.

Course Learning Outcomes

1. Identify strategies to advocate for personal needs in the community using technology.
2. Use problem solving skills to develop plans to navigate to a variety of community locations independently.
3. Demonstrate social skills appropriate to a variety of community settings.
4. Maintain personal safety in the community.
5. Develop strategies to interact with service providers to achieve personal goals.

ICCS 2030

Problem Solving for Adulthood

Credit hours: 2

Introduces the social problem-solving framework. Explores application of the framework to problems common to living and working independently, including problems in relationships, issues that arise in the workplace, and problems associated with living independently in the community. Teaches problem-solving skills to help make appropriate choices in challenging situations such as interpersonal conflict, personal safety, and coercive interactions.

Course Learning Outcomes

1. Identify the steps of the social problem solving framework.
2. Demonstrate the application of social problem solving to common problems in social relationships.
3. Demonstrate the application of social problem solving to common issues that arise in the workplace.
4. Demonstrate the application of social problem solving to common issues that arise in the community.

ICCS 210R

Career Development II

Credit hours: 1 to 3

Provides instruction in the skills necessary for maintaining employment such as communicating effectively with supervisors, interacting appropriately with others in the workplace, advocating for personal needs/supports, performing necessary duties, and giving and receiving feedback. Teaches the application of problem-solving skills to maintain employment. May be repeated for a maximum of 9 credits toward graduation.

Course Learning Outcomes

1. Identify job performance objectives for a variety of career options.
2. Demonstrate self- advocacy appropriate for the work environment.
3. Demonstrate social skills to support positive relationships in the work environment.
4. Respond appropriately to critical feedback.

ICCS 220R

Career Development Practicum II

Credit hours: 1 to 3

Provides internship/practicum experiences on campus and in the community. Teaches social, communication, and self-advocacy skills to promote success in the workplace. Supports interaction with supervisors and co-workers in a positive and productive manner to maintain relationships and enhance job performance. Teaches strategies to build relationships and contacts for the future while developing marketable skills. May be repeated for a maximum of 9 credits toward graduation.

Course Learning Outcomes

1. Demonstrate strategies for conflict resolution in the workplace.
2. Improve resume to reflect new skills and abilities acquired through internship/practicum.
3. Utilize social and communication skills to maintain positive workplace relationships.
4. Utilize problem solving to successfully navigate workplace challenges.

IM 1010

Basic Computer Applications

Credit hours: 3

Prepares students for the IC3 certification exam. Teaches basic computer fundamentals, digital living concepts, and key applications. Includes PC computer system concepts, basics of the Windows operating system, software licensing and installation, electronic communication, Internet and research fluency, and ethical computer usage. Provides hand-on experience in the basic features of Microsoft Word, PowerPoint, Excel, and Access as common business problem solving and communication tools. May be delivered hybrid and/or online. Lab access fee of \$45 for computers applies. Canvas Course Mats \$85/Cengage applies.

Course Learning Outcomes

1. Describe different types of computers and common computer concepts.
2. Adjust key components and settings of the computer operating system.
3. Use computer utility programs.
4. Troubleshoot basic software and hardware issues.
5. Perform file management tasks.
6. Use word processing, presentation, spreadsheet, and database software.
7. Protect digital data and devices.
8. Apply appropriate Internet searches for research purposes.
9. Use computers ethically and responsibly.

IM 2010

Business Computer Proficiency

Credit hours: 3

Encompasses two software applications, Microsoft Excel and Microsoft Access, from a business perspective. Covers intermediate level problem solving and production skills. Uses business applications in case study settings to solve problems and accomplish tasks. In company with IM 1010, meets/exceeds the Board of Regent's Business Core Advisory Committee's requirement and the Business Computer Proficiency required by the Woodbury School of Business. May be delivered online. Lab access fee of \$45 for computers applies. Canvas Course Mats \$77/McGraw and \$42/MyEducator applies.

Course Learning Outcomes

1. Plan, create, and manage spreadsheet worksheets and workbooks.
2. Incorporate mathematics, formulas, and functions into spreadsheets.
3. Design, create, and format charts.
4. Manipulate large datasets, create Excel tables, use structured references, sort and filter, and apply conditional formatting.
5. Recognize fundamentals database concepts, navigate between database objects and views, sort table data, create filters and practice good database file management.
6. Create tables, establish table relationships, and create single- and multi-table queries.
7. Customize, analyze, and summarize query data.
8. Create and use professional forms and reports.

IM 2100

Document Processing Applications

Credit hours: 3

Teaches intermediate word processing features in a Windows environment for the production of business letters, envelopes, multiple-page documents, reports, newsletters, tables, and other specialized business documents. Emphasizes identification and troubleshooting problems associated with soft copy document production. Stresses proper formatting. Lab access fee of \$45 for computers applies. Canvas Course Mats \$85/Cengage applies.

Course Learning Outcomes

1. Use Windows Explorer, Office Help, and common Office software interface components.
2. Prepare a document including formatting, using styles, checking spelling and grammar, improving readability, and changing properties.
3. Collaborate and produce professional research documents.
4. Create and manipulate data with Tables and Mail Merge.
5. Apply graphic design principles and desktop publishing guidelines while producing documents.
6. Demonstrate efficient use of time-saving tools such as templates, themes, building blocks, and navigation tools.
7. Automate documents by using macros and form controls.
8. Build and publish a Web page and create a blog post.
9. Understand and attach an XML Schema

IM 2300

Information Management Principles

Credit hours: 3

Includes storage and retrieval systems, managing manual and electronic files, cross referencing, automated records systems, safety, security, and disaster recovery. Discusses the records cycle, equipment, supplies, retention schedules, and micrographics and image technology. Explores legal and ethical concerns. Lab access fee of \$45 for software applies. Canvas Course Mats \$55/Cengage applies.

Course Learning Outcomes

1. Recognize the functions of records and information management.
2. Categorize significant federal legislation relating to business or government records.
3. Store and retrieve records by the alphabetic, subject, numeric, chronologic, and geographic methods.
4. Describe micrographic, optical disk, and bar-coding technology and their application in large and small firms.
5. Identify security devices for the protection of records and data.
6. Describe disaster prevention and recovery measures for records and data.
7. Identify major trends, ethical issues, and ethical behavior and consequences as they relate to the records and information management profession.
8. Plan, develop, sort, query, and manage a database.

IM 2500

Graphic Applications

Credit hours: 3

Explores digital image editing using Adobe Photoshop and Adobe Illustrator. Provides an overview of image optimization processes for the web. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Determine the need for an instructional graphic in a learning environment;
2. Evaluate existing instructional graphics;
3. Utilize software tools and special features to create custom- designed graphics;
4. Manipulate and enhance images such as scanned photographs, printed artwork, logos, etc.;
5. Work with graphic file formats;
6. Utilize masks, filters, and special effects features in the software packages.

IM 2600

Spreadsheet Applications

Credit hours: 3

Provides an extensive study and hands-on examination of practical business applications using electronic spreadsheets. Provides comprehensive coverage of features available in the current Windows version of spreadsheet software. Lab access fee of \$45 for computers applies. Canvas Course Mats \$77/McGraw applies.

Course Learning Outcomes

1. Design professional worksheets for various business applications.
2. Create, edit, and format workbooks and worksheets.
3. Work with basic formulas and functions, advanced functions, conditional formatting, and filtering.
4. Work with charts and graphs.
5. Create Subtotals, PivotTables, and PivotCharts.
6. Manage multiple-sheet workbooks.
7. Import data and work with XML and Web queries.
8. Work with templates, styles, and macros.

IM 3700

Database Applications

Credit hours: 3

Explores creating and utilizing database files using database management software. Covers basic concepts of database management emphasizing commonly used applications. Teaches use of reports, letters, labels, custom screens, and queries in a business setting. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Create, sort, and manage a simple database
2. Create reports, mail-merge letters, and mailing labels from a database
3. Create custom objects (forms, reports, queries)
4. Customize the database window
5. Work with multiple databases
6. Use queries to search for specific information

IM 481R

Internship

Credit hours: 1 to 8

For Information Management majors only. Provides a transition from school to-work where learned theory is applied to actual practice through a meaningful on-the-job experience. Includes student, employer and coordinator evaluations, on-site work visits, and written assignments. Provides experience in establishing and accomplishing individualized work objectives that improve work performance. Internship is intended for senior IM students who are working at that level. Credit is determined by the number of hours a student works during the semester and completion of individually set goals. May be repeated for a maximum of 9 credits towards graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Apply academic skills to a practical professional setting;
2. Reflect on how classroom experience applies to a professional setting;
3. Develop and maintain professional relationships with coworkers, supervisors, and clients;
4. Recognize and refine personal career interests relative to their internship experiences;
5. Further explore career opportunities in Information Management.
6. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Professional demeanor; 2 - Awareness of whether to seek further experience in this area or in other areas.

INFO 1120

Information Systems and Technology Fundamentals

Credit hours: 3

Explores the fundamental concepts of information technology and the role played by enterprise systems in business and organizational strategy. Introduces types of systems, computer organization and hardware, operating systems and networking, project planning, software development, computer ethics, and career paths for enterprise developers and IT professionals. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain how Information Systems are used by business, individuals, and society;
2. Identify the fields of specialties in Information Systems;
3. Research the career paths that are available for Information Systems graduates;
4. Describe the opportunities and challenges of modern Information Systems;
5. Discuss the characteristics and components of a computerized Information System that provides information to users;
6. Summarize how Information Systems can be used to support, decision making;
7. Conduct research and write intelligently about key Information Systems concepts;
8. Explain how to use Information Systems for strategic advantage in business.
9. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Confidence in directing their future studies if choosing a career in the field of Information Systems.

INFO 1200

Computer Programming I for IS IT

Credit hours: 3

Presents concepts of modern computer programming. Emphasizes problem-solving, algorithm development, and programming design. Stresses constructs, data representation, fundamental types and data structures, decision structures, repetition structures, methods, arrays, classes, and objects. Includes testing, debugging, and documentation. Introduces object-oriented, event-driven programming models. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe how variables store data and be able to create and use variables of different data types within a program;
2. Use the individual controls of a graphical user interface (GUI) correctly in a program;
3. Describe the events related to GUI controls and be able to capture them to run code;
4. Explain and use control-flow structures, such as if-else statements, for loops, while loops, and do-while loops;
5. Write code to perform file input/output (I/O) in a program;
6. Describe how programs are organized into classes and methods and be able to break a problem into organized methods;
7. Describe the need for collection classes and be able to implement arrays in a program for collections of data.

INFO 2200

Computer Programming II for IS IT

Credit hours: 3

Focuses on object-oriented design and programming methodologies. Teaches inheritance, polymorphism, and encapsulation. Develops knowledge to abstract functionality by using interfaces. Covers collection classes, generics, exception handling, file handling, and more advanced topics such as accessing databases via LINQ, socket/network programming, and multi-threading. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Create GUI-based and command line applications properly using variables, control structures, multiple classes, and collection classes;
2. Utilize proper code documentation and good coding style principles, including self-documenting code, using coding headers, and standard compilations units;
3. Create an application that correctly utilizes object inheritance and polymorphism and be able to explain how the process works;
4. Explain the issues related to object-oriented programming, including multiple inheritance, abstract classes versus interfaces, and the difference between new and override;
5. Create an application that includes input/output functionality utilizing both files and the console from which to read and write;
6. Create an application that connects to a database through LINQ and utilizes LINQtoSQL to create database objects and insert, update, and delete records into the created table

INFO 2410

Database Fundamentals

Credit hours: 3

Introduces concepts and use of database management systems. Presents the relational model, Structured Query Language, database design including normalization theory, and application development tools using an enterprise-level relational database management system. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the functions and uses of a database in an enterprise information system;
2. Describe the database design and implementation process and how it fits into the System Development Life Cycle (SDLC);
3. Develop a data model for an organization using standard data modeling techniques;
4. Convert a data model into a functioning database using an industry standard relational Database Management System (DBMS);
5. Apply the rules of good design and normalization in creating well-formed tables in a database;
6. Query a relational database using the Structured Query Language (SQL).

INFO 2420

Web Application Design

Credit hours: 3

Focuses on the design and construction of Web pages and maintenance of Web sites. Includes foundations in standards-based HTML and CSS. Covers code markup, design concepts and web graphics manipulation, page layout, form development, and usability and accessibility issues. Teaches use of Web authoring tools for code development and site management. Requires individual projects. May be delivered hybrid and/or online. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Examine overall site design and implementation;
2. Review fundamental HTML concepts;
3. Create and use HTML tables, templates, imagemaps, hyperlinks, etc.;
4. Write and validate clean HTML;
5. Make use of CSS for separating presentation from page content;
6. Analyze the different graphical formats supported by the Web;
7. Modify web graphics for greater performance.

INFO 3130

Introduction to Applied Data Analytics

Credit hours: 3

Intended for people who will be working with data analysts and data scientists, managing analytics projects, or investing in analytics ventures, and aspiring data scientists. Provides opportunities for students to gain skills in data-analytic thinking required to succeed in today's analytical and data-driven economy. Introduces the basics of data management and data analytics. Covers core analytic techniques: data exploration and visualization, pattern discovery (segmentation and association), predictive modeling (decision tree, logistic regression, neural network), and forecasting. Lab access fee of \$45 for computers applies. Canvas Course Mats \$83/MyEduc applies.

Course Learning Outcomes

1. Apply general concepts for extracting knowledge from data
2. Analyze problems using data analytical thinking
3. Describe how data analytics fits with business organizational strategy
4. Explain data management for analytical problems
5. Choose appropriate data analytics techniques for various problems

INFO 3300

Web Systems Development

Credit hours: 3

Emphasizes interpretation of business processes, process modeling, and implementation of the models as web applications. Instructs how to implement web solutions that use a relational database backend to manage site data using an industry-standard programming language to interact with the database to produce dynamic web content. Covers parameter passing, cookie storage, and session variables. Introduces application platforms that can be customized to new business requirements. Highlights how to use content management systems (CMS) and how to customize such systems to quickly produce web applications to meet business needs. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Create a dynamic web site using a server-side scripting language to pass parameters, record session variables and store cookies.
2. Translate business process requirements into an entity relationship diagram (ERD).
3. Implement the entity relationship diagram using relational database technology.
4. Create web pages to support create, read, update, and delete (CRUD) operations in a web application.
5. Create a web site using tools provided by a content management system (CMS).
6. Customize a web site created using a content management system to enable the processing of forms that connect to a database.

INFO 3330

Client-Side Web Development

Credit hours: 3

Teaches how to create high performance and scalable web sites using JavaScript across the client and server (full development stack). Instructs how to program directly in JavaScript as well as how to utilize JavaScript libraries and frameworks. Introduces popular JavaScript libraries to perform client-side form validation, make AJAX server calls, and deploy mobile apps based on web standards. Covers web application development using client-side frameworks that implement model view controller design patterns. Introduces server-side JavaScript tools and the NoSQL database to manage application data. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Utilize CSS libraries to style web pages according to specifications.
2. Utilize JavaScript to validate form data and incorporate validation tools from JavaScript libraries.
3. Utilize JavaScript libraries to manipulate and traverse the document object model (DOM) and make AJAX calls to web services.
4. Design a web interface using JavaScript mobile libraries and compile that application into native applications.
5. Create the front-end of a single page application (SPA) using a virtual DOM.
6. Create tables and queries using a NoSQL database.
7. Create a client-side model, view, controller (MVC) application.

INFO 3360

Server-Side Web Frameworks

Credit hours: 3

Emphasizes web application development using modern server-side frameworks for web site architecture as well as data integration technologies. Covers server-side architectural design patterns in depth using Model View Controller (MVC) frameworks. Covers Object Relational Mapping (ORM) tools for database integration as well as techniques to secure a website from common attacks. Teaches how to implement web site authentication and authorization, form validation, web services, and introduces unit testing and test-driven development. Instructs how to package and deploy applications to a web server. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Create a web application based on the MVC architecture using both scripting and structured programming.
2. Develop a data-driven MVC web app using entity framework code-first or database-first methodologies.
3. Identify invalid or harmful data entries.
4. Utilize authorization and authentication features to secure specific areas of a web application.
5. Create routing behaviors to access various endpoints.
6. Test and debug a web application using current web browser developer tools and an integrated development environment.
7. Deploy a web application to a web server.

INFO 3410

Database Systems and Warehousing

Credit hours: 3

Covers advanced database development topics and introduces a data warehouse model designed especially to support analytics and reporting needs. Database development topics covered include transaction management, performance optimization, data loading, and the development of stored procedures, triggers, and functions. Presents the data warehouse model in contrast to existing operational transaction systems. Analyzes business reporting needs, creates models for data warehouses based on the reporting needs, and uses SQL to create and populate tables based on dimensional models. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Complete complex queries using both SQL DML and SQL DDL;
2. Describe the purpose of transaction management and be able implement two-phase locking;
3. Implement complex stored procedures, functions, and triggers that utilize variables and control-flow statements and know the differences between the three database objects;
4. Explain and implement a cursor;
5. Explain what a dimensional model is and how it differs from a typical relational model;
6. Identify required data from existing relational systems and construct a dimensional data model based on reporting needs;
7. Extract, transform, and load data into a data warehouse star schema and write SQL reports against the star schema;
8. Implement a data warehouse design using commercial database products.

INFO 3430

Systems Analysis and Design WE

Credit hours: 3

Introduces the systems development life cycle with a focus on systematic planning; requirements, process, and data analysis; and an overview of the design phase. Covers fundamental principles, effective processes, and techniques of project management, including scheduling and project control. Covers appropriate methodologies, tools, diagrams, and techniques for systems analysis, design, and project management. Requires working in teams to complete and present the first planning and analysis phases of a project for a client. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the role of the systems analyst in today's business environment.
2. Demonstrate systems development project management skills and the ability to manage quality planning, quality assurance, quality control, human resources, and communication during the system development process.
3. Describe the activities of the SDLC and the various methodologies, tools, and techniques available.
4. Identify the scope and alternatives of the project initialization process, and develop a project justification and feasibility analysis.
5. Utilize various approaches to gathering/investigating system requirements.
6. Determine and document system, process, and data requirements.
7. Use project-management and diagramming tools to support the SDLC.
8. Evaluate various development approaches and make recommendations to management using written and verbal presentations.
9. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

INFO 405G

Global Ethical and Professional Perspectives in IS and IT GI WE

Credit hours: 3

Examines professional and ethical issues within the information systems and information technology fields with a global perspective. Covers ethical and legal issues IT professionals face dealing with computer and cybercrimes, privacy issues, freedom of expression, intellectual property, software development including risk analysis, and social networking. Includes career professional development through resumes, cover letters, and job interviews specific to information systems and technology. Focuses on global networked readiness, digital highways, and challenges that information technology organizations face. Lab access fee of \$45 for computers applies. Canvas Course Mats \$85/Cengage applies.

Course Learning Outcomes

1. Explain codes of ethics, reasons for certification, and general ethical issues for IT professionals
2. Identify IT security issues and techniques for assessing and managing risk within an organization
3. Describe privacy, freedom of expression, social networking, and intellectual property rights and responsibilities from IT and managerial perspectives
4. Identify the various IS/IT management functions
5. Describe the frameworks decision making in software development and IT productivity
6. Evaluate and plan for the integration of emerging technologies. Identify and describe some of the major forthcoming technologies and the moral issues they are likely to raise
7. Identify and describe the kinds of global and ethical dilemmas that arise in technological organizations
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups
9. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences

INFO 4120

Data Visualization

Credit hours: 3

Focuses on extracting business intelligence from data sets for various applications including reporting and visual analytics in multiple domains including web analytics and business analytics to aid decision-making processes. Provides hands-on experience with a variety of business intelligence software for reporting and building visualizations and dashboards. Emphasizes how to extract, present and apply business intelligence to improve business decision making. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the data rich environment of the global economy and the related business intelligence opportunities that exist;
2. Demonstrate the key methods of BI analytical analysis;
3. Demonstrate effective visual presentation of data and building data visualizations;
4. Implement major techniques using modern business intelligence software;
5. Evaluate the business strengths of BI techniques in the context of a smart consumer;
6. Demonstrate proficiency required to provide business intelligence reporting services.

INFO 4130

Data Science and Big Data Analytics

Credit hours: 3

Extends the concepts of analytics to the analysis of large data-sets, and preparation of analysis reports and presentations describing implications of findings. Uses current software tools for advanced analytics and big data. Covers the theory and methods of advanced data analytics such as clustering, association, decision trees, time series, and natural language processing. Employs a hands-on big data lifecycle lab. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Analyze data with exploratory models;
2. Build predictive analytical models;
3. Communicate analytics to decision makers;
4. Apply modern data analytics software to analytics problems;
5. Evaluate analytical techniques;
6. Provide a professional level of analysis services in various business decision support contexts.

INFO 4300

Enterprise Web Development

Credit hours: 3

Addresses the challenges of developing software applications in a corporate environment. Covers methods to interact with code repositories and commit developed code. Teaches how to create web applications using test-driven development and how to write unit tests for applications. Teaches how to create and group unit tests together and how to trigger the tests automatically when code changes are made. Implements cloud deployments of web applications and teaches how to manage cloud resource usage. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Analyze development approaches of enterprise software development and small team project development.
2. Manage code repositories.
3. Control public software versions using package management systems.
4. Validate software functionality using unit tests.
5. Configure Windows and Linux container environments.
6. Deploy web applications to cloud providers using web servers and data stores.

INFO 4410

Database Administration

Credit hours: 3

Introduces students to the database administration tasks and tools of a Relational Database Management System (DBMS). Includes the core areas of installation and configuration, maintaining instances and databases, optimizing and troubleshooting, managing data, implementing security, and implementing high availability. Also, introduces NoSQL database solutions and their administration and configuration. Hands-on assignments provide students with opportunities to apply the knowledge gained in the course to a popular commercial database management system. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Install and configure a Relational Database Management System (RDBMS);
2. Maintain instances and databases;
3. Optimize and troubleshoot a database;
4. Manage data including implementing a backup strategy;
5. Implement security by utilizing logins, server roles, and database permissions;
6. Implement high availability solutions including AlwaysOn, database mirroring, and replication;
7. Install and administer a NoSQL solution;

INFO 4420

Mobile Application Development

Credit hours: 3

Focuses on the design and development of native mobile device applications. Covers mobile interface design and development using navigation controls specific to a popular mobile development platform. Introduces various user interface controls including those for displaying single data values and data collections along with their event models. Teaches methods for integrating apps with cloud-based data stores and cloud-based authentication. Composes apps with data from web services. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Develop mobile user interfaces using layout files with controls that respond to events.
2. Construct mobile apps with localization files to provide internationalization functionality.
3. Implement user interface code that overrides lifecycle methods.
4. Create mobile app functionality and event listeners by using variables, functions and control flow statements.
5. Incorporate cloud-based service functionality into mobile apps.
6. Develop apps that use web services and process JavaScript object notation (JSON).

INFO 4430

Systems Design and Implementation

Credit hours: 3

Continuation of INFO 3430. Focuses on the design and implementation of an information system using an agile, iterative development approach. Utilizes self-organizing teams that will deliver working software with ongoing customer collaboration. Introduces use of a source control system to manage code base, an agile project management tool, and encourages continuous integration practices. Requires that students work in teams to complete and present a working system of a project for a client. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Practice agile development methodologies and utilize agile tools to track iteration development;
2. Integrate data management, security, and performance requirements incrementally for each iteration;
3. Design and implement effective forms, reports, and the system user interface using continuous input from the client;
4. Work in teams to implement and deliver working software each development iteration;
5. Prepare test cases for each system component and code until all test cases pass;
6. Provide user help documentation, installation instruction, and training for each software iteration;
7. Complete project closure processes and final client acceptance testing;
8. Create and present a summary of project accomplishments.

IS 2000

Knowledge Integrated

Credit hours: 3

Introduces questions or problems whose answers or solutions require the integration of ideas and disciplines. Focuses on ideas from a variety of cultural perspectives. Covers how important thinkers through history have approached difficult questions in ways that integrated disciplines. Provides the opportunity to complete written assignments based on research.

Course Learning Outcomes

1. Explain how important thinkers have approached difficult questions in ways that integrated disciplines.
2. Conduct research across disciplinary borders.
3. Analyze relevant ideas from writings of key figures.
4. Demonstrate coherent, integrated knowledge about the special topic.

IS 300R

Introductory Topics in Integrated Studies

Credit hours: 3

Introduces a variety of topics crossing disciplines in science, religion, philosophy, history, literature, business, technology and the arts. Topics vary from semester to semester, but course remains modular in structure. Research and writing intensive. Requires final research paper. Involves writing across the curriculum. May be repeated for a maximum of 12 credits toward graduation.

Course Learning Outcomes

1. Locate and critically analyze primary and secondary sources.
2. Use historical sources and methodologies from interdisciplinary and multi-perspective approaches to develop an interpretation of the specific topic, issue, or period under study.
3. Apply critical research, reading, analysis, and writing skills in the production of written assignments.
4. Demonstrate the ability to apply new understanding of the special topic by completing a final research paper.

IS 350R

Topics in Integrated Studies

Credit hours: 3

Examines a particular interdisciplinary topic; topics vary from semester to semester. Presents topics that cross one or more fields of academic specialty from the arts and sciences. Includes lecture, reading, discussion and research. Research and writing intensive, requires final research paper. May be repeated for a maximum of 12 credits toward graduation.

Course Learning Outcomes

1. Locate and critically analyze primary and secondary sources.
2. Use historical sources and methodologies from interdisciplinary and multi-perspective approaches to develop an interpretation of the specific topic, issue, or period under study.
3. Apply critical research, reading, analysis, and writing skills in the production of written assignments.
4. Demonstrate the ability to apply new understanding of the special topic by completing a final research paper.

IS 4980

Integrated Studies Capstone I WE

Credit hours: 3

Focuses on a major research paper integrating the student's two emphases. Addresses theoretical and practical problems associated with research and writing that combine disciplines. Includes work with a committee throughout the semester. Taken first semester in the two-semester capstone sequence.

Course Learning Outcomes

1. Engage in Primary and Secondary Research in an area that requires integration of their two emphases.
2. Demonstrate ability to construct a thesis statement.
3. Write a clear and detailed proposal for a senior thesis that will integrate two or more emphasis areas.
4. Collaborate with three thesis mentors on a senior thesis or project.

IS 4990

Integrated Studies Capstone II WE

Credit hours: 3

Focuses on a major research paper (senior thesis) integrating the student's two or more emphases. Addresses theoretical and practical problems associated with research and writing that combine disciplines. Includes work with a committee throughout the semester, which must approve the written thesis. Requires the student to orally present the thesis in a formal defense. Taken second semester in a two-semester capstone sequence.

Course Learning Outcomes

1. Take initiative to work as a team member and communicate effectively with multiple faculty thesis advisors.
2. Synthesize information from two or more disciplinary areas by writing a major research paper.
3. Write final capstone/thesis.
4. Defend senior thesis orally before a formal defense committee comprised of multidisciplinary faculty thesis advisors.

IT 1510

Introduction to System Administration--Linux/UNIX

Credit hours: 3

Introduces administering Linux/UNIX Operating Systems including managing of software and services, configuration of kernel modules, network parameters, storage, cloud and virtualization technologies. Explores OS/software installation, managing daemons, user creation, file management, permissions, authentication, troubleshooting, system properties and processes, automation, scripting, orchestration, and security/server best practices. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the relationship between UNIX, Linux, BSD and OSX.
2. Perform administrative tasks including writing basic shell scripts.
3. Configure system security via users, groups and permissions.
4. Configure, manage, backup and restore file systems.
5. Install, update and remove software.
6. Configure system boot and initialization.
7. Manage and schedule processes.

IT 1600

Computer Architecture and Systems Software

Credit hours: 3

Provides a thorough grounding in computer hardware, system software, and contemporary information system architecture. Examines hardware structure, operating systems theory, and systems software as part of a technical foundation for enterprise systems development and IT infrastructure procurement and management. Lab access fee of \$45 for computers applies. Canvas Course Mats \$153/TstOut applies.

Course Learning Outcomes

1. Name and describe the hardware and software components of a computer system;
2. Explain the role and function of the various components;
3. Perform necessary file management and configuration tasks;
4. Configure a working computer.

IT 2530

Introduction to System Administration--Windows Client

Credit hours: 3

Introduces operation management of operating systems using Microsoft Windows. Introduces installation methods and troubleshooting, hardware device installation and management, storage management, disaster recovery planning and management. Aids the student in the development, understanding, and working knowledge of the Windows networking framework including peer-to-peer, workgroups, user profiles, domains, NTFS, and share-level permissions. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Install and upgrade to the current version of Windows;
2. Configure hardware and applications;
3. Configure network connectivity;
4. Configure access to resources;
5. Configure remote access and mobility;
6. Monitor and maintain Windows clients;
7. Configure backup and recovery options.

IT 2600

Data Communication Fundamentals

Credit hours: 3

Provides an in-depth knowledge of data communications and enterprise networking including networking and telecommunications technologies, hardware, and software. Emphasizes underlying technologies and protocols. Design topics include wired and wireless architectures; topologies, models, standards and protocols; and operation of bridges, routers, switches, and gateways. Includes lab assignments covering TCP/IP implementations. May be delivered hybrid. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe key principles of data representation and manipulation in computing and the principles underlying layered systems architectures and their application to both computers and networks.
2. Describe the differences and similarities between the core elements of an IT infrastructure solution, such as clients, servers, and network devices and how they are organized into infrastructure solutions in different organizational environments.
3. Describe the principles underlying service virtualization and the opportunities that virtual computing service provision models, such as cloud computing, create for organizations.
4. Describe through practical examples how protocols are used to enable communication between computing devices connected to each other.
5. Demonstrate the core concepts underlying IP networks to solve simple network design problems, including IP subnetting and structure of the Internet as an IT infrastructure.
6. Analyze and understand the security and business continuity implications of IT infrastructure design solutions.
7. Describe current trends in data communications.

IT 3200

Cloud Foundations

Credit hours: 3

Covers the business value of cloud computing, cloud architecture and design, maintenance and optimization of cloud environments. Explores the effect of cloud adoption on IT service management, as well as the risks and consequences of implementing cloud solutions. Investigates cloud deployment models, infrastructure needs, cloud applications, and cloud and data security.

Course Learning Outcomes

1. Analyze the different current cloud models.
2. Analyze system requirements to successfully execute a cloud solution.
3. Design a cloud solution to support business requirements.
4. Implement virtualization, infrastructure, troubleshooting, resource management, security, systems management, and business continuity.
5. Deploy hardware resources and the virtual environment infrastructure.
6. Optimize cloud environments, including proper automation and orchestration procedures, backup and restore operations, and disaster recovery tasks.
7. Troubleshoot capacity, automation, connectivity and security issues related to the cloud implementation.

IT 3510

Advanced System Administration--Linux/UNIX

Credit hours: 3

Explores enterprise systems administration using the UNIX/Linux operating system. Students learn advanced administrative tasks including server installation, network configuration and user management, file management, network services deployment, server security, back up and recovery, Shell scripting, source compilation, performance monitoring and tuning, troubleshooting, and managing hardware and component changes. Requires a community project and portfolio based on advanced server management skills. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Write or edit a Bash, Perl or Python script to accomplish system administration tasks.
2. Install and configure software to provide server services.
3. Configure and troubleshoot network services.
4. Implement tools for network management and monitoring.
5. Plan and coordinate authentication and services in an enterprise network.
6. Secure a Linux/Unix server.
7. Setup a web server and shopping cart for multiple hosts.
8. Distinguish between different virtualization options for private cloud computing.

IT 3530

Advanced System Administration--Windows Server

Credit hours: 3

Explores enterprise systems administration using the Microsoft Windows Server operating system. Students learn advanced administrative tasks including server installation; hardware change management; software application management; network configuration and user management; file management; printing; network services deployment; server security; back up and recovery; scripting; performance monitoring, tuning, and troubleshooting. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Use PowerShell effectively as an interactive management tool and to automate repetitive administrative tasks
2. Design, implement, and manage DNS to provide name resolution for Active Directory (AD)
3. Design, implement and manage AD infrastructure that fulfills the security needs of a company
4. Describe migration and interoperability features of AD
5. Design, implement, and manage a secure network infrastructure
6. Design, implement, and manage data storage solutions
7. Design, implement, and manage Windows Server virtualization and installation
8. Design, implement, and manage policy based computing using Group Policy Objects

IT 3600

Internetworking and Router Management

Credit hours: 3

Teaches the theory and implementation skills and techniques needed to configure, troubleshoot and support reliable TCP/IP internetworks. Discusses security and management issues. Offers the opportunity to build an internetwork with cables, network cards, and routers. Emphasizes the analysis and design of networks in organizations. Includes lab assignments covering TCP/IP implementations and router configurations. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Identify and correctly install the various hardware and software components of a network;
2. Analyze the network infrastructure requirements of a small to medium sized organization and design a network to handle the expected load levels;
3. Monitor network usage, identify potential bottlenecks and problem areas, and recommend ways to correct problems when they arise;
4. Use basic methods and techniques to prevent network intrusion and loss of data and recommend a security design for a given network.

IT 4300

IoT-Internet of Things

Credit hours: 3

Introduces basic concepts and applications of Internet of Things (IoT) technology in smart environments. Covers IoT application, design, and the list of capabilities that an IT professional can dial up or down depending on tradeoffs and decisions made in IoT design. Emphasizes IoT design considerations regarding the domain, requirements, cost, mobility, and network design.

Course Learning Outcomes

1. Describe the impact of IoT on existing organizational models.
2. Explain the impact of IoT on organizational use cases.
3. articulate the role of IoT in conjunction with big data, applications, and mobility.
4. Describe the components required for an IoT environment.
5. Illustrate the tools that are used in designing IoT.
6. Express intelligent information processing and its application in an IoT environment.
7. Illustrate the challenges in defining the architecture for different IoT applications.
8. Design an architectural framework for an IoT environment.

IT 4600

Enterprise Network Architectures and Administration

Credit hours: 3

Examines management of resources used in enterprise computing environments from a practical, applied viewpoint. Extends the student's understanding of these concepts through hands-on application of real-world network, server, and software management techniques and addresses the problems associated with providing a secure, stable, reliable enterprise computing infrastructure. Includes principles of IT enterprise infrastructure management; configuration, analysis, and troubleshooting of virtual servers; redundancy and failover; directory service integration, access control and security; uptime monitoring and notification; backup and recovery; Storage Area Networking; Cloud computing platform choices, functionality, cost, deployment, flexibility, and adaptability. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain the importance of services provided in today's enterprise computing environment;
2. Apply skills learned through hands-on exercises in setup, configuration, and management of hardware, software, and network protocols;
3. Analyze a small to mid-size information system for infrastructure weaknesses and offer recommendations for improvement;
4. Communicate to clearly and succinctly, using both oral and written communication.

IT 4750

Information Technology Operations Capstone

Credit hours: 3

Senior-level, capstone experience course. Enhances student IT knowledge with operational and business applications. Focuses on integrating IT principles as an organic part of an organization's processes. Covers barriers to implementing information technology solutions, policies, and building a business case for IT initiatives, and how to incorporate IT project management and DevOps to integrate and automate the work of software development and IT operations. Requires student project presentations. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the role of IT services and applications to create a competitive advantage for the organization.
2. Explain the business case for IT initiatives.
3. Describe the challenges of implementing IT applications and services.
4. Explain how to incorporate IT project management and DevOps to integrate and automate the work of software development and IT operations.
5. Create an IT project.
6. Explain proper documentation and reporting requirements for IT projects.

IT 6300

Principles of Cybersecurity

Credit hours: 3

Provides foundational knowledge of cybersecurity for graduate-level studies. Covers information security theories, terminology, and implementation. Includes networking and system fundamentals, cryptography, malware, authentication, authorization, access control, physical security, attacker profiles, appropriate threat responses, and the human elements of cybersecurity. Introduces multiple aspects of cybersecurity and various career paths within the field.

Course Learning Outcomes

1. Differentiate and debate cybersecurity concepts, such as the CIA triad, defense-in-depth, and least privilege.
2. Evaluate technologies related to cybersecurity including TCP/IP, cryptography, firewalls, and anti-malware.
3. Develop strategies to mitigate cybersecurity threats to enterprise, government, and individual.
4. Formulate role statements of cybersecurity in organizations.
5. Evaluate various aspects of cybersecurity, including common specializations, certifications, and career options.

IT 6330

Cybersecurity Operations

Credit hours: 3

Focuses on operational aspects of cybersecurity. Includes incident response, network monitoring, change management, configuration management, and resource protection. Emphasizes the role of cybersecurity in the enterprise. Integrates sound cybersecurity principles into various aspects of IT operations. Includes information on secure server administration and open source security software. Teaches cybersecurity standards for government and industry sources and the application of those standards.

Course Learning Outcomes

1. Appraise the role of cybersecurity operations in the enterprise.
2. Respond to cybersecurity incidents with proper techniques.
3. Monitor networks for intrusion and data leakage.
4. Defend change management and its role in cybersecurity.
5. Manage configurations to ensure systems have proper baseline security settings.
6. Evaluate the application of industry and government cybersecurity standards to the enterprise.
7. Administer secure servers.
8. Select and implement open source cybersecurity software.

IT 6350

Law/Ethics/Privacy in Cybersecurity

Credit hours: 3

Explores legal, ethical, and privacy issues as they apply to cybersecurity. Includes the legalities and ethics of hacking, corporate information security and use policies, and the government's role in cybersecurity. Emphasizes the roles and responsibilities of individual cybersecurity practitioners as well as corporate entities, including vulnerability disclosure and correcting software defects. Teaches privacy policies and regulations as they relate to cybersecurity and information systems.

Course Learning Outcomes

1. Analyze major legislation that relates directly to cybersecurity, privacy, and hacking.
2. Debate privacy issues in the digital age.
3. Analyze how cybersecurity professionals can address privacy concerns.
4. Evaluate ethical issues involved in cybersecurity and "hacktivism."
5. Classify vulnerability disclosure methods.

IT 6370

Penetration Testing and Vulnerability Assessment

Credit hours: 3

Explores advanced topics in ethical hacking, penetration testing, vulnerability assessment, and other offensive network and system techniques. Teaches network scanning, target identification, application exploitation, antivirus evasion, physical security, social engineering, phishing, and privilege escalation. Contains hands-on labs providing experience from the perspective of an attacker.

Course Learning Outcomes

1. Interpret hacking techniques and mitigation strategies.
2. Evaluate appropriate methods of attacking networks and systems.
3. Analyze the human and physical factors of cybersecurity.
4. Demonstrate use of common offensive security tools.
5. Defend the value of penetration testing in an enterprise.

IT 6740

Advanced Network Defense and Countermeasures

Credit hours: 3

Explores advanced topics in network defense, server hardening, vulnerability assessment, and mitigation scanning. Teaches students about network scanning, asset identification, Linux and Windows server hardening, anti-malware tools, intrusion detection, physical security, perimeter security, and cybersecurity awareness training. Contains hands-on labs providing experience from the perspective of a defender.

Course Learning Outcomes

1. Analyze advanced hacking techniques and mitigation strategies.
2. Evaluate safeguards to protect servers and other resources.
3. Formulate a process of defending networks and systems.
4. Describe the human and physical factors of cybersecurity.
5. Select and implement consistent documentation practices.

IT 6770

Cybersecurity Management

Credit hours: 3

Teaches management skills applicable to cybersecurity. Includes governance models, business continuity, disaster recovery, risk management, organizational security, cybersecurity life cycle management, and interactions between information technology and business units. Focuses on policies, procedures, and guidelines based on industry and government standards to fulfill legal, regulatory, and operational requirements.

Course Learning Outcomes

1. Debate the importance of cybersecurity management in the enterprise.
2. Contrast different governance models and frameworks.
3. Develop cybersecurity policies, procedures, and guidelines.
4. Create strategies for business continuity and disaster recovery.
5. Assess and measure cybersecurity risks.
6. Create and implement risk management strategies.
7. Examine security life cycles for programs and projects.
8. Analyze common organizational structures and where cybersecurity fits.

IT 6900

Cybersecurity Capstone

Credit hours: 3

Provides culmination of cybersecurity in a self-directed research or practical project that showcases student's mastery of cybersecurity topics. Provides an opportunity to conduct research and/or implement systems that incorporate topics from previous courses. Requires students to present their work at the end of the semester.

Course Learning Outcomes

1. Demonstrate mastery of cybersecurity topics.
2. Communicate complex cybersecurity topics effectively.
3. Prepare a feasible project proposal.
4. Present findings from cybersecurity research.
5. Design and produce an advanced cybersecurity project.

JPNS 1020

Beginning Japanese II LH

Credit hours: 4

Offers a continuation of basic Japanese. Uses various methods of instruction that focus on the development of functional competence in listening, speaking, reading, and writing. Provides comprehensive explanations of basic Japanese grammar along with structural practice for building language accuracy. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken and written conversations at the "novice mid" level.
2. Express preferences or feelings using practiced or memorized words, phrases, and simple sentences at least at the "novice mid."
3. Present information orally and in writing using practiced or memorized words, phrases, and simple sentences at least at the "novice mid."
4. Identify the main idea and some basic details in conversations and texts supported by gestures or visuals at least at the "novice mid."
5. Reproduce aspects of Japanese grammar at least at the "novice mid."
6. Recognize aspects of Japan's cultural heritage, society and everyday life.

JPNS 2010

Intermediate Japanese I LH

Credit hours: 4

Offers a continuation of basic Japanese. Reviews and builds additional skills from 1000-level language courses. Uses various methods of instruction that focus on the development of functional competence in listening, speaking, reading, and writing. Introduces authentic texts and provides discussions based on reading. Provides comprehensive explanations of basic Japanese grammar along with structural practice for building language accuracy. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken and written conversations at the "novice high" level.
2. Express feelings or opinions on a given topic at least at "novice high."
3. Present information orally and in writing at least at "novice high."
4. Summarize the main idea in informational texts that are spoken and written at least at "novice high."
5. Describe main idea and key information in simple fictional texts at least at "novice high."
6. Develop a better conceptual understanding and partial control over basic Japanese structures at least at "novice high."
7. Reproduce aspects of Japanese grammar at least at "novice high."
8. Recognize aspects of Japan's cultural heritage, society and everyday life.

JPNS 202G
Intermediate Japanese II HH GI

Credit hours: 4

Reviews and builds further language skills upon the grammar, reading, writing (including Kanji knowledge), and conversation skills learned in the previous JPNS 1010, 1020, and 2010. Introduces reading of a variety of texts in Japanese. Lab access fee of \$12 applies.

Course Learning Outcomes

Please see the department for information.

JPNS 3050

Advanced Japanese

Credit hours: 3

For non-native Japanese speakers who have attained basic mastery of Japanese and some Kanji reading skills. Focuses on the development of Japanese language skills with emphasis on grammar review, reading, and writing. Introduces Japanese culture and literature. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Master a variety of grammatical concepts in Japanese.
2. Comprehend a variety of literary and cultural texts.
3. Describe a variety of cultural topics, orally and in writing.
4. Write expository essays with correct grammar and usage.

JPNS 351G

Japanese Culture and Civilization GI

Credit hours: 3

Explores chronologically the cultural formation and development of Japan. Examines and discusses the ethnic development and linguistic history from ancient to modern Japanese society. Analyzes and evaluates the differences and similarities between the Japanese and American cultures. Class instruction and presentations in Japanese. Fulfills the requirements for a G/I course.

Course Learning Outcomes

1. Recognize how the Japanese people adopted foreign cultures, assimilated and refined them into their own culture;
2. Evaluate impacts of major historical events on Japanese society from the ancient to modern and how such events played a role in the development of Japanese culture and society;
3. Discuss how the current behaviors of the Japanese people have been formed;
4. Analyze the difference between the Japanese culture and the American culture and acquire knowledge and skills to properly respond to Japanese behavior;
5. Gain correct knowledge and understanding of the Japanese culture and civilization;
6. Identify and discuss stereotypical descriptions and misunderstandings of the Japanese and Japanese culture and the reality of the.

LANG 3000
Language and Culture LH

Credit hours: 3

Introduces cultural linguistics. Analyzes features of human languages that make possible semantic universality. Examines distinction between phonetic and phonemic units. Explores relationship between language and culture. Studies how language shapes culture and how culture shapes language.

Course Learning Outcomes

Please see the department for information.

LANG 4200

Methods of Teaching a Foreign Language

Credit hours: 3

For those who plan to certify to teach a foreign language. Addresses learning approaches, methods, evaluation procedures, text analysis, and other techniques for teaching and evaluating language learning. Includes discussion about professional organizations and other resources in the field. Taught entirely in English.

Course Learning Outcomes

1. Demonstrate familiarity with the historical development of language teaching pedagogy.
2. Apply the various methods and theories in language teaching.
3. Access specialized literature and other resources in the language teaching field.
4. Determine a preferred method or approach to teach a specific concept.
5. Evaluate textbooks and other language learning materials.

LANG 4500

Translation Technology

Credit hours: 3

Provides students the practice and exposure to become proficient in the use of CAT (Computer-Assisted Translation) tools, which is crucial for competitive entry into the language services industry. Prepares students and translators of any language to obtain one or more certifications for industry-leading CAT tools, such as Trados, memoQ, and Phrase. Describes machine translation technology from its origins to the current state of the science. Investigates the foundational principles of terminology management. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Translate files of different formats in any language pair, using computer-assisted translation (CAT) tools to optimize the process.
2. Examine and assess the tools most commonly used in professional environments in the language services industry.
3. Obtain at least one certification for an industry-leading CAT tool.
4. Create and manage termbases and use them in a CAT tool environment.
5. Apply principles of project management to translation and localization projects.
6. Describe how machine translation technology works and use machine translation APIs with CAT tools.

LEGL 3000

Business Law

Credit hours: 3

For School of Business students and others desiring a more complete understanding of business law. Presents the American legal system, constitutional law, statutory law, common law, and administrative law and alternatives to courts. Discusses crimes, torts, negligence, contracts, negotiable instruments, and contractual relationships. May be delivered online. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Summarize the history and development of the American legal system;
2. Define and interpret basic legal concepts in Business Law including but not limited to: the American Court System; ADR; Constitutional Law for Businesses; Torts, Crimes, and Intellectual Property; Product Liability; Cyber Law and Crimes; Contracts; Negotiable Instruments; Creditor's and Debtor's Rights; Agency Formation and Termination; Liabilities of Principals, Agents and Independent Contractors; Labor Law; Small and Large Business Entities; Administrative Law; Consumer Protection; Antitrust; Personal Property; Real Property; Insurance; Accountant's Liability; Wills and Trusts; Family Law; and, International and World Trade Law;
3. Define common business legal terms and interpret their use in legal documents;
4. Critique legal concepts in current events and the world generally.

MAT 1010

Intermediate Algebra

Credit hours: 4

Uses an in-depth function and graphing based approach to teach Intermediate Algebra and focuses on conceptual understanding as well as algebraic skill. Covers linear, polynomial, quadratic, exponential, logarithmic and rational, functions from algebraic and graphical perspectives. Extends students' mathematical reasoning practice to a collegiate and academic approach in mathematical thinking. Prepares students for MAT 1030, STAT 1040, MATH 1050 and MATH 1090.

Course Learning Outcomes

1. Explain functions through graphical, algebraic, and set perspectives, including domain, range, transformation, and inverse.
2. Graphically analyze the fundamental features of functions, including shape, intercepts, domain, and range for linear; quadratic; polynomial; exponential; logarithmic; and rational functions.
3. Perform algebraic operations, including factoring and composition of linear; quadratic; polynomial; exponential; logarithmic; and rational functions.
4. Analyze functions from an algebraic perspective, including finding function values, zeros, intercepts, or vertex; construct a linear function: linear; quadratic; polynomial; exponential; logarithmic; rational.
5. Construct a linear function algebraically using slope, y-intercept, and/or points on the line.
6. Perform transformations on basic linear, quadratic, exponential, logarithmic, and rational functions graphically and algebraically.
7. Find the inverse function of linear, quadratic, exponential, logarithmic, and rational functions graphically and algebraically.
8. Find the intersection point(s) between functions of the same type through equation solving of linear; quadratic; polynomial; exponential; logarithmic; and rational functions.

MAT 1030

Quantitative Reasoning QL

Credit hours: 3

Teaches how to communicate, interpret, and analyze quantitative information found in the media and in everyday life to make sound personal, professional, and civic decisions.

Course Learning Outcomes

1. Explain real world information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words), including making reasonable predictions of trend data;
2. Convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words) that are appropriate and accurate;
3. Perform calculations that are sufficiently comprehensive and elegant (clear, concise, etc.) to solve authentic problems;
4. Analyze real world data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions;
5. Make and evaluate important assumptions in estimation, modeling, and data analysis using a compelling rationale for why each assumption is appropriate;
6. Express quantitative evidence in support of an argument or specific purpose (in terms of what evidence is used and how it is formatted, presented, and contextualized);

MATH 1050

College Algebra QL

Credit hours: 4

Includes inequalities, functions and their graphs, polynomial and rational functions, exponential and logarithmic functions, systems of linear and nonlinear equations, matrices and determinants, arithmetic and geometric sequences, and the Binomial Theorem. May be delivered hybrid and/or online.

Course Learning Outcomes

1. Use algebraic methods to solve a variety of problems involving exponential, logarithmic, polynomial, and rational functions, systems of equations and inequalities, sequences notation.
2. Solve equations by correctly completing several logical steps before arriving at a final answer, and when possible, check solutions.
3. Graph linear, power, root reciprocal, absolute value, polynomial, rational, exponential, logarithmic functions along with basic transformations.
4. Graph relations and solutions sets of systems of inequalities.
5. Use mathematical vocabulary and symbols in order to understand, interpret and represent mathematical information.
6. Use algebraic manipulations to rewrite equations and expressions, including rewriting in standard form, factoring completing the square and converting systems of equations to either a matrix equation or augmented matrix form.

MATH 1060

Trigonometry QL

Credit hours: 3

Includes the unit circle and right triangle definitions of the trigonometric functions, graphing trigonometric functions, trigonometric identities, trigonometric equations, inverse trigonometric functions, the Law of Sines and the Law of Cosines, vectors, complex numbers, polar coordinates, and rotation of axes.

Course Learning Outcomes

1. Solve problems involving trigonometric and inverse trigonometric functions, the Law of Sines, the Law of Cosines, and De Moivre's Theorem.
2. Graph trigonometric and inverse trigonometric functions using basic transformations and, for the trigonometric functions, the concepts of period, amplitude, and phase shift.
3. Evaluate the trigonometric functions without a calculator at multiples of the reference angles $\pi/6$, $\pi/4$, $\pi/3$, $\pi/2$.
4. Construct the inverse trigonometric functions and their domains and ranges.
5. Verify trigonometric identities.
6. Write the trigonometric form of complex numbers.
7. Convert between polar and rectangular coordinates.
8. Write equations describing the conic sections in both polar and rectangular coordinates.

MATH 1100

Survey of Calculus QL

Credit hours: 3

Provides a comprehensive survey of the basic concepts and techniques of differential and integral calculus. Covers topics from both single and multivariable calculus including limits, continuity, differentiation, partial differentiation, integration, single variable and multivariate optimization. Includes the derivatives and integrals of polynomial functions, rational functions, exponential functions, and logarithmic functions, and partial differentiation of multivariate versions of these same functions. Emphasizes applications to specific disciplines such as business, computer science, and the life sciences.

Course Learning Outcomes

1. Evaluate limits algebraically, analytically, and graphically.
2. Find derivatives by applying differentiation techniques.
3. Use the first and second derivatives of a function to find which intervals of its graph are increasing/decreasing and concave up/down.
4. Compute definite and indefinite integrals by applying the appropriate integration techniques.
5. Compute the first and second partial derivatives of a function of several variables.
6. Solve multivariable optimization problems.
7. Solve discipline specific problems using the techniques of Calculus.

MATH 1210

Calculus I QL

Credit hours: 4

Covers limits, continuity, differentiation, applications of differentiation, integration, and applications of integration, including derivatives and integrals of polynomial functions, rational functions, exponential functions, logarithmic functions, trigonometric functions, inverse trigonometric functions, and hyperbolic functions. Is a prerequisite for calculus-based sciences.

Course Learning Outcomes

1. Compute the limits of various types of functions including polynomial, rational, trigonometric, inverse trigonometric, exponential, logarithmic, hyperbolic, and piecewise-defined functions, and combinations of such functions using L'Hopital's Rule when appropriate.
2. Determine if a function is continuous or differentiable at a given point.
3. Compute the derivatives of polynomial, rational, trigonometric, inverse trigonometric, exponential, logarithmic, hyperbolic, and piecewise-defined functions, and the derivatives of products, quotients, and compositions of such functions using implicit differentiation when necessary.
4. Solve application problems related to differentiation including rates of changes in the sciences, related rates, linear approximations and differentials, Newton's method, and optimization.
5. Use information from the first and second derivatives to aid in graphing functions.
6. Use Riemann sums to approximate the area under a curve.
7. Apply the Fundamental Theorem of Calculus and the substitution rule where appropriate to compute definite and indefinite integrals.

MATH 1220

Calculus II

Credit hours: 4

Includes applications of integration, integration techniques, arc length, area of a surface of revolution, moments and centers of mass, sequences and series, and parametrization of curves and polar coordinates.

Course Learning Outcomes

1. Use integrals to compute the area between two curves, volumes of solids of revolutions or known cross sections, and the average value of a function.
2. Solve application problems related to integration including force, work, and volume.
3. Compute definite, indefinite, and improper integrals using integration by parts, trigonometric substitution, and partial fraction decomposition.
4. Approximate definite integrals using approximation formulas including Simpson's rule.
5. Find the area of a surface of revolution, centroids, hydrostatic force, and the arc length of curves, parametric curves, and in polar coordinates.
6. Determine convergence and divergence of sequences and series using Partial Sums, Geometric Series Test, p-series Test, the Integral Test, Comparison Test, Limit Comparison Test, Alternating Series Test, Ratio Test, and Root Test.
7. Find the interval of convergence of power series, Taylor series and Taylor polynomials of functions, and error bounds using the Taylor Inequality.

MATH 2010

Mathematics for Elementary Teachers I

Credit hours: 3

Is for pre-elementary education majors. Includes problem solving, sets, numeration systems, arithmetic of whole numbers, integers, rational numbers, real numbers, elementary number theory, ratios, proportions, decimals, and percents.

Course Learning Outcomes

1. Perform Boolean operations on sets.
2. Convert numerals from one numeration system to another numeration system including Hindu-Arabic, Egyptian, Mayan, Roman, Babylonian, and systems that have bases other than 10.
3. Apply basic properties of and algorithms for addition, subtraction, multiplication, and division of whole numbers, integers, rational numbers, real numbers, and numbers in different bases.
4. Apply concepts of elementary number theory including prime and composite numbers, the greatest common divisor, least common multiple, and divisibility rules of 2, 3, 4, 5, 6, 8, 9, 10, or 11.
5. Express a number as a percent, fraction, or decimal and a repeating decimal as a fraction.
6. Determine whether a number is rational or irrational from its decimal expansion.
7. Use basic problem solving skills including algebraic thinking, ratios and proportions.

MATH 2020

Mathematics for Elementary Teachers II

Credit hours: 3

Is for pre-elementary education majors. Includes topics on probability, statistics, geometry and measurement.

Course Learning Outcomes

1. Convert measurements within a system of measurement and from one system of measurement to another.
2. Find the perimeter and area of plane figures and the surface area and volume of solids.
3. Identify basic geometric plane figures and solids and their properties including symmetries.
4. Solve triangle problems involving the concepts of congruence, similarity, the Pythagorean Theorem, and the Triangle Inequality.
5. Perform elementary geometric constructions and transformations of the plane using a variety of tools.
6. Solve application problems of probability and simulations.
7. Summarize data in bar graphs, picture graphs, dot plots, histograms, frequency distributions, box plots, scatter plots, and two-way tables.
8. Find measures of central tendency (mean and median) and measures of dispersion (mean absolute deviation and interquartile range), outliers, and lines of best fit.
9. Interpret lines of best fit, solutions to inequalities, and solutions to systems of equations.

MATH 2210

Calculus III

Credit hours: 4

Includes vectors in 3-space, quadric surfaces, partial derivatives, gradient, Lagrange multipliers, multiple integrals, line integrals, Green's Theorem, surface integrals, the Divergence Theorem, and Stokes' Theorem.

Course Learning Outcomes

1. Find dot and cross products of vectors, projections, equations of lines and planes in 3D-space, and graphs of quadric surfaces.
2. Compute the rectangular, cylindrical, and spherical coordinates of points in space, tangent vectors and tangent lines to curves in space, arc length, velocity, acceleration, and distance traveled of objects moving in space.
3. Find partial derivatives of functions of several variables, the gradient, directional derivative, and linear approximations.
4. Find critical points, extreme values, and saddle points of functions of two variables using methods such as the Second Partial Derivative Test, the Extreme Value Theorem, and Lagrange multipliers.
5. Compute double integrals in rectangular or polar coordinates or via change of variables.
6. Compute triple integrals in rectangular, cylindrical, or spherical coordinates or via change of variables.
7. Determine parametric representations of curves or surfaces with orientation and compute line and surface integrals of scalar functions and vector fields.
8. Find the curl and divergence of a vector field.
9. Apply the Fundamental Theorem of Line Integrals, Green's theorem, Stokes' theorem, and the Divergence theorem to compute appropriate double, triple, line, or surface integrals.

MATH 2250

Differential Equations and Linear Algebra

Credit hours: 4

Is for engineering students. Includes separable equations, linear differential equations, differential operators and annihilators, variation of parameters, Laplace transforms, and systems of linear differential equations. Introduces basic concepts of linear algebra including matrices, Gaussian elimination, determinants, linear independence, and eigenvalues and eigenvectors.

Course Learning Outcomes

1. Apply the methods of separation of variables, annihilators, undetermined coefficients, Laplace transforms, and variation of parameters to solve differential equations, the methods of Gaussian elimination, inverse matrices, and Cramer's rule to solve systems of linear equations, and the method of Laplace transforms and the operator method to solve systems of linear differential equations.
2. Solve linear systems of equations, homogeneous linear equations with constant coefficients, nonhomogeneous linear differential equations, and systems of linear differential equations.
3. Find the Laplace transforms and the inverse Laplace transforms of functions and solutions of initial value problems.
4. Compute determinants, matrix inverses, eigenvalues and eigenvectors of matrices, and algebraic operations on matrices.
5. Determine whether a set of vectors is linearly dependent or independent.
6. Determine whether solutions of a system of differential equations is dependent or independent.

MATH 2270

Linear Algebra

Credit hours: 3

Includes matrices and systems of equations, determinants, vector spaces, linear transformations, orthogonality, and eigenvalues and eigenvectors.

Course Learning Outcomes

1. Solve systems of linear equations using the methods of elimination, Gaussian elimination, inverse matrices, and Cramer's rule.
2. Evaluate inner products, angles between vectors in an inner product space, the dimension of a vector space, the rank of a matrix, the determinant of a matrix, the coordinates of a vector in terms of a given basis, and compositions and inverses of linear transformations.
3. Determine which matrices are invertible, which matrices are orthogonal, which operations are inner products, and whether a set of vectors is linearly dependent or independent.
4. Find the eigenvalues and eigenvectors of a matrix, a basis and orthogonal basis for a vector space, linear transformations satisfying given requirements, the diagonalization of a matrix, and the orthogonal diagonalization of a symmetric matrix.

MATH 2280

Ordinary Differential Equations

Credit hours: 3

Includes separable equations, linear differential equations, differential operators and annihilators, variation of parameters, power series solutions of differential equations, Laplace transforms, systems of linear differential equations, and numerical methods.

Course Learning Outcomes

1. Apply the methods of separation of variables, annihilators, undetermined coefficients, Laplace transforms and variation of parameters to solve differential equations, and the method of Laplace transforms and the operator method to solve systems of linear differential equations.
2. Determine whether a differential equation is exact.
3. Determine whether solutions to a differential equation are independent or dependent.
4. Determine which coefficients of power series give series solutions to differential equations with variable coefficients.
5. Solve homogeneous linear equations with constant coefficients, nonhomogeneous linear differential equations, and systems of linear differential equations.
6. Find the Laplace transforms and the inverse Laplace transforms of functions, solutions to initial value problems, and implicit solutions to exact differential equations.

MATH 3000

History of Mathematics WE

Credit hours: 3

Provides a survey of the history of mathematics with a focus on the development of mathematical ideas in their historical context. Includes numeration systems, the mathematics of the ancient world, the development of algebra, geometry, and calculus, and the work of pivotal mathematicians.

Course Learning Outcomes

1. Describe the cultural and historical influences on the development of mathematical thought.
2. Apply problem-solving and calculation techniques that were common during the historical periods studied, such as Egyptian multiplication and division, the method of false position, solving cubic equations using Cardano's method, and Fermat's and Barrow's techniques for differentiation.
3. Express numbers using Egyptian, Babylonian, Greek, Roman, and Mayan numeration systems.
4. Describe the lives of and the contributions to mathematics of important ancient Greek mathematicians including Pythagoras, Hippocrates, Euclid, Archimedes, and Eratosthenes.
5. Describe the lives and contributions of important European mathematicians including Leonardo of Pisa, Cardano, Descartes, Pascal, Fermat, Wallis, Barrow, Newton, Leibniz, the Bernoullis, Euler, Gauss, and Cantor.
6. Relate the history of pivotal developments in mathematics, such as Euclidean and non-Euclidean geometry, calculus, Fermat's Last Theorem, and solutions of polynomial equations.
7. Prove the Pythagorean Theorem, Euclid's theorem that there are infinitely many primes, the irrationality of the square root of 2, Newton's approximation of pi, Leibniz's summation of the reciprocals of the triangular numbers, Bernoulli's theorem on the divergence of the harmonic series, Euler's summation of the reciprocals of the square numbers, and Cantor's theorem on the uncountability of the real numbers.
8. Write effective mathematical and historical content, such as for proofs or articles, following the current conventions of the mathematical community.

MATH 3010

Methods of Secondary School Mathematics Teaching

Credit hours: 3

Is for Mathematics Education majors. Presents different methods of teaching mathematical ideas at the secondary school level. Includes classroom instruction, student presentations, and field experiences. Studies various techniques of assessment and classroom management.

Course Learning Outcomes

1. Apply the skills, knowledge, and reflective practice necessary for successful teaching, including classroom procedures, materials, and methods of evaluation.
2. Facilitate their students' learning through discovering mathematical concepts, stimulating learning of mathematics, and building mathematical problem solving skills.
3. Apply pedagogical mathematical content knowledge to build understanding, accuracy and efficiency in computational skills with secondary school students.
4. Teach their students how to study mathematics by evaluating the learning of concepts, skills, and problem solving and in developing a desirable attitude and appreciation towards mathematics.
5. Evaluate new curriculum proposals, materials, and technology in light of current trends in mathematics education.
6. Plan for effective mathematics instruction including selecting appropriate goals, writing lesson plans and units, and evaluation items.
7. Find new applications, ideas, and materials for effective mathematics instruction.
8. Facilitate their students' growth from concrete representation to the symbolic and the specific to the general.

MATH 3030

Algebra for Secondary Mathematics Teaching

Credit hours: 3

For Mathematics Education Majors: Includes the exploration of important conceptual underpinnings, common misconceptions and students' ways of thinking, appropriate use of technology, and instructional practices to support and assess the learning of algebra. Teaches algebra as an extension of number, operation, and quantity; various ideas of equivalence as it pertains to algebraic structures; patterns of change as covariation between quantities; connections between representations (tables, graphs, equations, geometric models, context); and the historical development of content and perspectives from diverse cultures. Focuses on deeper understanding of rational numbers, ratios and proportions, meaning and use of variables, functions (e.g., exponential, logarithmic, polynomials, rational, quadratic), and inverses.

Course Learning Outcomes

1. Construct mathematical explanations and arguments.
2. Analyze definitions and statements of theorems.
3. Create examples and counterexamples.
4. Draw helpful diagrams and figures.
5. Use mathematical terminology and notation.
6. Use multiple representations of a mathematical concept.
7. Analyze mathematical errors and misconceptions.

MATH 3050

Geometry for Middle School Mathematics Teaching

Credit hours: 3

Explores important conceptual underpinnings, common misconceptions and students' ways of thinking, appropriate use of technology, instructional practices to support and assess the learning of geometry in grades 6-9, and designed for students seeking a Middle School Mathematics Endorsement from the Utah State Board of Education. Teaches constructions and transformations, congruence and similarity, analytic geometry, solid geometry, and the historical development of content and perspectives from diverse cultures. Makes explicit connections to various mathematical content strands (modeling, function, and algebra).

Course Learning Outcomes

1. Construct mathematical explanations and arguments.
2. Analyze definitions and statements of geometric theorems.
3. Create examples and counterexamples to support or refute statements about geometric figures and properties.
4. Construct diagrams and figures to illustrate facts about geometric figures and properties.
5. Use correct mathematical terminology and notation.
6. Use multiple representations of a mathematical concept.
7. Analyze mathematical errors and misconceptions.

MATH 3060

Statistics and Probability for Middle School Mathematics Teaching

Credit hours: 3

Explores important conceptual underpinnings, common misconceptions and students' ways of thinking, appropriate use of technology, instructional practices to support and assess the learning of statistics and probability, and is designed for students seeking a Middle School Mathematics Endorsement from the Utah State Board of Education. Focuses on summarizing and representing data, study design and sampling, probability, testing claims and drawing conclusions, and the historical development of content and perspectives from diverse cultures.

Course Learning Outcomes

1. Explain fundamental definitions, theorems, and concepts of the grades 6-9 statistics and probability curriculum.
2. Solve statistical problems related to the grades 6-9 statistics and probability curriculum and its theoretical foundation.
3. Evaluate pedagogical content focused on statistical thinking.
4. Develop strategies for teaching statistical concepts, thinking, and skills to middle school students.
5. Use appropriate tools and technology for effective middle school teaching.
6. Develop models of teaching that focus on enhancing professional knowledge and instructional skill in standards-based statistics and probability.

MATH 3090

Methods of Middle School Mathematics Teaching

Credit hours: 3

Presents different methods of teaching mathematical ideas at the middle school level. Includes classroom instruction, student presentations, the study of various techniques of assessment and classroom management, and is designed for students seeking a Middle School Mathematics Endorsement from the Utah State Board of Education.

Course Learning Outcomes

1. Incorporate the skills, knowledge, and reflective practice necessary for successful teaching, including classroom procedures, materials, and methods of evaluation.
2. Demonstrate an ability to facilitate student learning through discovering mathematical concepts, stimulating learning of mathematics, and building mathematical problem-solving skills.
3. Apply pedagogical mathematical content knowledge to build understanding, accuracy and efficiency in computational skills with middle school students.
4. Demonstrate an ability to teach students how to study mathematics by evaluating the learning of concepts, skills, and problem solving.
5. Develop a desirable attitude and appreciation towards mathematics.
6. Evaluate new curriculum proposals, materials, and technology in light of current trends in mathematics education.
7. Plan for effective mathematics instruction by selecting appropriate goals and by writing lesson plans, units, and evaluation items.
8. Identify new applications, ideas, and materials for effective mathematics instruction.
9. Demonstrate an ability to facilitate mathematical growth from concrete representation to the symbolic and from the specific to the general.

MATH 3100

Foundations of Geometry

Credit hours: 3

Introduces logic and mathematical proof. Offers an axiomatic development of Euclidean and non-Euclidean geometries.

Course Learning Outcomes

1. Write a mathematical proof.
2. State the axioms of Euclidean and non-Euclidean plane geometries including the various parallel postulates.
3. Describe the difference between Euclidean and non-Euclidean plane geometries including the various parallel postulates.
4. Prove theorems about Euclidean Geometry.
5. Prove theorems about Non-Euclidean Geometry.

MATH 3200

Foundations of Analysis

Credit hours: 3

Covers material from beginning analysis including the axioms of the real numbers, sequences, mathematical induction, limits, topology of the real line, continuity, differentiation, and integration.

Course Learning Outcomes

1. Prove theorems using the axioms of the real numbers, the least upper bound property, cardinality, sequences and convergence.
2. Prove the Principle of Mathematical Induction and the Bolzano-Weierstrass Theorem and theorems using these results.
3. Prove theorems relating to limits and real topology, continuity and uniform continuity, including the Intermediate Value Theorem, the sequential characterization of limits and the Extreme Value theorem.
4. Prove theorems pertaining to differentiation, including the product, quotient, sum and chain rules, as well as the Mean Value Theorem, the Inverse Function Theorem and L'Hopital's rule.
5. Prove theorems relating to integrability and integration.

MATH 3210

Complex Variables

Credit hours: 3

Introduces complex analysis. Includes algebra of complex numbers, analytic functions, mapping properties of elementary functions, the Cauchy integral formula, complex series, residues, and conformal mapping.

Course Learning Outcomes

1. Apply the algebraic properties of complex numbers in carrying out complex number arithmetic and in finding powers and roots of complex numbers.
2. State the major definitions in the course, including the definitions of a limit and a derivative of a function of a complex variable, and the definition of a line integral of a function of a complex variable along a contour.
3. Describe the mappings of elementary functions covered in the course.
4. Apply the properties of series to solve problems.
5. State the major theorems of the course, including the Cauchy- Goursat Theorem, Morera's Theorem, Liouville's Theorem, the Fundamental Theorem of Algebra, and the Residue Theorem.

MATH 3250

Introduction to Advanced Calculus WE

Credit hours: 3

Introduces mathematical logic and proof. Covers the first topics of advanced calculus including the axioms of the real numbers, sequences, mathematical induction, limits, topology of the real numbers, continuity, differentiation, and integration.

Course Learning Outcomes

1. Use logical inferences, axioms, and set constructions to form mathematically correct proofs.
2. Prove theorems using the axioms of the real numbers, the least upper bound property, cardinality, sequences, and convergence.
3. Prove theorems using the Principle of Mathematical Induction and the Bolzano-Weierstrass Theorem.
4. Prove theorems relating to limits and topology of the real line, continuity and uniform continuity, including the Intermediate Value Theorem, the sequential characterization of limits and the Extreme Value Theorem.
5. Prove theorems pertaining to differentiation, including the product, quotient, sum, and chain rules, and the Mean Value Theorem.
6. Prove theorems relating to integrability and integration.
7. Write effective mathematical content following the current best practices of the mathematical community for proofs and articles.

MATH 3300

Foundations of Abstract Algebra

Credit hours: 3

Provides an introduction to algebraic structures. Covers the theory of groups including modular arithmetic, normal subgroups, factor groups, and cyclic groups. Introduces rings, integral domains, and fields.

Course Learning Outcomes

1. State the definitions of congruence mod n , group, subgroup, normal subgroup, cyclic group, factor group, coset, ring, subring, integral domain, field, group homomorphism, and ring homomorphism.
2. Provide examples of groups, rings, integral domains, fields, group homomorphisms, and ring homomorphisms.
3. Provide examples of subgroups and subrings of given groups and rings, respectively.
4. Prove general properties of groups and rings.
5. Prove important properties of cyclic groups.
6. Determine whether a given subgroup is normal.
7. Prove properties of normal subgroups, cosets, and factor groups.
8. Prove Lagranges Theorem and its corollaries.
9. Prove statements pertaining to various group homomorphism properties, including Cayleys Theorem, the First Isomorphism Theorem, and applications.

MATH 3400

Partial Differential Equations

Credit hours: 3

Introduction to partial differential equations. Topics include Bessel functions, Legendre polynomials, Fourier analysis, partial differential equations, and boundary value problems.

Course Learning Outcomes

1. Demonstrate a working knowledge of Bessel functions, Legendre polynomials, and Sturm-Liouville theory;
2. Find and apply Fourier series, Fourier integrals, and Fourier transforms;
3. Solve heat and wave equations with boundary values;
4. Solve the Laplace equation with boundary values.

MATH 3750

Financial Mathematics

Credit hours: 3

Prepares students to take Exam FM/Exam 2 given by the Society of Actuaries/Casualty Actuarial Society. Trains students to answer complex questions under significant time pressure. Teaches the principles and mathematics of interest, annuities, amortization, investments, financial economics, derivative investment contracts and financial risk management.

Course Learning Outcomes

Please see the department for information.

MATH 4030

Geometry for Secondary Mathematics Teaching

Credit hours: 3

For Mathematics Education Majors. Includes the exploration of important conceptual underpinnings, common misconceptions and students' ways of thinking, appropriate use of technology, and instructional practices to support and assess the learning of geometry. Teaches constructions and transformations, congruence and similarity, analytic geometry, solid geometry, conics, trigonometry, and the historical development of content and perspectives from diverse cultures. Makes explicit connections to various mathematical content strands (modeling, complex numbers, function, and algebra).

Course Learning Outcomes

1. Construct mathematical explanations and arguments.
2. Analyze definitions and statements of theorems.
3. Create examples and counterexamples.
4. Draw helpful diagrams and figures.
5. Use mathematical terminology and notation.
6. Use multiple representations of a mathematical concept.
7. Analyze mathematical errors and misconceptions.

MATH 4040

Statistics and Probability for Secondary Mathematics Teaching

Credit hours: 3

For Mathematics Education Majors. Includes the exploration of important conceptual underpinnings, common misconceptions and students' ways of thinking, appropriate use of technology, and instructional practices to support and assess the learning of statistics and probability. Focuses on summarizing and representing data, study design and sampling, probability, testing claims and drawing conclusions, and the historical development of content and perspectives from diverse cultures.

Course Learning Outcomes

1. Explain fundamental definitions, theorems, and concepts of the grades 6-12 statistics and probability curriculum.
2. Solve advanced statistical problems related to the grades 6-12 statistics and probability curriculum and its more advanced theoretical foundation.
3. Evaluate pedagogical content focused on statistical thinking.
4. Develop strategies for teaching statistical concepts, thinking, and skills to secondary students.
5. Use appropriate tools and technology for effective teaching.
6. Develop models of teaching that focus on enhancing professional knowledge and instructional skill in standards-based statistics.

MATH 4210

Advanced Calculus I

Credit hours: 3

Covers limit and differentiation theorems, L'Hopital's rule, integration, the Fundamental Theorem of Calculus, series convergence, Taylor series, compactness, and an introduction to the geometry and topology of Euclidean spaces.

Course Learning Outcomes

1. Evaluate limits, continuity, uniform continuity, and differentiability;
2. Prove standard limit and differentiation theorems, including the sequential characterization of limits, the sum, product, quotient, and chain rules for derivatives, the Intermediate Value Theorem, The Mean Value Theorem, the Extreme Value Theorem, the Inverse Function Theorem, and L'Hopital's rule;
3. Evaluate Riemann sums, integration, upper and lower sums, and integration rules;
4. Prove standard integration theorems, including The Fundamental Theorem of Calculus in both forms, the First Mean Value Theorem for Integrals, equivalence of Riemann sum and upper and lower sum definitions of integral, the comparison theorem for integrals, and integration by parts;
5. Evaluate series convergence and convergence of function sequences and the fundamental aspects of the topology of the line, including compactness, connectedness, and separability;
6. Prove standard series and function sequence theorems, including the ratio test, root test, Dirichlet's test, alternating series test, integral test, comparison test, limit comparison test for convergence, and Weierstrass M-test;
7. Prove the existence of and use Taylor series;
8. Prove theorems about the geometry of Euclidean spaces including the Cauchy-Schwarz inequality, representing linear transformations with matrices and the topology of Euclidean n -space.

MATH 4220

Advanced Calculus II

Credit hours: 3

Covers the topology of Euclidean spaces, vectors and linear transformations, multivariable limits and continuity, multivariable differentiation, Jordan regions, multivariable Riemann integration, and Taylor series in multiple variables.

Course Learning Outcomes

1. Prove theorems about the topology of Euclidean spaces;
2. Prove theorems about vectors and linear transformations in Euclidean spaces;
3. Prove multivariable differentiation theorems in Euclidean spaces;
4. Prove theorems about limits and continuity in Euclidean spaces;
5. Prove theorems about Jordan regions in Euclidean spaces;
6. Prove theorems about Riemann integrals in Euclidean spaces;
7. Prove theorems about Taylor series in multiple variables.

MATH 4310

Introduction to Modern Algebra I

Credit hours: 3

Provides a deeper treatment of topics in modern algebra. Covers direct products of groups and the classification of finite Abelian groups. Covers the theory of rings including ideals, factor rings, various kinds of integral domains, fields, and polynomial rings.

Course Learning Outcomes

1. State the definitions of direct product, ideal, factor ring, characteristic of a ring, principal ideal domain, unique factorization domain, and Euclidean domain.
2. Determine whether a given subring is an ideal.
3. Provide examples of direct products, ideals, and factor rings.
4. Prove statements of important properties of direct products, factor rings, and applications.
5. Determine the isomorphism class of a given finite Abelian group using the Fundamental Theorem of Finite Abelian Groups.
6. Determine whether an ideal is prime or maximal, whether a factor ring is an integral domain or a field, and whether a polynomial over a given field is irreducible.
7. Prove statements pertaining to ring homomorphisms.
8. Prove statements about polynomial rings including that every ideal in a polynomial ring over a field is principal.
9. Prove statements about the relationships between principal ideal domains, unique factorization domains, and Euclidean domains.

MATH 4330

Theory of Linear Algebra

Credit hours: 3

Covers vector spaces, linear transformations and matrices, dual spaces, inner product spaces, orthogonality, bilinear forms, eigenvalues, eigenvectors and generalized eigenvectors, diagonalization, and Jordan and other canonical forms.

Course Learning Outcomes

1. State important definitions and theorems related to vector spaces, linear transformations, and inner products.
2. Describe the significance of important definitions and theorems related to vector spaces, linear transformations, and inner products.
3. Describe the solvability of a linear operator equation including existence and uniqueness of solutions.
4. Perform computations related to linear transformations and bases, including finding matrices of linear transformations with respect to various bases, orthonormal bases of various inner product spaces via the Gram- Schmidt process, and dual bases.
5. Compute eigenspace information including characteristic polynomials, eigenvalues, eigenvectors and generalized eigenvectors, and the Jordan and other canonical forms of a matrix.
6. Prove mathematical statements related to vector spaces, linear transformations, dual spaces, inner product spaces, bilinear forms, eigenvalues and eigenspaces, and canonical forms of matrices.
7. Provide examples of vector spaces, inner products, bilinear forms, and matrices and forms of varying types.

MATH 4610

Introduction to Numerical Analysis I

Credit hours: 3

Includes numerical solutions of equations in one variable, numerical solutions of linear and nonlinear system of equations, interpolations and polynomial approximation, and approximating eigenvalues and eigenvectors.

Course Learning Outcomes

1. Define round off and approximation error.
2. Describe basic theories behind algorithms covered in the course, including error analysis.
3. Prove theorems pertaining to round off error, approximation error, basic theories behind algorithms, and error analysis.
4. Apply basic, direct, and indirect algorithms to interpolate polynomials, find solutions for nonlinear equations, and solve systems of linear and nonlinear equations.
5. Calculate eigenvalues by standard techniques.
6. Use mathematical software to program algorithms to solve a variety of problems.

MATH 4620

Introduction to Numerical Analysis II

Credit hours: 3

Introduction to numerical analysis II. Topics will include numerical differentiation and integration, numerical solutions of initial-value problems and boundary-value problems for ordinary differential equations, numerical.

Course Learning Outcomes

1. Find numerical solutions of nonlinear systems of equations;
2. Solve problems using numerical differentiation and integration;
3. Find numerical solutions for ordinary differential equations;
4. Apply Approximation Theory;
5. Find a numerical solution for partial differential equations;
6. Apply the basic theory behind the algorithms, including error analysis;
7. Program the algorithms to solve varieties of problems using mathematical software like Maple.

MATH 4750

Life Contingencies

Credit hours: 3

Includes survival models, Markov Chains, life insurance and annuities, and Poisson processes. Prepares students for the life contingencies portion of Exam M of the Society of Actuaries.

Course Learning Outcomes

1. Calculate the expected values, variances, and probabilities for survival time random variables.
2. Define non-homogenous and homogenous discrete-time Markov Chain models to calculate probabilities of being in a particular state and transitioning between particular states.
3. Calculate premiums for life insurances and annuities.
4. Compute reserves for life insurance products.
5. Compute the present value of cash flows.
6. Compute the expected values and variances of life insurance products.
7. Compute the present value of future loss for life insurance products.
8. Calculate expected values, variances, and probabilities for Poisson processes.

MATH 4999

Mathematics Capstone WE

Credit hours: 2

Is for mathematics majors and is to be taken during the last semester before graduation. Reviews topics learned in the core undergraduate mathematics courses. Assesses student understanding through the Major Field Test. Provides an opportunity for senior mathematics majors to participate in mathematical research under the supervision of a faculty member. Offers a setting in which students prepare a research paper and give oral presentations that describe their research.

Course Learning Outcomes

1. State mathematical definitions and theorems clearly and precisely.
2. Use mathematical notation in an effective and proper manner.
3. Explain in a written and/or oral format a previously unfamiliar topic of their choice that appears in a mathematical textbook, including important theorems, proofs, and solutions to exercises.
4. Prove theorems associated with mathematical literature that is intended for advanced undergraduates and beginning graduate students.
5. Evaluate their own mathematical conjectures using rigorous mathematical arguments.
6. Give verbal and written mathematical arguments that are clear and concise, with no errors nor irrelevant steps.
7. Write effective mathematical content following the current best practices of the mathematical community for proofs and articles.

MATH 6100

Topics in Geometry and Topology

Credit hours: 3

Includes manifolds, fundamental group, classification of surfaces, covering spaces, homotopy types, differential geometry, Riemannian geometry, algebraic geometry, projective geometry, and algebraic topology.

Course Learning Outcomes

1. Explain geometric and topological ideas conceptually using figures and models.
2. State definitions and theorems related to instructor-selected branches of geometry and topology (e.g. the topology of the real line, point-set topology, non-Euclidean geometry, and differential geometry).
3. Compute important geometric and topological quantities (e.g. curvature, torsion, and Euler characteristic) related to instructor-selected branches of geometry and topology.
4. Prove theorems related to instructor-selected branches of geometry and topology.
5. Provide examples of mathematical objects which exhibit important geometric or topological properties.

MATH 6210

Real Analysis

Credit hours: 3

Introduces students to fundamental analytic tools used across all of mathematics. Presents a proof based approach to analysis in Euclidean space and analysis in the general setting of metric spaces. Includes sequences, series, limits in \mathbb{R}^n , metric spaces, topology, differentiation, and integration.

Course Learning Outcomes

1. State important definitions and theorems concerning limits and convergence in \mathbb{R}^n , the topology of metric spaces, and differentiation and integration of multivariable functions.
2. Prove theorems about limits and convergence in \mathbb{R}^n , the topology of metric spaces, and differentiation and integration of multivariable functions.
3. Perform computations involving limits and convergence in \mathbb{R}^n , the topology of metric spaces, and differentiation and integration of multivariable functions.
4. Provide examples of sequences, series, and/or functions that exhibit important features related to real analysis.

MATH 6310

Modern Algebra

Credit hours: 3

Covers advanced topics from group, ring, and field theory.

Course Learning Outcomes

1. State advanced definitions and theorems involving groups, rings, integral domains, ideals, factor rings, and fields.
2. Provide important examples of groups, rings, integral domains, ideals, factor rings, and fields.
3. Prove advanced statements and theorems involving groups, rings, integral domains, ideals, factor rings, and fields.
4. Perform computations involving groups, rings, integral domains, ideals, factor rings, and fields.
5. Describe applications of groups, rings, and fields to other areas of mathematics such as number theory, geometry, cryptography, etc.

MATH 6330

Advanced Linear Algebra

Credit hours: 3

Presents a proof and computation based approach to the theory of vector spaces, including bases, dimension, linear transformations, rank-nullity theorem, dual spaces, inner products, and canonical forms.

Course Learning Outcomes

1. State important advanced definitions and theorems related to vector spaces, linear transformations, and inner products.
2. Describe the significance of important advanced definitions and theorems related to vector spaces, linear transformations, and inner products.
3. Determine when a linear equation has a solution and when the solution is unique.
4. Perform important linear space computations, including finding matrices of linear transformations with respect to various bases, coordinates of vectors in various bases, orthonormal bases of various inner product spaces via the Gram-Schmidt process, and dual bases.
5. Compute eigenspace and generalized eigenspace information including characteristic polynomials, eigenvalues, eigenvectors, generalized eigenvectors, and the Jordan and other canonical forms of a matrix.
6. Prove mathematical statements related to topics in linear algebra including vector spaces, linear transformations, dual spaces, inner product spaces, bilinear forms, eigenvalues and eigenspaces, and canonical forms of matrices.
7. Provide examples of important objects in linear algebra including vector spaces, linear transformations, inner products, bilinear forms, and matrices and forms of different types.

ME 2210

Manufacturing Processes for Engineers

Credit hours: 3

Introduces manufacturing processes, including machining, injection molding, casting, 3D printing, and forming. Introduces Computer Numeric Control (CNC) machining and Computer Aided Manufacturing (CAM). Lab access fee of \$45 for computers applies. Course lab fee of \$21 for materials applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Classify a variety of manufacturing processes
2. Describe the physical phenomena involved in how various families of manufacturing processes work
3. Identify characteristics and capabilities of various manufacturing processes to make recommendations for process selection including process parameters
4. Identify materials and/or their properties that would be appropriate for successful use with various manufacturing processes
5. Make practical design recommendations to improve the manufacturability of component parts based on manufacturing process knowledge
6. Perform various manufacturing processes with physical equipment
7. Write and present professional quality engineering reports on manufacturing processes

ME 3010

System Dynamics I

Credit hours: 3

Covers analysis of linear systems in the time and frequency domains. Focuses on modeling and analysis of physical systems. Introduces Laplace transforms. Includes a design component. Lab access fee of \$45 for computers applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Develop a mathematical model(s) for dynamic systems
2. Represent the transfer function for a system
3. Represent a system in state-space
4. Predict a system's response by solving its governing differential equation
5. Describe the effect of mass, stiffness, and damping on a mechanical system response
6. Perform simulation of the behavior of a system with computer software

ME 3050

Mechatronic Systems

Credit hours: 3

Provides exposure to modeling and design of combined electro-mechanical systems. Covers an introduction to modeling of electrical circuits as well as how to integrate electrical systems with mechanical systems such as DC motors and sensors. Software fee of \$50 applies.

Course Learning Outcomes

1. Describe fundamental electrical quantities including charge, current, voltage, energy, and power
2. Apply basic circuit theory and analysis techniques
3. Analyze the operation of rotating machines including generators, motors, and pumps
4. Mathematically model combined electro- mechanical systems
5. Design a combined electro-mechanical system to perform a pre- determined function

ME 3140

Machine Design

Credit hours: 3

Presents methods for static and dynamic stress and failure analysis for mechanical systems. Teaches how to create machine design models and free-body diagrams, calculate stress, estimate deflection, select an appropriate failure theory, and design to prevent failure. Gives experience using commercial FEA software to create models of simple structures and machine components. Includes a design component. Lab access fee of \$45 for computers applies. Canvas Course Mats \$85/McGraw applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Analyze loads, reaction forces, and stress distributions in machine elements for given geometry and loads
2. Estimate the stress and deflection of structural members for given geometry, material properties, and loading conditions
3. Select an appropriate static failure theory for a brittle or ductile material and apply it to predict failure loads and safety factor for various geometries and loading conditions
4. Apply appropriate fatigue theories to predict a safety factor for infinite or finite life in cyclically-loaded machine components
5. Diagnose the cause of failure in members
6. Design machine members to prevent static, dynamic or fatigue failure
7. Integrate several components in a system to meet design requirements
8. Use commercial FEA software to simulate a machine component or structure and calculate reaction forces, displacements, and stresses

ME 3310

Fluid Mechanics

Credit hours: 3

Covers the fundamentals of fluid mechanics including fluid properties, fluid statics, fluid kinematics, the Bernoulli equation, and the integral and differential analyses of fluid flow. Introduces dimensional analysis, similitude, and modeling. Covers viscous internal and external flows. Includes a design component. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Select appropriate fluid mechanical principles needed to analyze various fluid flow situations
2. Calculate pressure variation in fluids and hydrostatic forces on objects
3. Apply the Bernoulli equation to appropriate fluid systems
4. Apply conservation of mass, momentum and energy to appropriate fluid systems
5. Perform differential analysis of appropriate fluid systems
6. Use dimensional analysis and similitude to apply experimental studies to prototype applications
7. Calculate energy losses and resulting flow rates in pipe flow with various system components
8. Calculate the lift and drag forces on simple objects
9. Design fluid mechanics-related systems to meet specified requirements

ME 3320

Heat Transfer

Credit hours: 3

Focuses on the three modes of heat transfer: conduction, convection, and radiation. Introduces steady and unsteady heat conduction, convection heat transfer principles, forced and free internal and external convection flows. Covers radiation heat transfer, combined modes of heat transfer, and analysis and design of heat exchangers. Includes a design component. Lab access fee of \$45 for computers applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Identify modes of heat transfer relevant to an engineering system
2. Describe the physics of each mode of heat transfer
3. Simplify a physical problem based on appropriate assumptions
4. Apply conservation of energy to a closed system and a control volume
5. Calculate the heat transfer rates for each mode of heat transfer
6. Identify ways to reduce or enhance transfer rates when applicable
7. Perform simple heat transfer-related design

ME 3335

Thermal/Fluid Experimentation WE

Credit hours: 2

Covers temperature, pressure, and flow measurement, along with calibration of thermal/fluid sensors in a lab setting. Focuses on experiments to investigate various phenomena in fluid flow, thermodynamics, and heat transfer. Investigates the performance of pumps, fans, and heat exchangers. Includes substantial amount of writing and satisfies WE requirements. Course Lab access fee of \$45 applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Perform temperature measurements using thermocouple wires, RTD, and thermistors
2. Perform pressure measurements using manometers, barometers, and various gauges
3. Perform flowrate measurements using mass and time technique, rotameters, and obstruction meters
4. Perform velocity measurements using a pitot tube
5. Determine pump performance
6. Determine Drag and Lift experimentally
7. Analyze simple Internal Combustion Engine performance
8. Perform Free and Forced Convection, Conduction, and Radiation experiments
9. Communicate experimental results in oral and in a written engineering format that fulfills WE requirements

ME 3410

Applied Finite Element Analysis

Credit hours: 3

Covers the basic theory of finite element analysis (FEA) and its application using commercial software to solve typical problems of structural and heat transfer. Includes the application of finite element analysis with emphasis on modeling techniques and design. Software fee of \$50 applies.

Course Learning Outcomes

1. Develop element and global stiffness matrices for simple elements
2. Validate the finite element analysis results through hand calculations of simple 1-D problems
3. Derive shape functions for 1D, 2D, and beam elements and how they are used to solve for displacement and temperature
4. Formulate and assemble element stiffness matrices to solve simple finite element problems
5. Explain the steps in finite element modeling using any finite element tool
6. Interpret the results of a FEA model of real-life problems

ME 4010

System Dynamics II

Credit hours: 3

Covers design and analysis of control systems. Introduces an introduction to digital control and feedback compensation concepts for system performance improvement. Includes a design component. Lab access fee of \$45 for computers applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Model automatic control systems in the time domain
2. Model control systems in the frequency domain
3. Analyze the time response of various control systems
4. Analyze the stability of various control systems
5. Evaluate steady-state errors of control systems and make improvements
6. Apply frequency response methods to analyze and control a system
7. Design a control system

ME 4015

Control and Vibration Experimentation

Credit hours: 1

Introduces system modelling and characterization in the time and frequency domains, feedback and compensation, Proportional Integral Derivative (PID) control, control of velocity and position in a lab setting. Covers motion measurement, force measurement, free vibration, frequency response, impact response, noise, and signal processing. Includes a writing component. Lab access fee of \$45 for computers applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Measure system response to step and sinusoidal inputs
2. Simulate system response using experimentally determined transfer function
3. Design controller to meet response specifications
4. Use accelerometers and force transducers to make measurements
5. Predict natural frequencies and mode shapes that are based on simple models and measurements
6. Apply frequency response methods to analyze and control a system
7. Communicate experimental results orally and in a written engineering format

ME 4510

Mechanical Engineering Seminar

Credit hours: 1

Introduces various mechanical engineering careers and related industries. Emphasizes importance of life-long learning and active participation in professional societies and communities through lectures given by practicing engineers using their own experiences. Introduces various engineering codes of ethics. Intended as a culminating seminar for graduating seniors to prepare for their engineering careers. Lab access fee of \$45 for computers applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Identify available career paths in mechanical engineering
2. Prepare a professional resume
3. Analyze ethical decisions using ASME or NSPE Codes of Ethics
4. Prepare a five-year career plan

ME 4810

Mechanical Engineering Capstone I

Credit hours: 3

Serves as a comprehensive two-semester design experience from conception to modeling or prototype. Uses, where possible, multidisciplinary team application of the engineering design process along with project management, manufacturing methods and economic analysis. Culminates in a design review based on formal presentations of fully documented, detailed proposed designs. Capstone I and II must be taken in consecutive semesters. Lab access fee of \$45 for computers applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Define a design problem and its constraints
2. Develop conceptual design alternatives
3. Use a decision matrix to choose the best solution
4. Identify the development stages through which design evolves
5. Perform validation testing to ensure the desirability and transferability of the design at each stage of the development
6. Apply appropriate concepts to project planning, idea generation, prototyping, modeling and conveying information both in written and oral formats
7. Use effective team processes, communication, and conflict resolution skills
8. Design a product that meets a set of constraints

ME 4820

Mechanical Engineering Capstone II

Credit hours: 3

Serves as a second semester of the two-semester design experience from conception to modeling or prototype. Uses, where possible, multidisciplinary team application of the engineering design process along with project management, manufacturing methods and economic analysis. Culminates in a demonstration of a final product (model or working prototype) with verification and documentation of how final product meets customer needs. Capstone I and II must be taken in consecutive semesters. Lab access fee of \$45 for computers applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Apply the steps in product realization process to a specific project
2. Function in a team environment to make a project plan and complete the project
3. Write an engineering project report
4. Use effective team processes, communication, and conflict resolution skills
5. Design a product that meets a set of constraints

MECH 1010

Fundamentals of Mechatronics

Credit hours: 3

Covers the fundamental skills and theory of the Mechatronics discipline. Covers integrated system design which includes electrical, mechanical, and microprocessor programming theory. Discusses the fundamentals of materials science, manufacturing processes, and the application of automation systems in a production environment. Course fee of \$20 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Describe career paths in automation
2. Describe factory automation systems
3. Describe a production environment
4. Identify safety standards in a production environment
5. Identify electrical, mechanical, and control components of a system

MECH 1200

Electronics in Automation Design

Credit hours: 3

Teaches basic DC and AC electronics theory including voltage, current, resistance, reactance, and complex impedance as well as basic electronic components such as resistors, capacitors, and inductors. Includes the analysis of series, parallel, and complex circuits as well as troubleshooting and measurement techniques. Teaches principles of algebra and trigonometry which will be utilized for circuit analysis. Emphasizes the application of electronic theory and analysis in the design of automation systems. Course Lab fee of \$40 for materials, lab applies.

Course Learning Outcomes

1. Explain the concepts of voltage, current, and resistance as well as Ohm's law
2. Integrate the use and application of series, parallel, and complex circuits
3. Perform basic circuit analysis
4. Describe the applications of capacitors and inductors to timing circuits
5. Apply AC circuit theory, reactance, impedance, and resonance in circuit design
6. Demonstrate the use of algebra and trigonometry in circuit analysis

MECH 1205

Electronics in Automation Design Laboratory

Credit hours: 2

Applies basic DC and AC electronics theory including voltage, current, resistance, reactance, and impedance as well as basic electronic components such as resistors, capacitors, and inductors. Includes the analysis of series, parallel, and complex circuits as well as troubleshooting and measurement techniques. Presents the fundamentals of digital logic using combinational and sequential logic. Teaches number systems, binary arithmetic, logic gates, Boolean algebra, truth tables and logic simplification. Introduces computer architecture. Emphasizes the application of electronic theory and analysis in the design of automation systems. Lab access fee of \$45 applies. Course Lab fee of \$44 for materials applies.

Course Learning Outcomes

1. Apply the concepts of voltage, current, and resistance as well as Ohm's law
2. Integrate the use and application of series, parallel, and complex circuits
3. Apply basic circuit analysis
4. Apply the applications of capacitors and inductors to timing circuits
5. Apply AC circuit theory, reactance, impedance, and resonance in electronic circuits
6. Use logic gates, truth tables and flip/flops in logic circuits
7. Utilize number systems, Boolean algebra and simplification techniques to simplify and construct logic systems for automation control
8. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - An enthusiasm for electronics used in automation 2 - An ability to analyze and design basic analog and digital circuits 3 - A desire to succeed in mechatronics

MECH 1300

Industrial Wiring for Mechatronic Systems

Credit hours: 1

Covers National Electrical Code and International Electrical Code using electrical prints, installation methods, and system requirements in mechatronic systems. Covers the creation and use of electrical diagrams for design and troubleshooting. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Utilize the National Electrical Code and International Electrical Code to make design decisions in mechatronic systems
2. Calculate the load and size of mechatronic circuits and equipment
3. Specify mechatronic electrical equipment for an application
4. Create electrical diagrams using industry standards
5. Use electrical diagrams to troubleshoot a mechatronic system

MECH 1305

Industrial Wiring for Mechatronic Systems Laboratory

Credit hours: 2

Applies the use of National Electrical Code and International Electrical Code using electrical prints, installation methods, and system requirements in mechatronic systems. Explains how to create and use electrical diagrams for design and troubleshooting.

Course Learning Outcomes

1. Build mechatronic systems using National Electric Code and International Electric Code
2. Wire mechatronic control panels and systems
3. Measure the load of mechatronic circuits and equipment
4. Use electrical diagrams to troubleshoot a mechatronic system

MECH 2200

Semiconductors in Mechatronic Systems

Credit hours: 3

Teaches the theory of semiconductor PN junctions and discrete semiconductors such as diodes, bipolar junction transistors, and MOSFET's applied to automation control. Also introduces the utilization of opto-isolators, triacs, and SCR's in controlling automation power devices. Course Lab fee of \$25 for materials, lab applies.

Course Learning Outcomes

1. Explain the basic physical principles of semiconductors and the PN junction
2. Use diodes in the design of automation circuits
3. Use bipolar junction transistors as low and high side switches in automation systems
4. Explain the use of MOSFET devices as low and high side switches in automation systems
5. Explain the operation SCRs, TRIACs, and opto-isolators devices used in automation systems

MECH 2205

Semiconductors in Mechatronic Systems Lab

Credit hours: 1

Applies the theory of semiconductor PN junctions and discrete semiconductors such as diodes, bipolar junction transistors, and MOSFET's applied to automation control. Introduces the utilization of opto-isolators, triacs, and SCR's in controlling automation power devices. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Explain the basic physical principles of semiconductors and the PN junction
2. Use diodes in the design of automation circuits
3. Use bipolar junction transistors as low and high side switches in automation systems
4. Demonstrate the use of MOSFET devices as low and high side switches in automation systems
5. Demonstrate the operation SCRs, TRIACs, and opto- isolators devices used in automation systems

MECH 2300

Microcontroller Architecture and Programming

Credit hours: 3

Teaches computer architecture and the fundamentals of computer programming in C language. Uses an IDE to develop, compile and debug C code. Introduces structured top down design and program documentation. Teaches the organization of I/O ports including alternate functions. Utilizes microcontroller communications, functions and I/O methods to interface to sensors and actuators. Course Lab fee of \$50 for materials, lab applies.

Course Learning Outcomes

1. Document computer architecture and Input/output (I/O) port specifications
2. Describe the I/O ports to basic automation sensors and components
3. Describe the Integrated Development Environment (IDE) for code generation and organization
4. Design structured C code to implement program solutions
5. Design pseudocode to organize program flow and evaluate program requirements
6. Design C code to perform mathematical and logical operations on digital and analog I/O
7. Describe code modularity to maintain and document code solutions
8. Develop ability to analyze and debug computer programs

MECH 2305

Microcontroller Architecture and Programming Lab

Credit hours: 2

Applies computer architecture and the fundamentals of computer programming in C language. Uses an IDE to develop, compile and debug C code. Introduces structured top down design and program documentation. Teaches the organization of I/O ports including alternate functions. Utilizes microcontroller communications, functions and I/O methods to interface to sensors and actuators. Course Lab fee of \$387 for materials applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Construct computer architecture and Input/output (I/O) port specifications
2. Interface I/O ports to basic automation sensors and components
3. Demonstrate use of an Integrated Development Environment (IDE) for code generation and organization
4. Structure C code to implement program solutions
5. Use pseudocode to organize program flow and evaluate program requirements
6. Use C code to perform mathematical and logical operations on digital and analog I/O
7. Implement code modularity to maintain and document code solutions
8. Debug computer programs

MECH 2400

Mechanical Components

Credit hours: 4

Teaches students how to select, design, and analyze mechanical components that are used in manufacturing automation systems. Reviews and reinforces the concepts of the structure of metals, metals selection, and mechanical properties. Focuses on the selection of belt and chain drives, gear and gearbox selection, design of shafts, specification of rolling element bearings, and the use of threaded fasteners. Integrates the selection and design of mechanical components into a design project. Lab access fee of \$45 applies

Course Learning Outcomes

1. Select mechanical components based on design requirements;
2. Design a belt or chain drive system;
3. Specify and/or design a gear drive system;
4. Properly select rolling element bearings;
5. Design the application of threaded fasteners;
6. Document a design.

MECH 2500

Introduction to PLCs in Mechatronic Design

Credit hours: 2

Covers the theory and programming of industrial control systems and programmable logic controllers (PLC). Introduces PLC programming stressing Ladder Logic and PLC programming, troubleshooting, and maintenance. Covers connection of PLCs to external components. Presents the fundamentals of digital logic using ladder logic. Covers number systems and Boolean algebra. Course Lab fee of \$15 for materials, lab applies. Software fee of \$29 applies.

Course Learning Outcomes

1. Describe a PLC device and how the device connects to external components in a system
2. Interpret algorithms for PLC programs used in process control
3. Describe the role of sensor systems in PLC programming
4. Describe how digital logic is used to create PLC program

MECH 2505

Introduction to PLCs in Mechatronic Design Laboratory

Credit hours: 2

Applies the theory and programming of industrial control systems and programmable logic controllers (PLC). Applies PLC programming stressing Ladder Logic and PLC programming, troubleshooting, and maintenance. Applies connection of PLCs to external components. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Program a PLC device and connect the device to external components in a system
2. Develop algorithms for PLC programs used in process control
3. Apply PLC programming to sensor systems
4. Apply digital logic to create PLC programs
5. Develop skills in the programming of PLCs in electromechanical systems

MECH 2510

Fundamentals of Automation Controls

Credit hours: 2

Covers how to select, install, and troubleshoot sensors in a manufacturing environment. Emphasizes the application of proximity sensors in automation equipment as well as the use of encoders to measure speed and position, pressure transducers, and the use of thermocouples and thermistors to measure temperature. Covers signal conditioning methods to interface sensors to microprocessors and PLC's. Course Lab fee of \$20 for lab notebook, lab applies.

Course Learning Outcomes

1. Describe NPN and PNP transistor based sensors in an automation system
2. Describe the operation of strain gage based pressure transducers
3. Describe how thermocouples are used to measure temperature in a process
4. Describe how quadrature encoders are used to measure position, speed, and rotation

MECH 2515

Fundamentals of Automation Controls Laboratory

Credit hours: 1

Applies methods for proper selection, installation, and troubleshooting of sensors in a manufacturing environment. Emphasizes the application of proximity sensors in automation equipment as well as the use of encoders to measure speed and position, pressure transducers, and the use of thermocouples and thermistors to measure temperature. Utilizes signal conditioning methods to interface sensors to microprocessors and PLC's. Lab access fee of \$45 applies. Course Lab fee of \$16 applies.

Course Learning Outcomes

1. Select and install NPN and PNP transistor based sensors in an automation system;
2. Assemble and troubleshoot op amp based amplifier circuits;
3. Specify, install, and troubleshoot strain gage based pressure transducers;
4. Use thermocouples to measure temperature in a process;
5. Use quadrature encoders to measure position, speed, and rotation;
6. Interface analog sensors to microprocessors and PLC's in an automation system.

MECH 2550

Advanced PLC Programming and Applications

Credit hours: 2

Covers the principles of program structure, subroutines, interrupts, debugging, and simplifying. Illustrates the measurement and scaling of analog signals. Covers networking principles such as Ethernet and serial. Course Lab fee of \$15 for materials, lab applies. Software fee of \$29 applies.

Course Learning Outcomes

1. Describe the use of ladder logic programming in structured program design
2. Describe the use of subroutines and interrupts in ladder logic programming
3. Describe how analog I/O is measured and scaled using engineering units in an automation system
4. Describe how PLC's are networked into a factory control system

MECH 2555

Advanced PLC Programming and Applications Laboratory

Credit hours: 2

Applies the principles of program structure, subroutines, interrupts, debugging, and simplifying using a PLC. Applies the use of PLCs in the measurement and scaling of analog signals. Applies networking principles such as Ethernet and serial to communicate with a PLC. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Program PLC ladder logic utilizing industry based standards
2. Utilize subroutines and interrupts in ladder logic programming
3. Integrate analog I/O measurement and scaling using engineering units in an automation system
4. Integrate PLC's into a factory floor control system

MECH 2600

Introduction to Fluid Power Systems

Credit hours: 2

Develops the concepts used to design, build, and control a fluid power system that is used in an industrial automation process. Covers the the fundamental principles of fluid power. Course Lab fee of \$15 for materials, lab applies. Lab access fee of \$45 applies. Software fee of \$50 applies.

Course Learning Outcomes

1. Describe the principles of fluid power flow theory
2. Describe fluid power control valves based on design requirements
3. Calculate the performance characteristics of fluid power actuators
4. Describe the principles of fluid power generation and conditioning

MECH 2605

Introduction to Fluid Power Systems Laboratory

Credit hours: 1

Applies the concepts used to design, build, and control a fluid power system that is used in an industrial automation process. Employs laboratory exercises to illustrate the selection and use of actuators, valves, and controls to sequentially control a process.

Course Learning Outcomes

1. Apply the principles of fluid power flow theory.
2. Select fluid power control valves based on design requirements.
3. Observe the performance characteristics of fluid power actuators.
4. Apply the principles of fluid power generation and conditioning.
5. Prepare industrial quality fluid power documentation schematics and reports.

MECH 2700

Industrial Motor Control Mechatronic Systems

Credit hours: 2

Covers installation, troubleshooting, preventive maintenance, and theory on DC/AC motors, generators, and associated industrial control circuitry. Discusses ladder logic, controls, sensors, motor starters, overloads, and electronic devices used to control and protect DC/AC Machines. Describes three phase systems, transformers, and delta-wye connections. Introduces AC variable speed drives.

Course Learning Outcomes

1. Describe DC and AC Motors and their associated control circuitry.
2. Describe three phase electrical power and transformers
3. Describe the use of ladder logic in industrial motor control
4. Describe sensing devices, timers, relays, solenoids, and starter in industrial motor control

MECH 2705

Industrial Motor Control Mechatronic Systems Laboratory

Credit hours: 2

Applies the principles of Installation, troubleshooting, preventive maintenance, and theory on DC/AC motors, generators, and associated industrial control circuitry. Uses ladder logic, controls, sensors, motor starters, overloads, and electronic devices used to control and protect DC/AC Machines. Lab activities include the wiring of transformers, and three phase systems in both delta and wye configurations.

Course Learning Outcomes

1. Analyze the operation of DC and AC motors.
2. Create operationally correct logic and ladder diagrams.
3. Use sensing devices, timers, relays, solenoids, and starters to design industrial control circuitry.
4. Troubleshoot electrical motor control circuitry.
5. Analyze three phase electrical and transformer connections.

MECH 3220

Motion Control for Mechatronic Systems

Credit hours: 3

Presents the selection and application of AC and DC servo motors and how to control the speed and position in automation systems. Covers variable frequency drives and servo drives in automation system design. Applies algebra, trigonometry, integrals, and derivatives. Course Lab fee of \$15 for materials, lab applies.

Course Learning Outcomes

1. Design encoder, speed and position feedback in a servo motor application
2. Specify a variable frequency drive into an automation system
3. Design a transistor interface between a controller and a motor
4. Design the application of servo motors in a motion control application
5. Design the application of proportional/integral/derivative control of speed and position
6. Use algebra, trigonometry, and elementary calculus to solve applications of motor control

MECH 3225

Motion Control for Mechatronic Systems Laboratory

Credit hours: 1

Applies the standards for the selection of AC and DC servo motors and the use of programming to control speed and position in automation systems. Implements variable frequency drives and servo drives in automation system design. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Use encoder, speed and position feedback in a servo motor application
2. Integrate a variable frequency drive into an automation system
3. Program pulse width modulation code using a transistor interface between a controller and a motor
4. Apply servo motors in a motion control application
5. Demonstrate the application of proportional/integral/derivative control of speed and position

MECH 3300

Industrial Networks

Credit hours: 2

Covers the principles of designing, configuring, integrating, and maintaining an industrial network. Discusses the use of software to integrate PLC's, computers, managed switches, and smart devices into an industrial data network. Covers a broad spectrum from legacy networks to modern Ethernet based networks. Course Lab fee of \$25 for materials, lab applies. Software fee of \$29 applies.

Course Learning Outcomes

1. Describe the basic fundamental principles of computer networking
2. Define legacy industrial networks
3. Define modern industrial networks
4. Apply troubleshooting techniques used to maintain an industrial network

MECH 3305

Industrial Networks Laboratory

Credit hours: 1

Applies the principles of designing, configuring, and integrating and maintaining an industrial network. Applies the use of software to integrate PLC's, computers, managed switches, and smart devices into an industrial data network. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Integrate industrial networks on industrial equipment
2. Manage industrial data
3. Specify an industrial network system
4. Install and integrate an industrial network
5. Troubleshoot and maintain an industrial network system

MECH 3400

Statics and Material Properties for Mechatronics

Credit hours: 4

Teaches the concept of forces as vectors, the equations of equilibrium, calculation of internal forces, and the calculation of centroids and area moments of inertia. Teaches how to calculate tensile and shear stress in machine components and compare the resultant forces to standard theories of failure using the principles of statics. Teaches algebra, trigonometry, and elementary calculus in terms of the application of statics.

Course Learning Outcomes

1. Resolve forces into vectors using vector math to calculate resultant forces on a structure
2. Use 3 dimensional equations of equilibrium to characterize the forces on a structure
3. Calculate the centroid and area moments of inertia
4. Specify the yield and tensile strength of a machine component
5. Resolve the forces on a machine and calculate the principle tensile and maximum shear stresses
6. Compare the calculated stresses to standard theories of failure and develop a design factor of safety

MECH 3405

Statics and Material Properties for Mechatronics Laboratory

Credit hours: 1

Applies the concept of forces as vectors, the equations of equilibrium, calculation of internal forces, and the calculation of centroids and area moments of inertia. Covers how to calculate tensile and shear stress in machine components and compare the resultant forces to standard theories of failure by using the principles of statics. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Use vector math to calculate resultant forces on a structure
2. Use three dimensional equations of equilibrium to characterize the forces on a structure
3. Calculate the centroid and area moments of inertia for machine components.
4. Verify the yield and tensile strength of a machine component
5. Use yield and tensile strength data in the design of a machine component
6. Calculate the forces, principle tensile stresses, and maximum shear stresses on machine components
7. Develop a design factor of safety using calculated stresses and standard theories of failure

MECH 3500

Industrial Robots

Credit hours: 2

Covers the principles of industrial robotics, programming, and the application of vision systems using industry created curriculum. Course Lab fee of \$11 for flat ribbon cable, lab applies. Lab access fee of \$45 applies Software fee of \$50 applies.

Course Learning Outcomes

1. Define the design and operation of industrial robots
2. Define common faults and how to recover from them
3. Design programs for robotic operations
4. Explain the use of sensors to control the operation of an industrial robot in a manufacturing process
5. Define the principles of vision in an industrial manufacturing process

MECH 3505

Industrial Robots Laboratory

Credit hours: 1

Applies the principles of industrial robotics, programming, and the application of vision systems using industrial robots. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Analyze the design and operation of industrial robots
2. Utilize a teach pendant to program and operate an industrial robot
3. Create, modify, and execute a robotic program
4. Use sensors to control the operation of an industrial robot
5. Interface an industrial robot with a vision system and a PLC

MECH 3570

Design Analysis and Rapid Prototyping WE

Credit hours: 3

Covers the fundamentals of geometric dimensioning and tolerancing based on the ASME Y14.5 standard. Explores how a design is affected by manufacturing tolerances and how to specify the fit of parts on a detail print. Emphasizes assembly analysis using SolidWorks Motion and rapid prototyping to verify the form, fit, and function of a design. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Demonstrate proficiency in the practice of GD&T as defined in ASME Y14.5.
2. Verify the performance of an assembly using SolidWorks Motion.
3. Manufacture parts in order to verify form, fit and function.
4. Create a unique design that can be manufactured.
5. Compose a variety of disciplinary-appropriate texts within multiple situations and for multiple audiences.

MECH 3700

CNC Machines in Mechatronic Design

Credit hours: 2

Covers the application, programming, and maintenance of CNC machines. Emphasizes the integration of CNC machines into automation systems. Covers specifications, performance, interfacing with industrial robots, tooling, programming, and integrating the CNC machine into factory system. Course lab fee of \$35 for materials applies. Software fee of \$29 applies

Course Learning Outcomes

1. Define the appropriate tooling according to workpiece and CNC machine requirements.
2. Define the steps to programming a CNC.
3. Define the software used to program a CNC.
4. Define how a CNC machine integrates with a factory system.

MECH 3705

CNC Machines in Mechatronic Design Laboratory

Credit hours: 1

Applies the application, programming, and maintenance of CNC machines. Emphasizes the integration of CNC machines into automation systems. Applies specifications, performance, interfacing with industrial robots, tooling, programming, and integrating the CNC machine into a factory system. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Select the appropriate tooling according to workpiece and CNC machine requirements.
2. Program a CNC machine using simulation software and manually.
3. Program a CNC machine using software.
4. Integrate a CNC machine with a factory system.

MECH 4300

Capstone I

Credit hours: 2

Integrates the concepts of the Mechatronics Engineering Technology curriculum into a semester-long capstone proposal. Requires students to conceive, define, design, and document a capstone proposal. Course lab fee of \$15 for equipment applies.

Course Learning Outcomes

1. Identify the selection of control devices for mechatronic systems
2. Design a mechatronic system
3. Calculate the performance of a mechatronic system
4. Describe the techniques for troubleshooting a mechatronic system

MECH 4305

Capstone I Laboratory

Credit hours: 1

Integrates the concepts of the Mechatronics Engineering Technology curriculum into a semester-long capstone proposal. Requires students to prototype and test key components of their capstone proposal. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Select and use control devices in a mechatronic system
2. Construct a mechatronic system
3. Analyze the performance of a mechatronic system
4. Troubleshoot the performance of a mechatronic system

MECH 4400

Polymers/Composites and Processes

Credit hours: 3

Teaches students the selection of polymers, design of polymer products and manufacturing processes associated with polymer based products. Also teaches types of composites and design of composite products. Course lab fee of \$18 for supplies applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Demonstrate a knowledge of manufacturing processes and equipment associated with producing composite and polymer products.
2. Recognize the properties of industrial polymers and composite materials
3. Design products using industrial plastics and composite materials
4. Document the manufacturing processes associated with composite components

MECH 4500

Advanced Automation Controls

Credit hours: 3

Introduces methods of advanced control of high speed components, analog controls, temperature, pressure, and time delay processes using digital and analog methods of control. Covers algebra, trigonometry, and basic applied calculus in the context of complex control systems. Course lab fee of \$45 for equipment applies. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Analyze the use of an analog PID controller to control industrial processes
2. Design a PLC based controller for a time delay process
3. Discuss how to control pressure and force in an industrial process
4. Discuss the use of a remote site feedback control system
5. Discuss how to control a high speed process
6. Use algebra, trigonometry, and elementary calculus to solve complex control systems

MECH 4505

Advanced Automation Controls Laboratory

Credit hours: 1

Integrates methods of advanced control of high speed components, analog controls, temperature, pressure, and time delay processes using digital and analog methods of control. Implements practical applications of the concepts discussed in the lecture portion of the class. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Use an analog PID controller to control industrial processes
2. Implement a PLC based controller for a time delay process
3. Control pressure and force in an industrial process
4. Develop a remote site feedback control system
5. Control a high speed process

MECH 4800

Capstone II WE

Credit hours: 3

Builds on Capstone I and integrates project management into a semester-long capstone project. Requires students to construct, validate, document, and present their capstone project. Lab access fee of \$45 applies. Software fee of \$29 applies.

Course Learning Outcomes

1. Design a mechatronic project using the design skills learned in the Mechatronics Engineering Technology degree.
2. Demonstrate design project management skills.
3. Integrate design theory into the design of their team project.
4. Complete an industry standard design document of their team project.
5. Compose a variety of disciplinary-appropriate texts within multiple situations and for multiple audiences.

METO 1010

Introduction to Meteorology PP

Credit hours: 3

Introduces the study of our atmosphere. Studies the Earth's dynamic weather systems. Covers structure and compositions of the atmosphere; weather patterns; air masses; and types of weather fronts, weather forecasting, and climates.

Course Learning Outcomes

1. Convert meteorological variables among different units and report their value in scientific notation
2. Recall the chemical composition and thermal structure of the atmosphere
3. Explain various properties of the atmosphere, including the heating mechanisms, the greenhouse effect, stability, and the heat budget of the Earth
4. Discuss the factors that affect the temporal and spatial variations in temperature, precipitation, wind, humidity, severe weather, and pressure on the Earth's surface
5. Interpret weather maps
6. Apply the laws of radiations to compare and contrast the radiative properties of different bodies
7. Explain the scientific evidence of anthropogenic impacts on the atmosphere, including climate change, air pollution, and heat island impacts at local and global scales
8. Explain the role of federal agencies relating to climate and meteorology

METO 3100

Climate and the EArth System

Credit hours: 3

Studies the six major components of the Earth system (i.e., the atmosphere, the hydrosphere, the cryosphere, the geosphere, the exosphere, and the biosphere) and investigates the interdependency and connections of these components, with particular emphasis on the effects on the climate system. Discusses the Earth's energy balance, the greenhouse effect, and the biogeochemical cycles of some elements and provides an overview of the most important climatic events that occurred during the history of the Earth. Course lab fee of \$10 applies.

Course Learning Outcomes

1. Explain systems, system components, system interconnections, positive and negative feedbacks
2. Compose system diagrams
3. Illustrate the components of the Earth system (i.e., the atmosphere, the hydrosphere, the cryosphere, the geosphere, the exosphere, and the biosphere) and their interactions and interdependencies
4. Apply the laws of radiation and the concept of albedo to the Earth's energy balance and effective radiating temperature
5. Explain the greenhouse effect
6. Discuss the forces that create winds and ocean currents and the role of winds and ocean currents in the transport of heat from low to high latitudes
7. Explain the biogeochemical cycles of carbon, nitrogen, phosphorous, and sulfur
8. Discuss the application of stable isotope techniques as paleoclimate proxies
9. Explain the most important climatic events that occurred in Earth's history, including ongoing global warming

MFT 6000

Systemic Foundations of Marriage and Family Therapy

Credit hours: 3

Introduces students to the historical development of the relational/systemic perspective. Emphasizes a systemic paradigm for clinical intervention. Includes conceptual foundations of MFT.

Course Learning Outcomes

1. Evaluate the influence of a relational/systemic perspective on approaches to therapy with individuals, couples and families
2. articulate the conceptual foundations of MFT
3. Identify the role of process within family functioning and therapeutic contexts
4. Formulate a personal theoretical model of change

MFT 6010

Contemporary Approaches to MFT

Credit hours: 3

Introduces students to contemporary models of MFT. Compares post-modern models of MFT. Includes evidence-based practice and the biopsychosocial perspective.

Course Learning Outcomes

1. Assess research about evidence-based practice in MFT
2. Evaluate the usefulness of a biopsychosocial perspective with a variety of presenting problems
3. Compare post-modern theoretical approaches to MFT
4. Apply contemporary theoretical MFT approaches to common therapeutic challenges

MFT 6100

Ethical Issues in Marriage and Family Therapy

Credit hours: 3

Promotes MFT identity. Develops student competence in ethical decision making. Includes application of the American Association for Marriage and Family Therapy Code of Ethics and relevant Utah law to clinical scenarios.

Course Learning Outcomes

1. Examine MFT professional identity as it is described by the AAMFT Code of Ethics, and Utah law.
2. Clarify the standard of care in MFT and how it is informed by the AAMFT Code of Ethics
3. Apply the AAMFT Code of Ethics to a variety of clinical services
4. Create informed consent processes that align with the AAMFT Code of Ethics

MFT 6200

Systemic Assessment and Diagnosis

Credit hours: 3

Develops student competence in treatment approaches specifically designed for use with families. Introduces students to crisis intervention with families. Includes evidence-based practice for clinical work with young children, adolescents, families in mid-life, and elderly families.

Course Learning Outcomes

1. Demonstrate basic therapy skills for providing therapy to families
2. Determine basic therapy skills for crisis intervention with families
3. Evaluate clinical approaches for working with young children
4. Contrast evidence-based treatment approaches for work with adolescent and elderly clients
5. Examine the process of assessment, diagnosis and treatment planning in family therapy

MFT 6210

Couples Therapy

Credit hours: 3

Develops student competence in treatment approaches specifically designed for use with a range of diverse couples, including sex therapy, same-sex couples, elderly, and interfaith couples. Includes evidence-based practice and crisis intervention with couples.

Course Learning Outcomes

1. Develop basic therapy skills for treatment of common couple concerns
2. Determine basic therapy skills for crisis intervention with couples
3. Contrast evidence-based treatment approaches for sex therapy
4. Construct an evidence-based treatment paradigm for work with same-sex, elderly and interfaith couples
5. Examine the process of assessment, diagnosis and treatment planning in couples therapy

MFT 6220

Group Therapy

Credit hours: 2

Develops student competence in treatment approaches specifically designed for use with groups. Evaluates group work with addiction, abuse and trauma. Includes evidence-based practice and crisis intervention with groups.

Course Learning Outcomes

1. Develop basic therapy skills for leading therapy groups
2. Evaluate basic therapy skills for crisis intervention with groups
3. Examine evidence-based treatment approaches for group work with addiction, abuse, and trauma
4. Construct process of assessment, diagnosis, and treatment planning in group therapy

MFT 6230

Family Therapy

Credit hours: 3

Develops student competence in treatment approaches specifically designed for use with families. Introduces students to crisis intervention with families, including assessment and treatment of addiction and family violence. Includes evidence-based practice for clinical work with adult children, families in mid-life, and elderly families.

Course Learning Outcomes

1. Demonstrate basic therapy skills for providing therapy to families
2. Apply basic therapy skills for crisis intervention with families
3. Evaluate clinical approaches for working with family violence and addiction
4. Contrast evidence-based treatment approaches for work with young adult and elderly clients
5. Examine the process of assessment, diagnosis and treatment planning in family therapy

MFT 6240

Individual Therapy

Credit hours: 2

Introduces students to a variety of common presenting problems including addiction, suicide, trauma, abuse, intra-familial violence, and acute chronic medical conditions. Utilizes a relational/systemic philosophy. Includes evidence-based practice and crisis intervention with individuals.

Course Learning Outcomes

1. Develop basic therapy skills for working with common presenting problems
2. Evaluate basic therapy skills for crisis intervention
3. Examine evidence-based treatment approaches for work with suicidality, intra-familial violence, and chronic medical conditions
4. Formulate process of assessment, diagnosis, and treatment planning in individual therapy

MFT 6300

Working with Diversity in MFT

Credit hours: 3

Builds student awareness of diversity, power, privilege, and oppression as these relate to race, age, gender, ethnicity, sexual orientation, gender identity, socioeconomic status, disability, health status, religious affiliation, nation of origin, spiritual orientation, or other relevant social categories.

Course Learning Outcomes

1. articulate personal intersectionality of relevant social categories
2. Examine personal reactions to relevant social categories
3. Evaluate experiences with diversity, power, and privilege
4. Outline plan for ongoing development of multicultural competence

MFT 6310

Child and Adolescent Development

Credit hours: 3

Introduces students to individual and family development during stages of childhood and adolescence, including developmentally appropriate individual and family therapy models. Addresses human sexuality. Discusses biopsychosocial health during childhood and adolescence.

Course Learning Outcomes

1. articulate biopsychosocial factors that influence development across childhood and adolescence, including family processes
2. Examine the influence of human sexuality and gender development that occurs during childhood and adolescence
3. Evaluate developmentally appropriate individual and family therapy practices with children and adolescents
4. Integrate developmentally appropriate family therapy practices with existing family therapy models

MFT 6320

Adult Issues in Human Development

Credit hours: 3

Introduces students to individual and family development across stages of adulthood. Addresses human sexuality. Discusses biopsychosocial health during adulthood.

Course Learning Outcomes

1. Evaluate developmental models of adult experience
2. articulate biopsychosocial factors that influence adult development across the lifespan
3. Assess the influence of human sexuality and gender development on adult experience
4. Determine the influence of family development and processes on adult development

MFT 6400

Research in Marriage and Family Therapy

Credit hours: 3

Introduces students to basic research methodology. Examines evidence-based practice in MFT. Evaluates usefulness of couple, marriage, and family therapy research.

Course Learning Outcomes

1. Develop processes for identifying evidence-based sources of clinical and MFT information
2. Compare MFT research methodologies
3. Evaluate the usefulness of MFT research as it applies to clinical practice
4. Determine process for remaining an informed consumer of MFT research

MFT 6500

Community Intervention

Credit hours: 1

Introduces students to practice within defined contexts (e.g., healthcare settings, schools, military settings, private practice). Addresses nontraditional MFT professional practice using therapeutic competencies (e.g., community advocacy, psycho-educational groups). Considers multidisciplinary collaboration.

Course Learning Outcomes

1. Discuss MFT competencies needed to provide effective therapy in a variety of defined contexts (e.g., healthcare settings, schools, military settings, private practice)
2. Propose a multidisciplinary approach to MFT intervention
3. Evaluate psycho-educational group content
4. Determine role of MFT in social justice and community advocacy

MFT 6510

Contemporary Issues in MFT

Credit hours: 1

Develops student competence in emerging and evolving contemporary challenges. Examines problems and/or recent developments at the interface of MFT knowledge and practice and the broader local, regional, and global context. Includes discussion of contemporary issues such as immigration, technology, same-sex marriage, and violence in schools.

Course Learning Outcomes

1. Discuss emerging clinical challenges in local, regional, and global contexts
2. Examine recent developments and opportunities at the interface of MFT knowledge and practice
3. Determine how recent developments in MFT knowledge and practice can be applied to challenges in local, regional, and global contexts
4. Evaluate clinical approaches to immigration, technology, same- sex marriage and violence in schools

MFT 6520

Clinical Business Development and Practice

Credit hours: 2

Introduces students to the development of private clinical practices. Emphasizes business practice in the mental health field. Includes discussion of HIPAA and telehealth.

Course Learning Outcomes

1. Compare business models for effective mental health practice
2. Develop models for MFT practice after licensure.
3. Construct plan for adherence to HIPAA laws
4. Formulate process for adherence to local laws including professional licensing, business licensing, and taxes

MFT 6600

Capstone in MFT

Credit hours: 1

Emphasizes achievement of the program-level outcomes. Integrates knowledge across the program to promote student awareness of their own potential contributions to and positioning in the MFT field.

Course Learning Outcomes

1. Assess personal readiness for associate licensure as an MFT.
2. Defend achievement of student learning outcomes of the program as a whole.
3. Evaluate competence in Association of Marriage and Family Therapy Regulatory Board domains.
4. Integrate the knowledge and personal characteristics required to succeed in MFT.

MFT 690R

Pre-Practicum

Credit hours: 3

Introduces basic skills and competencies needed for effective and ethical clinical practice. Guides self-awareness and self-reflection. Presents expectations of competency in basic MFT interventions, sensitivity to client contextual variables, completion of case documentation, and use of supervision and feedback. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Administer effective MFT interventions with sensitivity to client contextual variables
2. Complete timely case documentation
3. Use supervisory feedback for effective personal and clinical growth
4. Assess self-awareness of emotional regulation required for clinical readiness

MFT 691R

Practicum I

Credit hours: 3

Develops student competence in MFT assessment and intervention. Includes practice with diverse, international, multicultural, marginalized, and/or underserved communities. Guides competence in working with sexual and gender minorities and their families as well as anti-racist practices. Guides self-awareness and self-reflection. Requires completion of case documentation, and effective use of supervision and feedback. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Compare effective MFT interventions with sensitivity to client contextual variables
2. Demonstrate timely case documentation
3. Implement supervision and feedback
4. Assess self- awareness and self-reflection related to MFT

MFT 692R

Practicum II

Credit hours: 3

Continues development of student competence in MFT assessment and intervention. Includes practice with diverse, international, multicultural, marginalized, and/or underserved communities. Guides competence in working with sexual and gender minorities and their families as well as anti-racist practices. Guides self-awareness and self-reflection. Requires completion of case documentation, and effective use of supervision and feedback. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Apply effective MFT interventions with sensitivity to client contextual variables
2. Demonstrate timely case documentation
3. Implement supervision and feedback
4. Assess self- awareness and self-reflection related to MFT

MFT 693R

Practicum III

Credit hours: 3

Develops student competence in MFT assessment and intervention. Includes practice with diverse, international, multicultural, marginalized, and/or underserved communities. Guides competence in working with sexual and gender minorities and their families as well as anti-racist practices. Guides self-awareness and self-reflection. Requires completion of case documentation, and effective use of supervision and feedback. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Apply effective MFT interventions with sensitivity to client contextual variables
2. Demonstrate timely case documentation
3. Implement supervision and feedback
4. Assess self- awareness and self-reflection related to MFT

MFT 694R

Practicum IV

Credit hours: 3

Final development of student competence in MFT assessment and intervention. Includes practice with diverse, international, multicultural, marginalized, and/or underserved communities. Guides competence in working with sexual and gender minorities and their families as well as anti-racist practices. Guides self-awareness and self-reflection. Requires completion of case documentation, and effective use of supervision and feedback. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Defend effective MFT interventions with sensitivity to client contextual variables
2. Demonstrate timely case documentation
3. Implement supervision and feedback
4. Assess self- awareness and self-reflection related to MFT

MGMT 1010

Introduction to Business SS

Credit hours: 3

Overviews the business world, its structure, procedures, and vocabulary. Provides information to assist in making occupational choices. Methods include lectures, class discussions, group activities, videos, and guest speakers. Completers should have a general knowledge of business and career opportunities. May be delivered online. Canvas Course Mats \$42/Lumen applies.

Course Learning Outcomes

1. Understand the economic and social importance of business in our economic system.
2. Explain the increasing importance of the global environment and how businesses operate within the global market.
3. Describe the different forms of business organizations (sole proprietorship, partnership, corporation, and franchise) how they are formed, the advantages and disadvantages of each.
4. Understand the difference between leadership and management, employee empowerment, functions of management, organization structure, and how organizations are changing.
5. Explain the different motivational theories, how to motivate employees, and how to build self-managed teams.
6. Describe human resource management, the issues in managing human resources, and how to find and retain the best employees.
7. Describe the issues and problems that a business has to deal with to have world-class products and services.
8. Understand marketing as it relates to building customer relationships, producing products and services, distributing products efficiently and competitively, and promoting products and services using integrated marketing communications.
9. Describe how to manage personal finances as well as how businesses manage financial resources through securities markets, money, and financial institutions.

MGMT 1250

Principles of Leadership

Credit hours: 3

Provides an introduction to principles of leadership. Examines personal beliefs about leadership and explores leadership philosophies, styles, and skills. Includes opportunities to identify individual strengths and develop leadership potential. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Clarify personal beliefs about leadership.
2. Identify leadership philosophies, styles, characteristics, and behaviors.
3. Define the role of ethics and values in leadership.
4. Identify individual strengths and areas of improvement as a leader.
5. Create a personal leadership development plan.

MGMT 1400

Introduction to Data Analytics

Credit hours: 3

Introduces data analytics to a general audience. Presents the role of the analyst and different career paths available within data analytics. Employs a broad range of use cases to introduce methods for extracting, cleaning, organizing, and analyzing data and sharing insights. Covers data visualization and report generating tools. Discusses the legal, ethical, and privacy issues involved with big data projects.

Course Learning Outcomes

1. Explain various methods for extracting, cleaning, organizing, and analyzing data.
2. Construct research questions in terms that can be answered through data analytics methods.
3. Describe the important legal and ethical issues that affect data analytics.
4. Compare the goals and strengths of common data science programming languages, applications, and hardware.
5. Describe the role of the data analyst in different career paths.

MGMT 2030

Inclusive Leadership SS

Credit hours: 3

Explores the experiences of individuals at work, with an emphasis on diversity and inclusion in leadership. Examines opportunities for and obstacles to leadership development and success, differences in communication and behavior, leader prototypes and perceptions of leader behaviors, the effects of the 24/7 work culture on leaders, and managerial and organizational strategies to support the advancement of all leaders. Draws from various social science disciplines, including organizational behavior, psychology, sociology, and economics.

Course Learning Outcomes

1. Identify and describe organizational obstacles and managerial actions that contribute to a lack of inclusivity in leadership.
2. Discuss how individual differences in communication and behavior can affect management and leadership development in organizations.
3. Explain how organizations can attract, recruit, develop, and retain diverse leaders.
4. Analyze leader behaviors and discuss their relationship to organizational outcomes.
5. Evaluate issues, problems, and the opportunities faced by aspiring leaders in organizations.
6. Develop strategies and solutions for change aimed at empowering and developing diverse leadership in organizations.

MGMT 2240

Business Quantitative Analysis

Credit hours: 3

Analyzes profit, revenue, cost and average cost functions through rates of change, both average and instantaneous. Applies graphical, numerical, and algebraic techniques to optimization in business-related problems. Covers compound interest including present value and future value of ordinary annuities. Focuses on solving a variety of problems in economics and finance using derivatives and integrals. Canvas Course Mats \$85/Cengage applies. Lab access fee of \$13 for computers applies. Course fee of \$35 for proctored testing applies.

Course Learning Outcomes

1. Create profit, revenue and cost equations given data, related equations, or graphs.
2. Construct models of best fit from data including linear, quadratic, polynomial, and power models.
3. Calculate optimal solutions for business-related problems using algebraic, numerical, and graphical techniques.
4. Calculate simple interest, compound interest, and continuously compounded interest including present value and future value of ordinary annuities.
5. Compute marginal profit, marginal cost, and marginal revenue by using derivative functions.
6. Construct total cost and total revenue functions by using indefinite integrals and initial conditions.
7. Create the derivative function for products, quotients and compositions of polynomial, rational, and exponential functions.
8. Calculate limits including limits at infinity and infinite limits.

MGMT 2340

Business Statistics I

Credit hours: 3

Presents an application of statistics in business and economics covering methods of collecting, analyzing, and presenting data. Includes frequency distributions, averages, index numbers, probability, sampling, estimation, analysis of variance, time series, regression and correlation, and chi-square. Canvas Course Mats \$93/McGraw applies. Lab access fee of \$13 for computers applies. Software fee of \$40 applies.

Course Learning Outcomes

1. Describe the process and methods that statisticians use to analyze data in business and social environments;
2. Describe and demonstrate the ability to define and use appropriate probability distributions and their characteristics within a statistical environment;
3. Describe the characteristics and processes used in working with populations and samples and how they impact statistical decision making;
4. Describe the basics of hypothesis testing, evaluating regression analysis and correlation concepts used in statistical analysis.

MGMT 2400

Data Analytics for Business

Credit hours: 3

Introduces the field of data analytics in business. Introduces the software, languages, and hardware used in data analytics. Uses common analytical tasks such as clustering, classifying, and predicting outcomes, along with common algorithms used in data analytics, such as regression, decision trees, and neural networks. Discusses the legal, ethical, and privacy issues inherent with big data projects. Includes hands-on experience with data extraction, data analysis and interpretation. Course lab fee of \$24 for testing services applies.

Course Learning Outcomes

1. Describe the role of programming, mathematics, and statistics in business analytics.
2. Apply business intelligence, web analytics, and statistics to case studies in business.
3. Answer research questions using data analytics methods.
4. Use appropriate technology applications to optimize business solutions.
5. Use appropriate analytics tools and algorithms in a business case context.

MGMT 3000

Organizational Behavior WE

Credit hours: 3

Studies behavioral theories and concepts for creating effective organizations. Emphasizes knowledge of individual, group, and organizational processes and variables regarding people's attitudes and behaviors in organizational settings. Presents topics on communication, leadership, motivation, conflict management, socialization, team building, decision making, diversity, ethics, and culture. Includes lectures, case studies, oral presentations, written assignments, and group projects. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Evaluate theory-based approaches for effective management-planning, organizing, leading, and controlling.
2. Describe individual differences such as personality, attitudes, perception, and motives.
3. Produce a self-evaluation of professional strengths and weaknesses.
4. Apply organizational behavior concepts for effective teamwork.
5. Synthesize organizational behavior concepts to resolve managerial issues.
6. Apply effective professional-level business writing skills.

MGMT 3020

Individual Action and Corporate Social Responsibility

Credit hours: 3

Focuses on moral issues in organizations and the role and importance these have in today's complex business environment. Explores the challenges that arise across the spectrum of business activity and studies human conduct in a business context and what constitutes right and wrong. Examines issues of ethics as they apply to business entities, managers, shareholders, customers, society, and other consultants. Focuses on identifying and solving real world ethical dilemmas in business, and evaluates various individual and corporate decision-making models.

Course Learning Outcomes

1. Discuss a variety of moral and ethical theories and articulate important ethical concepts and principles;
2. Identify possible moral and ethical problems in business contexts;
3. Employ the ethically significant characteristics of a controversy in a workplace to an ethical theory or principle;
4. Explain and defend fundamental value choices that lead to ethical judgments;
5. Formulate ideas for behaviors, practices, and programs to solve ethical problems and dilemmas;
6. Demonstrate the ability to use appropriate ethical decision-making strategies in resolving their own ethical issues and challenges;
7. Demonstrate capabilities for critical thinking, reasoning, and analyzing;
8. Demonstrate effective communication skills (i.e., writing, speaking and interpersonal).

MGMT 3070

Total Quality Management

Credit hours: 3

Teaches universal principles of total quality management (TQM), as defined by continuous improvement, employee involvement, and customer satisfaction. Considers the quality of every aspect of the process that produces the product or service. Covers quality dimensions, continuous improvement, failure prevention techniques, the seven tools of quality, and lean six sigma. Lab access fee of \$13 for computers applies. Software fee of \$40 applies.

Course Learning Outcomes

1. Create customer surveys using defined quality dimensions for products and services.
2. Implement an employee suggestion system in an organization to improve quality.
3. Analyze quality problems using lean six sigma, DMAIC approach, and the basic seven tools of quality.
4. Apply failure prevention techniques to improve customer satisfaction.
5. Explain customer relationship management (CRM) and lean production.
6. Define performance metrics for teams.
7. Plan quality improvement projects.

MGMT 332G

Cross Cultural Communications for International Business GI

Credit hours: 3

Discusses today's business environment which requires work in a multi-ethnic setting. Overviews critical elements that arise from the various cultural backgrounds which can impact both domestic and international organizations. Proceeds from a management point of view with lessons easily derived for the mid-level manager as well as for line personnel. Concentrates on managerial communications, negotiations, cultural changes, and management functions.

Course Learning Outcomes

1. Describe the effects of rapid globalization on the marketplace.
2. Describe the growing cultural diversity within all work forces throughout the world.
3. Describe the radical changes toward free enterprise and democracy within second and third world societies and cultures.
4. Demonstrate the need for business graduates to have a more cosmopolitan perspective, coupled with corresponding intercultural skills.
5. Describe the effects of culture on global management.
6. Examine the impact of culture on international business.
7. Compare and contrast cultural specifics and business/service abroad.
8. Demonstrate knowledge and recognition of complexities inherent in global and/or intercultural issues.
9. Interrelate knowledgeably, reflectively, responsibly, and respectfully with a society of increasing intercultural connections.

MGMT 3345

Business Statistics II

Credit hours: 3

Studies advanced managerial concepts. Includes multiple regression, ANOVA, test of hypotheses, and time series techniques. Emphasizes statistical modeling, statistical decision-making, and is computation intensive. Lab access fee of \$13 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Describe basic statistical concepts, hypothesis testing, analysis of variance, time series analysis, etc.;
2. Describe appropriate types of processes to use in analyzing varied types of statistical data;
3. Evaluate alternative statistical processes within the context of time series, cross sectional analysis, and related topics;
4. Apply alternative statistical processes in the evaluation of varied business decision circumstances.

MGMT 3450

Operations Management

Credit hours: 3

Focuses on the management of resources for products, production, or services within an organization. Covers project management, supply chain, facility location and layout, forecasting, scheduling, planning, and operational processes. Emphasizes product/service development, supply chain, forecasting, inventory control, quality assurance, and research techniques. May be delivered hybrid and/or online. Canvas Course Mats \$85/McGraw applies. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Demonstrate a working knowledge of the main fields within operations management.
2. Appraise the strengths and weaknesses in existing operations and select or create solutions to solve weaknesses in those organizations.
3. Solve mathematical operations problems using statistical methods, marginal analysis, algebra and heuristics.
4. Analyze and document the processes for existing processes in real companies.

MGMT 3460

Scheduling Forecasting and Inventory Management

Credit hours: 3

Applies critical scheduling, forecasting and inventory management skills in business operations. Analyzes a wide array of quantitative and qualitative methods that are in current industry use. Analyzes scheduling and forecasting in business situations, and how to manage inventory systems. Evaluates both short-run and long-run forecasting and inventory considerations.

Course Learning Outcomes

1. Apply basic scheduling, forecasting and inventory management theories.
2. Apply quantitative and qualitative skills and techniques to scheduling, forecasting and inventory management problems.
3. Apply scheduling, forecasting, and inventory techniques in actual companies or organizations.
4. Create efficient and effective schedules, forecasts, and inventory systems.

MGMT 3470

Lean Management Systems

Credit hours: 3

Teaches advanced operations management processes beyond introductory course. Studies process and value stream management. Teaches importance of continuous improvement and other techniques critical to operations management in modern organizations. Integrates hands-on experience in lean thinking processes. Software fee of \$40 applies.

Course Learning Outcomes

1. Identify the critical differences in lean thinking as contrasted to less effective processes.
2. Explain the differences that characterize a lean thinking organization.
3. Evaluate current business processes to create both current and future state value stream maps.
4. Describe the processes required for pull operations as contrasted to push systems.
5. Apply the techniques for creating and implementing lean thinking processes.
6. Apply lean thinking processes and utilize continuous improvement techniques in operations management systems.

MGMT 3480

Operations Simulation

Credit hours: 3

Applies critical operations management skill sets in a simulation. Creates simulations to analyze and solve operational problems. Applies data visualization software to make strategic decisions.

Course Learning Outcomes

1. Apply basic concepts of an operations simulation.
2. Create applicable models for complex systems.
3. Use data visualization software to make strategic decisions.
4. Analyze operational simulation results.

MGMT 3500

Leadership Theory and Application WE

Credit hours: 3

Examines leadership theory and how it applies to real-world situations. Facilitates thinking and dialogue about leaders and the leadership process. Covers leadership development strategies and approaches for individuals, teams, and organizations. Includes readings, discussions, reflections, experiential activities, guest speakers, written papers, and innovative assignments. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Describe the traditional theories and concepts of leadership, as well as of the most recently developed leadership philosophies.
2. Compare the variety of characteristics and competencies found in the literature regarding exceptional leaders and discuss with fellow learners.
3. Apply leadership concepts to current issue-focused discussions using critical thinking and reflection.
4. Use critical analytical and problem-solving skills to identify and solve a variety of identified leadership problems and issues within the course through written projects.
5. Illustrate, through writing, an awareness of various leadership styles.
6. Appraise personal competency in leadership analysis and behavior using reflective writing techniques.
7. Employ mastery of professional skills that include the ability to use written communication in the context of leadership development theory and practice.

MGMT 3700

Supply Chain and Logistics Management

Credit hours: 3

Teaches planning and controlling of supply chains and distribution networks. Covers concepts of network design, forecasting, aggregate planning, transportation, sourcing decisions, performance metrics, and the role of information technology in supply chain.

Course Learning Outcomes

1. Describe the different aspects and issues of supply chain.
2. Describe and evaluate the performance of supply chain networks.
3. Analyze and design supply chain networks.
4. Apply forecasting, planning, and controlling techniques to manage sales, operations, and inventory.

MGMT 4260

Business Analysis and Project Management

Credit hours: 3

Prepares students for entry-level certification in Business Analysis. Covers elicitation and collaboration, life cycle management, planning and monitoring, and analysis and design models.

Course Learning Outcomes

1. Manage the life cycle of a project, including traceability, maintenance, prioritization, assessment, and approval processes.
2. Use appropriate criteria to make best business decisions, such as business needs, opportunities, risk, compliance, and ability to achieve desired outcome.
3. Apply multiple analysis methodologies.
4. Identify innovative solutions to obstacles arising during project life cycle.
5. Perform all aspects of elicitation and collaboration.

MGMT 4350

Business Intelligence and Data Visualization

Credit hours: 3

Utilizes data and data visualization tools to support business intelligence and inform business decisions. Identifies key variables and methods of presenting data. Prepares for industry certifications, software credentials, and internships. Software fee of \$40 applies.

Course Learning Outcomes

1. Ask relevant data-driven questions.
2. Apply current business intelligence and data visualization tools to answer relevant questions.
3. Analyze large data sets to identify key variables.
4. Present meaningful visualization of key data variables.
5. Earn acceptable score on leading industry data visualization software package accrediting exam.

MGMT 4470

Strategic Operational Planning

Credit hours: 3

Integrates planning concepts in the planning hierarchy within a manufacturing framework. Explores in depth the concepts of capacity planning, advanced sales and operational planning, demand management and forecasting, advanced MRP/ERP, inventory control, scheduling and lot sizing. Focuses on linkages between production planning and execution.

Course Learning Outcomes

1. Match supply and demand in a capacity and material constrained production environment.
2. Differentiate levels of planning hierarchy from strategic to operational in a manufacturing or service organization.
3. Demonstrate understanding of the linkages between forecasting, sales and operations planning, inventory control, scheduling, MRP and capacity planning.
4. Apply the mathematical models and computer tools learned in class to solve various production planning problems.
5. Analyze a production system and identify problems and/or opportunities for improvement.

MGMT 4480

Management Science and Optimization

Credit hours: 3

Explores management science and optimization models in depth, focusing on business applications and computer modeling. Introduces linear programming, integer programming, nonlinear programming, goal programming and network flow models. Studies transportation, assignment and transshipment problems. Also studies stochastic models, queueing, simulation and decision analysis.

Course Learning Outcomes

1. Demonstrate the use of management science models such as linear, integer, nonlinear and goal programming; as well as network flows, queueing, simulation and decision analysis.
2. Formulate a model for a given business problem using an appropriate management science model and demonstrate the solution approach.
3. Demonstrate the use of computer tools in formulating and solving management science problems.
4. Analyze a process in a manufacturing or service organization and demonstrate how it can be improved using management science models.
5. Apply the modeling framework learned in this course to optimization problems encountered in various business environments.
6. Interpret the solutions obtained with the use of management science models and apply them to improve business processes.

MGMT 450R

Leadership Practicum

Credit hours: 3

Provides the opportunity to apply leadership theories and knowledge to professional contexts through a carefully designed project. Facilitates the acquisition and practice of leadership skills. Requires students to act as members of a consulting team to advise classmates on their projects. May be repeated for a maximum of 6 credits toward graduation.

Course Learning Outcomes

1. Apply knowledge of leadership to real problems in an actual organization through a well-defined leadership project.
2. Integrate leadership concepts and practices by analyzing and acting on organizational problems in a specific context through the leadership project.
3. Practice leadership skills by executing and managing the project.
4. Analyze leadership in a particular context and draw conclusions through a written report.
5. Examine leadership problems as a member of a leadership consulting team.
6. Provide ongoing guidance to others on leadership issues as a member of a leadership consulting team.

MGMT 481R

Internship

Credit hours: 1 to 6

For upper-division students working toward a Bachelor of Science Degree in Business Management. Provides a transition from school to work where learned theory is applied to actual practice through meaningful on-the-job experience. No more than three credit hours of internship work experience will apply toward graduation in any Business Management Specialization; may be repeated for a maximum of 6 credits. May be graded credit/no credit.

Course Learning Outcomes

1. Develop individual work objectives;
2. Communicate effectively in the work environment;
3. Develop written communication skills through weekly reports;
4. Demonstrate proper work habits and work ethics;
5. Create goals for application of classroom skills in the work environment.

MGMT 4860

Business Strategy Formulation and Implementation

Credit hours: 3

Cultivates a strategic mindset to lead and excel in today's competitive business environment. Employs a comprehensive understanding of strategic decision making, competitive advantage, and organizational success. Utilizes frameworks, tools, and techniques to analyze the business environment, formulate effective strategies, and drive performance. Develops expertise in environmental analysis, resource analysis and allocation, strategy implementation and evaluation. Forms part of the Business Core. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Apply analytical skills through qualitative/quantitative decision-making at the functional, business and corporate levels.
2. Employ operational and analytical techniques utilizing an interdisciplinary approach consistent with strategic management principles from a variety of functional areas including: accounting, finance, marketing, operations and other related disciplines.
3. Analyze external/internal competitive environments to achieve competitive advantage through the use of strategic principles and concepts.
4. Formulate and communicate analytical conclusions, strategic recommendations, and plans for implementation of strategic goals.
5. Create a strategic plan for achieving competitive advantage.
6. Utilize ethical reasoning and judgment in the pursuit of a strategic plan.

MGMT 4870

International Management

Credit hours: 3

Examines in depth the leading forces and trends shaping the opportunities and challenges confronted by multinational corporations (MNCs) as they assemble, grow, mature, coordinate and control their international network of subsidiaries, joint-ventures, alliances, and supplier firms. Examines the strategies pursued by MNCs in response to opportunities and challenges in this process, consistent with their distinctive strengths and weaknesses; and theories. Contrasts the models and strategic frameworks relating these strategies and forces/trends. Includes group project (written and oral presentations) on a multinational corporation developing or maturing its network in a selected market.

Course Learning Outcomes

1. Analyze and evaluate global or intercultural issues;
2. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups;
3. Evaluate how one's own cultural rules and biases compare and contrast with those from different cultures;
4. Interrelate respectfully with individuals representing cultures and perspectives other than one's own;
5. Summarize the International Standards for the Professional Practice of Internal Auditing;
6. Create governance documents;
7. Perform a risk assessment;
8. Apply control processes to manage risks;
9. Apply internal auditing techniques, Report audit findings.

MGMT 6300

Healthcare Systems/Finance/Operations

Credit hours: 3

Surveys the major components and organizational interrelationships of the United States healthcare system. Examines the various healthcare organizations (HCOs), personnel issues, delivery systems, and policy and payment mechanisms. Explores public policy and business practice issues associated with access, cost and quality of Healthcare.

Course Learning Outcomes

1. Analyze the current and future components and organizational interrelationships of the US healthcare system.
2. Evaluate characteristics of various healthcare organizations (HCOs), personnel issues, delivery systems, and payment mechanisms.
3. Examine managerial best practices and policies that affect healthcare organizations.
4. Analyze healthcare business performance issues associated with access, finance, and quality.

MGMT 6310

Healthcare Policy and Law

Credit hours: 3

Examines political issues affecting contemporary healthcare services by analyzing policy goals, public policy formulation processes, and external environments. Examines the blended use of managerial epidemiology, biostatistics, political and economic analysis, with an understanding of public health initiatives. Fosters an appreciation among future healthcare leaders for how political structures determine interactions with local and national governments.

Course Learning Outcomes

1. Describe political issues affecting contemporary Healthcare services.
2. Analyze the managerial application of policy, economics, and law as they relate to healthcare administration.
3. Evaluate how an organization's political structures interact with local and national governments.
4. Analyze the regulatory framework of public policy, law, and other external environmental factors related to healthcare.

MGMT 6320

Healthcare Strategy

Credit hours: 3

Studies healthcare trends and consumerism among different populations. Focuses on improving care for populations by examining patient preferences and needs, including access, and affordability. Examines ways of improving clinical health outcomes through improved care coordination and patient engagement. Discusses appropriate financial and care models

Course Learning Outcomes

1. Describe healthcare trends and consumerism among different populations
2. Propose methods for improving clinical health outcomes for a defined group of individuals
3. Implement applicable strategic planning models to improve healthcare organizational performance
4. Analyze patient preferences and needs in order to provide appropriate care

MGMT 6440

Advanced Project Management

Credit hours: 3

Focuses on advanced tools and techniques to develop strategic project management skills with an emphasis on managing technical projects. Explores best practices aligned for Program Management, Project Portfolio Management, and Strategic Project Leadership and Management. Analyzes basic cost justification techniques for making economic decisions in technical organizations.

Course Learning Outcomes

1. Implement advanced project management, cost estimation, economic/financial project evaluation, risk management, uncertainty, and procurement management concepts.
2. Formulate appropriate principles, tools, and techniques for advanced problem resolution, including the issues involved in managing multiple technical projects.
3. Apply advanced negotiation and conflict resolution skills.
4. Apply the tools and techniques involved in Project Portfolio Management including the use of economic evaluations such as net present value, internal rate of return, and payback analysis.
5. Develop online project management tools to track and manage large-scale technology implementations.

MGMT 6470

Organization Information Technologies

Credit hours: 3

Examines in depth how information and information management affect the strategy, structure and operations of organizations. Covers technical and organizational foundations of information systems along with contemporary approaches to building, managing and protecting information systems. Includes hands-on work with a modern Enterprise Resource Planning (ERP) system. Compares Enterprise Architecture to cloud-based Software as a Service offerings. Emphasizes how information technology affects decision-making. Uses Excel as a decision support tool. Examines the ethical and legal issues raised by the capabilities of information technology.

Course Learning Outcomes

1. Assess major categories of information technologies and their functions and purpose as they apply to management situations.
2. Illustrate the ways in which information technologies (IT) and Management Information Systems (MIS) support organizational processes and decision making.
3. Use databases and spreadsheets to produce information for decision making.
4. Apply enterprise resource planning (ERP) to an organization MIS.
5. Analyze company conditions using the major considerations associated with evaluation and implementation of IT.
6. Apply the basic concepts of information security and privacy to a firm.
7. Examine emerging trends and possible future consequences of MIS and IT.
8. Contrast cloud-based and in-house information management.
9. Discuss the basics of Enterprise Architecture.

MGMT 6500

Managing Individuals and Groups

Credit hours: 3

Exposes students to the concepts, theories, and practices related to the behavior and attitudes of people in organizations. Examines issues at the individual, group, and organizational levels, including topics such as individual differences, motivation, leadership, human resource management, teamwork, and organizational design, and structure.

Course Learning Outcomes

1. Explain what managers must do to manage individuals, groups and organizational systems
2. Demonstrate both self-awareness and awareness of others on key interpersonal differences such as personality, attitudes, perception, attribution, needs and motives
3. Effectively utilize groups, teams and their own interpersonal skills
4. Analyze organizational dynamics and prescribe appropriate interventions
5. Discuss the issues related to the effective management of organizational change

MGMT 6510

Information Systems and Project Management

Credit hours: 3

Examines information systems at the general management level. Employs a strategic look at needs of any organization and how the function of information systems assists in the effectiveness of organizations.

Course Learning Outcomes

1. Debate critical issues related to managing and administering the IS function.
2. Investigate the overall information needs of an organization and the role of information systems in providing them.
3. Evaluate alternative ways to match the information systems function to the structure and behavior of the organization.
4. Apply system information to the diverse subject matters in the IS environment.

MGMT 6740

Operations and Supply Chain Management

Credit hours: 3

Examines advanced topics in operations research which develop decision making processes for complex organizations and systems. Identifies creative methods to analyze problems, develop alternative processes for decision making, and optimize processes for business and organizations.

Course Learning Outcomes

1. Apply the alternative decision making process in complex systems and organizations.
2. Analyze alternative decision making processes to avoid system failure.
3. Use creative methods for dealing with problem areas including methods of analysis that have shown the ability to resolve complex problems.
4. Apply a variety of decision making processes that will facilitate the ability to analyze and deal with complex situations.
5. Assess alternative approaches that would facilitate achievement of systems success.

MGMT 6760

Applied Business Research

Credit hours: 3

Provides students with the opportunity to design and conduct applied business research projects in the varied disciplines as well as across disciplines. Examines the philosophy of science, research design, measurement and scaling, reliability and validity, communication of research results, and related issues.

Course Learning Outcomes

1. Describe the fundamental concepts involved in conducting research.
2. Analyze data to support decision making using effective Identification, collection, analysis, interpretation, and presentation techniques.
3. Critically analyze consumer research reported in trade and professional publications, as well as internal reports.
4. Communicate research results both orally and in writing.

MGMT 6800
Global Business Strategy

Credit hours: 3

Integrates case analysis considered from the CEO's perspective. Evaluates global competitiveness, strategic assessment, policy development, and strategy implementation. Canvas Course Mats \$85/McGraw applies. Software fee of \$40 applies.

Course Learning Outcomes

Please see the department for information.

MGMT 6930

International Engagement

Credit hours: 3

Provides an integrated, engaged, learning opportunity for students to experience differences in culture and business operations of another country through the completion and reflection of an international consulting project or case studies, and a possible international experience. Projects or case studies will require the integration of functional areas of business in an international setting, and will highlight how these functions are interrelated.

Course Learning Outcomes

1. Analyze cultural and professional differences that exist in other countries;
2. Examine international business through the business consulting process or case study;
3. Leverage positive relationships with team members;
4. Explore relevant issues within a non-U.S. companies through case studies or by developing a functionally integrated plan to address an organizational problem or opportunity;
5. Present findings to class and/or organizational stakeholders.

MGMT 6940

MBA Consulting Project

Credit hours: 3

Utilizes community consulting to focus on business development through identifying, evaluating, and executing business opportunities within new and existing businesses. Implements consulting processes and strategies, and allows students to practice tools and techniques for developing business models.

Course Learning Outcomes

1. Practice the business development process of identifying, evaluating and executing business opportunities;
2. Utilize models and tools to facilitate the development of business opportunities;
3. Engage in win-win relationships with clients, team members, and mentors;
4. Integrate the functional areas of a business while identifying and developing solutions in new and existing businesses;
5. Develop client centered solutions for business development;

MICR 2060

Microbiology for Health Professions BB

Credit hours: 3

Studies the history of microbiology. Explores bacterial, fungal, parasitic, and viral diseases and their causes. Discusses the classification, physiology, genetics, and physical and chemical control of microbes. Emphasizes clinical applications. Is designed for those planning a career in the health professions such as nursing, dental hygiene, medicine, pharmacy, and dentistry. Includes weekly laboratory as a corequisite.

Course Learning Outcomes

1. Define technical terms currently used in the study of microbiology and immunology.
2. Explain basic characteristics of microbes, especially bacteria, and how those characteristics relate to disease and treatments.
3. Identify the pathogenicity of infectious microorganisms and mechanisms the body uses to combat them.
4. Illustrate the growth requirements of microbes and how those are manipulated to control microbial growth in the environment and human body.
5. Discuss the importance of microbiology in a health care setting.

MICR 2065

Microbiology for Health Professions Laboratory

Credit hours: 1

Studies the history of microbiology focusing on clinical applications through laboratory activities. Explores bacterial, fungal, parasitic, and viral diseases and their causes using common microbiology lab techniques. Designed for those planning a career in the health professions such as nursing, dental hygiene, medicine, pharmacy, and dentistry. Course Lab fee of \$44 for materials, lab applies.

Course Learning Outcomes

1. Describe the many roles microorganisms play in our lives, as well as the ecosystem as a whole.
2. Investigate microorganisms (mostly bacteria) via isolation, culture, control, and identification.
3. Recognize the kinds of culture media used as well as what microorganisms they will identify.
4. Identify microorganisms studied in class through the use of the microscope, their physical characteristics, and through tests of their biochemical characteristics.

MICR 3150

Microbial Ecology WE

Credit hours: 4

Covers fundamentals of microbial ecology including interactions, major habitats, and factors that dictate microbial community structure consisting of bacteria, archaea, eukaryotes, and viruses. Includes in-depth examination of classic examples as well as additional systems to be selected based on class preferences. Course fee of \$25 for materials applies.

Course Learning Outcomes

1. Summarize the methods used to gather information about microbial ecology.
2. Identify the major roles of microbial functional roles and their impacts on microbial community structure.
3. Explain how environmental factors shape microbial community structure.
4. Describe unique properties of microorganisms that enable them to survive and contribute to their environments.
5. Examine systems using the fundamental concepts of microbial ecology.
6. Develop a research proposal incorporating content gained in class and additional literature research.

MICR 3450

General Microbiology

Credit hours: 3

Covers taxonomy, physiology and genetics of bacteria, archaea, viruses and eukaryotic microbes. Introduces industrial microbiology, biotechnology, and immunology and the biochemical basis of infectious diseases. Is designed for biology majors who desire an in-depth coverage of microbiology.

Course Learning Outcomes

1. Compare the biology of bacteria, archaea, eukaryotic microbes, and viruses.
2. Explain the metabolic diversity of microbes and their importance to life on this planet.
3. Describe the role of microorganisms in various ecosystems and industries.
4. Describe the pathogenicity of infectious microorganisms and the mechanisms our bodies use to combat them.
5. Analyze connections between society and the various fields of microbiology, including career opportunities in the field of microbiology.
6. Summarize the fundamentals of prokaryotic genetics.

MICR 3455

General Microbiology Laboratory

Credit hours: 1

Hands-on laboratory procedures that studies the methods of taxonomy and distinguishes physiology and genetics of prokaryotes (bacteria, Archaea), viruses and eukaryotic pathogens. Introduces methods used in industrial microbiology, biotechnology, and immunology and the biochemical basis of infectious diseases. Designed for biology majors who desire an in-depth coverage of microbiology. Course Lab fee of \$60 for materials, lab applies.

Course Learning Outcomes

Please see the department for information.

MICR 3550

Microbial Physiology

Credit hours: 4

Covers the structure, metabolism, and growth of microorganisms, with an emphasis on bacteria. Examines the diversity of strategies that microbes use for energy metabolism and biosynthesis of macromolecules. Highlights the integration of metabolic processes, regulatory mechanisms, and environmental changes. Explores current research topics in microbial physiology. Course fee of \$50 for materials applies.

Course Learning Outcomes

1. Explain the principles of microbial catabolic and anabolic pathways
2. Explain how microorganisms build and maintain a proton motive force
3. Explain how cells acquire and metabolize macronutrients including sources of carbon, nitrogen, sulfur, and phosphorus
4. Analyze the effects of environmental factors on a microbe's physiology
5. Identify the key features of metabolic and physiological diversity among bacteria and archaea and how they are studied and applied
6. Conduct experiments commonly involved in research on microbial physiology
7. Analyze data to interpret results of microbial physiology research

MICR 3650

Microbial Genetics

Credit hours: 4

Covers the structure, function, expression, and evolution of microbial genes and genomes, with an emphasis on bacteria. Examines microbial genome replication, the flow of information from DNA to functional RNAs and proteins, mechanisms for regulation of genome expression, and microbial gene organization including bacterial genomes, operons, plasmids, and mechanisms of horizontal gene transfer. Discusses experimental methods to construct, map, and examine mutations, measure gene expression, and genetically modify microbes. Examines DNA sequencing, analysis and annotation of microbial genomes. Course fee of \$62 for materials applies.

Course Learning Outcomes

1. Explain molecular mechanisms involved in DNA replication, transcription, translation, DNA repair, and horizontal gene transfer.
2. Analyze the various regulatory mechanisms of genome expression in microorganisms.
3. Explain the importance and role of microbes for the tools of molecular genetics.
4. Analyze microbial genome and gene structure using classical and molecular methods.
5. Conduct experiments commonly used in classical and molecular microbial genetics.
6. Analyze data to interpret results of microbial genetics research.

MKTG 1890

Introduction to Careers in Business

Credit hours: 1

Explores a wide variety of professional opportunities available in business including required skills, emerging trends, economic conditions, and workforce demands. Identifies and examines professional strengths, skills, and interests that add value in the workplace. Assists emerging candidates to align their abilities with industry needs. Initiates professional networking and internship opportunities. Requires professional outreach. Includes demonstrations, role playing and application exercises.

Course Learning Outcomes

1. Utilize resources to research career trends, workplace conditions, required skills, and emerging technologies consistent with business careers.
2. Engage in strategic networking practices.
3. Identify strengths, skills, and value-add contributions consistent to business professions in order to initiate a career narrative.
4. Develop an introductory career portfolio.
5. Employ rational decision making and critical problem-solving models to determine initial career strategy.
6. Explore self-evaluation inventories and measurements.

MKTG 220G

Written Business Communication GI WE

Credit hours: 3

Teaches written business correspondence and business reports using direct and indirect approaches. Emphasizes analysis of audience and purpose in drafting documents with accurate and clear content, organization, and style. Includes application of punctuation, grammar, and usage principles to business writing situations. Emphasizes teamwork and collaboration. Teaches how to interrelate respectfully with individuals representing cultures and perspectives other than one's own. Lab access fee of \$13 for computers applies. Canvas Course Mats \$29/Peerceptiv applies.

Course Learning Outcomes

1. Apply principles of effective written business communication with an emphasis on correct content, organization, and style.
2. Use rhetorical principles strategically in business documents.
3. Integrate current, relevant, and credible research into business documents.
4. Apply principles of effective teamwork in peer review and collaborative writing.
5. Apply the writing process in low- and high-stakes documents.
6. Analyze global or intercultural issues.
7. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
8. Evaluate how one's own cultural values compared with those from different backgrounds.

MKTG 2390

Professional Business Presentations

Credit hours: 3

Teaches business presentation skills. Emphasizes planning, developing, delivering, and evaluating business presentations. Includes informative and persuasive formats in diverse settings using a variety of media. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Explain oral presentation principles with an emphasis on appropriate topic and purpose, audience, research and data, media, and physical facilities.
2. Identify appropriate presenting style, appeals, design, and graphic elements.
3. Integrate current, relevant, and credible research and data visualization into business presentations.
4. Utilize peer review, critical thinking and evaluation as part of a team.
5. Implement verbal and nonverbal communication skills in a presentation.
6. Apply business self-presentation and impression management skills within a professional context.
7. Create an effective presentation.

MKTG 3170

Digital Advertising

Credit hours: 3

Teaches advanced digital advertising concepts and skills, including social, display, search, and video advertising as well as campaign management and decision making based on key metrics. Includes a digital advertising project and preparation for industry certifications in advertising.

Course Learning Outcomes

1. Design social, display, video, and paid search advertisements and campaigns on a variety of platforms.
2. Manage a digital advertising project launched on a platform for a client.
3. Formulate strategic advertising decisions based on key metrics such as views, likes, conversions, and engagement.
4. Manage social, display, video, and paid search advertisements and campaigns on a variety of platforms.

MKTG 3300

Marketing Analytics

Credit hours: 3

Provides a rigorous introduction to the exciting world of marketing analytics. Teaches the concepts, principles, and frameworks of marketing analytics from the perspective of a marketing strategist applying current marketing theory. Develops key skills required to understand current trends and make predictions based on available data.

Course Learning Outcomes

1. Utilize analytics software to answer relevant marketing questions.
2. Describe best practices and pitfalls for software models with respect to data collection and analysis.
3. Recommend marketing strategies using analyses of real data sets.
4. Use marketing relevant analysis such as sentiment and conjoint analyses.

MKTG 335G

International Marketing GI

Credit hours: 3

Presents the problems of marketing in the international marketplace and how marketers approach and solve them. Focuses on concepts and principles by teaching the theory and practice of international marketing through the use of practical examples and actual case studies of international (both US and foreign) marketing organizations. Includes international marketing position of the US, market entry strategies, analysis of foreign markets, culture and marketing, product design, pricing, distribution, promotion and sales. May be delivered online. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Describe the responsibilities of a knowledgeable and respectful citizen within an increasingly multicultural society and global community.
2. Explain how culture influences customer behavior and marketing practices in differing marketing environments.
3. Discuss the political environment of global marketing and the political and legal issues related to global marketing.
4. Explain the international marketing research process and the global marketing manager's role in that process.
5. Analyze an international marketing situation in order to make recommendations for improvement that account for cultural differences and the theories and concepts of international marketing.
6. Create a marketing plan that employs traditional marketing elements like marketing strategy and marketing mix decisions with accommodations for international and global differences and realities.

MKTG 3600

Principles of Marketing

Credit hours: 3

Studies consumers, markets, and environments from the perspective of the marketing manager. Covers the fundamentals of customer behavior, market research, marketing strategy, product management, pricing, professional selling, distribution, and promotion. Includes case analysis, lectures, class discussions, videos, oral presentations, written assignments, guest speakers, and a marketing plan project. Lab access fee of \$13 applies.

Course Learning Outcomes

1. Examine the role of marketing in business and society.
2. Investigate the economic, cultural, psychological, legal, and technological environment affecting marketing.
3. Develop marketing strategies to address relevant customer needs.
4. Create an effective marketing plan that appropriately analyzes a marketing situation and proposes strategies, tactics, and implementation steps with relevant controls.
5. Communicate proposals, conclusions, recommendations, and results to stakeholders.

MKTG 3620

Consumer Behavior

Credit hours: 3

Includes an analysis of consumer spending and saving habits, product preferences, shopping behavior, leisure time patterns, and social change. Explores the influence of advertising, selling and fashion trends. Includes lectures, class discussions, videos, projects, case analyses, oral presentations, written assignments, and guest speakers. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Describe the psychological, sociological, and economic processes and influences affecting customer choice.
2. Employ observation and interviewing skills to gain valuable customer insights.
3. Map the customer purchase decision process.
4. Use customer behavior research findings in the development of ethical marketing strategies.
5. Conduct a qualitative field study in order to understand the theoretical underpinnings of consumer motivations driving behavior in a marketplace.

MKTG 3630

Services Marketing

Credit hours: 3

Presents skills and attitudes necessary to market services and to provide good customer service. Emphasizes the marketing skills involved in marketing services and basic marketing concepts, including positive customer relations, effectively handling customer complaints, and sound customer service procedures. Focuses on developing successful service marketing strategies that can be applied in a business organizational setting. Includes lectures, guest speakers, video tapes, role plays, case analysis, oral presentations, and written assignments. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Describe the unique theories of services marketing including those related to marketing strategy and the 7 Ps of services marketing.
2. Explain implications and practical applications of services marketing theories.
3. Describe how relationship marketing and customer service add value to the customer's perception of a service.
4. Develop a services marketing strategy.
5. Explain how services marketing principles can be used as a conceptual framework to help managers identify and solve marketing problems.

MKTG 3640

Sales Management

Credit hours: 3

Analyzes the factors that go into managing a sales force. Teaches sales management strategies and tactics which help organizations achieve their revenue goals. Examines key behavioral, technological, and managerial trends in sales. Identifies current analytical, communication, relationship, and leadership skills needed by sales managers. Demonstrates the importance of sales and sales management in terms of people employed, dollars spent, and sales generated. Canvas Course Mats \$56/Sage applies.

Course Learning Outcomes

1. Evaluate the roles that sales managers play in today's environment and in the future.
2. Examine key behavioral, technological, and managerial forces and long term trends in the sales environment.
3. Appraise the ethical issues facing sales managers and salespeople today.
4. Compare and contrast current analytical, communication, relationship, and leadership skills needed by sales managers.
5. Evaluate recent developments in the areas of recruitment, selection, training, compensation, and forecasting.
6. Formulate skills and perspectives necessary for effective sales management.

MKTG 3650

Professional Selling

Credit hours: 3

Emphasizes theoretical skills in the personal selling process and the management of a sales force. Studies the recruiting, training and supervising of salespersons, organization of territories, compensation schemes, and forecasting. Includes lectures, guest speakers, video tapes, role playing, case analysis, oral presentations, and written assignments. Software fee of \$35 applies. Lab access fee of \$13 for computers applies. Canvas Course Mats \$56/Cengage applies. Canvas Course Mats \$39/GoReact applies.

Course Learning Outcomes

1. Identify the roles, functions, and responsibilities required of personal sales representatives.
2. Demonstrate the principles and practices of effective relationship building in personal sales presentations.
3. Develop a personal selling strategy.
4. Demonstrate written, verbal, and nonverbal communications skills in a consultative, problem-solving approach to professional selling.
5. Manage time and territory to maximize customer satisfaction and retention using current technology.

MKTG 3660

Digital Marketing

Credit hours: 3

Provides an introduction to the many business uses of the Internet to create competitive advantage. Features discussions of e-business strategic components and practice with Web page exercises. Uses guided exercises to explore the Net, both in and out of class. Includes projects, research, and Net use in a particular industry. Emphasizes the sharing of concepts discussed in lectures, class activities, the assigned readings, and group projects. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Identify the key terms, concepts, and practices of digital marketing.
2. Develop digital marketing strategies in the context of a firm's overall marketing strategy.
3. Demonstrate key digital marketing skills in analytics, website design, search, advertising, email, social media, inbound marketing, and mobile marketing.
4. Explain the importance of strategic planning in the management of a dynamic digital business environment.

MKTG 3665

Search Engine Optimization

Credit hours: 3

Covers basics of search engine optimization (SEO), including the intent, relevance, and quality of internet searches. Teaches the seven steps of search engine optimization for content creation. Includes video creation, social media, local listings, reputation management, and digital collaborations.

Course Learning Outcomes

1. Describe where SEO applies and where it does not.
2. Perform effective search engine research.
3. Evaluate the performance of online marketing assets with effective techniques and tools.
4. Create a SEO strategy in order to compete effectively on search engines.
5. Create SEO plans to improve search engine ranking in all areas of SEO.

MKTG 3680

Marketing with Social Media

Credit hours: 3

Teach students how to use social media platforms to market products and services. Includes the creation and marketing of a blog using WordPress and engaging with a local small business to write and execute a social media marketing campaign. Teaches the fundamentals of social media marketing and the most popular platforms like WordPress, Facebook, Twitter, Pinterest, and LinkedIn.

Course Learning Outcomes

1. Describe the theoretical, strategic, and tactical aspects of social media.
2. Explain how users and marketers use popular, relevant social media platforms.
3. Explain the role of media, pictures, and video in social media marketing.
4. Apply social media copy writing skills to create content targeted to customers.
5. Evaluate social media marketing performance using key metrics.
6. Create an effective, comprehensive social media marketing campaign for a targeted persona.

MKTG 3690

Digital Marketing Analytics

Credit hours: 3

Teaches advanced digital marketing concepts and skills related to digital marketing analytics and dashboards for web, social, and other digital platforms. Includes preparation for industry certifications in these areas.

Course Learning Outcomes

1. Obtain industry certifications in digital marketing analytics.
2. Critique digital marketing decisions based on digital marketing analytics and metrics.
3. Audit clients' digital marketing analytics.
4. Present recommendations to clients.
5. Utilize core principles to make managerial decisions based on metrics.

MKTG 3700

Fundamentals of Product Management

Credit hours: 3

Provides a rigorous introduction to the development and management of new products from a marketing perspective. Emphasizes current best practices in assessing market opportunities, determining target customers, and defining and designing a product-based solution, and measuring and validating the solution through an iterative product development process. Includes a semester project and presentation, role-plays, and case studies.

Course Learning Outcomes

1. Define the skills and career path of a product manager.
2. Identify important problems faced by target customers.
3. Form description statements that effectively communicate the situation, user, constraints, and key considerations of a problem.
4. Coordinate the prototyping of data- supported solutions for important customer problems.
5. Validate solution prototypes through user research and testing best practices.
6. Present solutions effectively to stakeholders.

MKTG 3890

Business Career Strategy

Credit hours: 2

Emphasizes the seamless transition to professional advancement in the workforce by developing a career narrative consistently presented on paper, online, and in person. Focuses on industry research, networking, interviews, and professional branding, including the customization of career tools, through a practicum design. Requires professional outreach. Includes demonstrations, role playing and application exercises. Lab access fee of \$13 for computers applies.

Course Learning Outcomes

1. Initiate a professional branding strategy.
2. Align professional strengths and skills to industry needs.
3. Engage in strategic networking practices to extend reputation and reach.
4. Demonstrate effective interviewing skills.
5. Customize career tools consistent with professional brand and industry needs to be used online, on paper, and in person.
6. Determine lifelong skill development strategy aligned to industry trends.

MKTG 4600

Customer Experience

Credit hours: 3

Covers managerial uses of marketing research in formulating marketing strategy. Includes determination of situations requiring research, appraisal of alternative research methods, and evaluation of studies. Presents theoretical concepts in research methodology. Includes lectures, class discussions, group projects, case analyses, oral presentations, written assignments, and speakers. Lab access fee of \$13 for computers applies. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Select appropriate analytical techniques to solve marketing research problems.
2. Select research methods and appropriate research protocol.
3. Apply appropriate theoretical concepts in research methodology.
4. Formulate effective marketing strategy using insights gained from properly conducted marketing research.
5. Create a professional presentation of marketing research findings.

MKTG 4610

Sales Operations

Credit hours: 3

Provides students with an understanding of Sales Operations and the key performance indicators driving professional sales organizations. Instills a data-driven perspective necessary for responding to organizational sales and revenue challenges. Develops important skills in forecasting, report and dashboard development, and territory analysis and design, as well as proficiency in Sales Force Automation and CRM software.

Course Learning Outcomes

1. Develop sales forecasts, dashboards, and common management reports using Sales Force Automation and Customer Relationship Management software.
2. Design sales territories and compensation plans.
3. Estimate customer life-time values and ROI for improving customer service and retention.
4. Analyze the data necessary for developing Key Performance Indicators (KPIs).
5. Justify the importance of commonly used KPIs.
6. Defend the design of sales territories and compensation plans.

MKTG 4620

Advanced Professional Selling

Credit hours: 3

Covers advanced business-to-business selling skills and practices. Emphasizes current best-practices in prospecting, needs identification, relationship-building, negotiating, and closing. Includes competitive role-play and case studies. Canvas Course Mats of \$39/GoReact applies.

Course Learning Outcomes

1. Evaluate current negotiation styles and strategies.
2. Perform a customer analysis and prioritization using two-factor and other analytical techniques.
3. Execute a prospecting and territory plan including the design and development phases.
4. Perform a company and product analysis using SWOT and other techniques.
5. Master the five stages of the sales-call, including the approach, needs Identification, presentation, objection handling, and close stages.
6. Critique current best-practices in the field of professional selling.
7. Develop a personal improvement plan for balancing customer and solution orientation.

MKTG 4630

Professional Sales Capstone

Credit hours: 3

Serves as the capstone for the Professional Sales degree. Integrates all foundational concepts and skills previously learned into a real-life sales experience where students are given an Ideal Customer Profile (ICP), product, CRM system, and quota. Requires that students achieve an actual sales quota (comprising both input and output measures). Canvas Course Mats \$87/Student applies.

Course Learning Outcomes

1. Demonstrate effective prospecting and approach skills using customer-centric professional selling principles.
2. Develop and implement an effective sales management plan for organizing, staffing, training, and motivating a sales force.
3. Evaluate the effectiveness of a sales funnel implemented using industry standard tools.
4. Demonstrate effective execution of the entire sales process, from research to close, with real-life products and prospects.

MKTG 4650

Marketing Management Capstone

Credit hours: 3

Presents detailed marketing analysis skills, planning and control of various marketing mix variables, target markets, and the marketing environment using both oral and written case studies. Includes lectures, class discussions, videos, projects, case analyses, oral presentations, written assignments, and guest speakers.

Course Learning Outcomes

1. Describe the role of strategic planning in marketing management.
2. Develop an integrated marketing plan for an organization.
3. Describe marketing decision analysis.
4. Identify different marketing opportunities and complementary market entry strategies.
5. Construct a coherent marketing strategy.
6. Identify marketing mix strategies that maximize brand equity, market share, and profitability.

MKTG 483R

Digital Marketing Internship

Credit hours: 1 to 8

For upper-division students working toward a Bachelor of Science Degree in Marketing. Provides a transition from school to work where learned theory is applied to actual practice through meaningful on-the-job experience. May be repeated for a maximum of 8 credits toward graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Locate a meaningful job in a marketing industry-related area.
2. Develop individual work objectives.
3. Recognize importance of human relations skills.
4. Develop written communication skills through weekly reports.
5. Formulate the ability to establish social skills in the work environment.
6. Develop an understanding of proper work habits and work ethics.
7. Evaluate performance objectively and take corrective action where needed.
8. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Varies from student to student based upon job duties and cooperative objectives.

MKTG 6400

Technology Marketing and Customer Experience

Credit hours: 3

Teaches conceptual frameworks and analytical tools for marketing decision making in technology businesses from a cross-functional and strategic orientation. Focuses on understanding user needs, technology standards and network externalities, forecasting and planning, solution design and architecture, platform strategy, and managing adoption. Uses cases, assignments, and projects. Examines the use of marketing analytics for intelligence gathering, analysis, and decision making. Teaches how to develop high-value solutions for users based on a deep understanding of their needs, and how to communicate the value of and provide access to those solutions through marketing technology.

Course Learning Outcomes

1. Construct an end-to-end overview of the strategic marketing processes in technology companies.
2. Compare the landscape of technology industries with other industries from a marketing perspective.
3. Diagnose technology marketing problems and challenges using appropriate marketing intelligence principles and tools as they relate to technology markets.
4. Formulate a technology marketing strategy to make informed decisions using conceptual frameworks and analytical tools.
5. Communicate technology marketing analysis and solutions orally and in written form in a manner that is understandable, credible, and persuasive.

MKTG 6600

Marketing Strategy

Credit hours: 3

Analyzes current marketing management problems. Emphasizes marketing concepts, research techniques, decision making, and marketing strategy development.

Course Learning Outcomes

1. Solve complex problems that are cross-functional in nature.
2. Deal effectively with strategic challenges that are interdisciplinary.
3. Analyze business issues systemically, critically, credibly, and creatively.
4. Apply the tools and techniques of business (both quantitative and qualitative) in unique situations not previously seen.
5. Present analysis of business problems in both written and oral forms in a manner that is understandable, creditable, and persuasive.
6. Apply effective management, leadership, and change management in organizations.

MKTG 6620

Marketing Research and Analytics

Credit hours: 3

Explores tools and analysis techniques related to customer relationship management. Focuses on "thick" data research, including: ethnography, social listening, interviewing, and laddering. Uses research tools, such as survey design, web analytics, and eye-tracking technology, to collect and analyze data through factor analysis, cluster analysis, classification trees, and multidimensional scaling.

Course Learning Outcomes

1. Develop appropriate marketing data measurement plans given various information needs.
2. Implement appropriate data collection procedures that increase data utility.
3. Demonstrate fluency of key marketing analytics models.
4. Produce actionable marketing and managerial insights and recommendations from data.

MKTG 6640

Brand/Product/Services Management

Credit hours: 3

Focuses on the practice of advanced marketing management topics including: brand management, product management, product development, services marketing, pricing and conjoint analysis. Integrates forecasting including diffusion models and other tactics, resource allocation, and managing profit and loss statements.

Course Learning Outcomes

1. Develop a brand image and an associated strategy for developing brand equity.
2. Use appropriate marketing models to determine pricing for marketing offerings.
3. Assess the demand for a product or service utilizing appropriate forecasting techniques.
4. Apply the core skills of product and services management.

MKTG 6660

Marketing Channels and Communications

Credit hours: 3

Explores key advanced marketing practices related to delivering and communicating value. Examines retailing, e-commerce, websites, personal selling, lead generation, digital marketing, as well as promotion and campaign management.

Course Learning Outcomes

1. Explain best principles and practices associated with managing the various aspects of digital marketing, including search optimization, digital advertising, social media marketing, web analytics, and ecommerce.
2. Create a digital marketing campaign that accounts for customer differences and preferences, competition, and the impact of other relevant market factors.
3. Develop and apply group decision-making skills in solving problems related to a digital marketing strategy.
4. Communicate analyses, decisions, campaigns, and plans to stakeholders effectively.

MUSC 1100

Fundamentals of Music FF

Credit hours: 3

Examines the fundamentals of music theory such as pitch notation, meter, rhythm, time signatures, intervals, major and minor scales, key signatures, and triads. Fulfills the Fine arts general education distribution requirement and addresses essential learning outcomes of quantitative reasoning. Lab access fee of \$17 for computers applies.

Course Learning Outcomes

1. Read basic musical notation.
2. Write basic musical notation.
3. Identify major and minor modes.
4. Identify the various qualities of triads, their inversions, and basic harmonic functions.

MUSC 1105

Fundamentals for Music Majors/Minors

Credit hours: 3

This course is designed to prepare music majors and minors for Theory I. The course covers basic concepts of musical construction including pitch, rhythm, basic harmony, scales, keys, and intervals.

Course Learning Outcomes

1. Read musical notation.
2. Write musical notation.
3. Identify major and minor modes.
4. Identify the basic qualities of triads, their inversions, and basic harmonic functions.
5. Compose a simple song.
6. Pursue further studies in tonal music theory.

MUSC 1110

Music Theory I

Credit hours: 3

Studies the fundamentals of music theory including elementary harmony, primary and secondary triads with inversions, non-harmonic tones and modulation.

Course Learning Outcomes

1. Identify music theory fundamentals fluently.
2. Compose in various textures including species counterpoint using diatonic harmony.
3. Identify principles of rhythmic design in multiple musical traditions.
4. Analyze basic phrases from multiple traditions.
5. Explain the primary organizing forces of music.

MUSC 1115

Music Notation and Score Preparation

Credit hours: 1

Introduces notation software for creating music scores. Includes symphonic layouts, lead sheets, vocal/choral notation, and drum/guitar notation. Explores complex techniques designed to speed notation process and control the nuances of the music's look to produce clear, professional-quality music. Software fee of \$16 applies.

Course Learning Outcomes

1. Notate music using Sibelius software.
2. Apply shortcut techniques to expedite the input process.
3. Utilize digital sound libraries for authentic playback.
4. Produce professional-quality digital music manuscript.

MUSC 1120

Music Theory II

Credit hours: 3

Provides further study of the fundamentals of music theory. Covers the analysis and composition of music using leading tone triads, seventh chords, secondary dominants, sequences, voice leading and modulation.

Course Learning Outcomes

1. Identify music theory fundamentals and diatonic harmony fluently.
2. Write about the role of embellishing tones in multiple musical traditions.
3. Compose music using applied chords.
4. Identify motifs in compositions from multiple musical traditions.
5. Write analyses that deal with the interactions of melody, harmony and meter.

MUSC 1130

Aural Skills I

Credit hours: 1

Provides training in the aural identification of intervals and triads. Practices rhythmic dictation in simple meters, and melodic dictation of simple melodies. Studies the solfege movable "Do" system.

Course Learning Outcomes

1. Demonstrate Kodaly hand signs for solfege in major keys.
2. Sight read simple melodies in major keys using the solfege movable "Do" system and coordinating Kodaly hand signs.
3. Sight read and perform rhythms in simple meters.
4. Aurally identify intervals.
5. Aurally identify major, minor, diminished and augmented triads.
6. Take rhythmic dictation in simple meters.
7. Take melodic dictation of simple melodies.

MUSC 1140

Aural Skills II

Credit hours: 1

Provides further training in the aural identification of intervals and triads. Practices rhythmic dictation in simple and compound meters, and melodic dictation in major and minor keys. Studies the solfege movable "Do" system.

Course Learning Outcomes

1. Demonstrate Kodaly hand signs for solfege in major and minor keys.
2. Sight read simple melodies in major and minor keys using the solfege movable "Do" system with coordinating Kodaly hand signs.
3. Sight read and perform rhythms in simple and compound meters.
4. Aurally identify intervals.
5. Aurally identify major, minor, diminished and augmented triads.
6. Take rhythmic dictation in simple and compound meters.
7. Take melodic dictation of melodies in major and minor keys.

MUSC 1350

Studio Conducting

Credit hours: 1

Provides an introduction to the technique of conducting for a commercial musician. Focuses on baton technique and score reading. Introduces instrumental transposition.

Course Learning Outcomes

1. Conduct beat patterns in simple and complex meters.
2. Exhibit commonly accepted baton technique.
3. Demonstrate appropriate facial expressions while conducting.
4. Define common terms in a musical score.
5. Employ appropriate score markings.

MUSC 1390

Survey of Recording Techniques

Credit hours: 1

Examines fundamental techniques of recording solo, small ensemble, and large ensemble music. Teaches basic use of microphones, digital interface, and signal path. Introduces editing and mixing skills for post production. Surveys applications of contemporary technology for remote performance.

Course Learning Outcomes

1. Record a solo, small ensemble, and large ensemble using entry-level professional audio gear.
2. Identify appropriate equipment to utilize for recording music.
3. Complete a full recording process, including mixing and editing.
4. Compare applications of contemporary media for remote performance.
5. Differentiate variations on signal path including interfaces and microphones.

MUSC 1400

Music Technology I

Credit hours: 2

Examines the fundamental concepts and usage of technologies in music. Studies basic analog and digital signal paths and audio basics. Explores the basics of subtractive synthesis. Introduces the use of the MIDI protocol (Musical Instrument Digital Interface) and the basics of a Digital Audio Workstation (DAW). Software fee of \$16 applies. Lab access fee of \$17 for computers applies.

Course Learning Outcomes

1. Describe the fundamental elements of sound and their application to music technology.
2. Describe the basic analog signal path and its application in live and recorded music.
3. Discuss what MIDI is and its current uses.
4. Demonstrates proficiency in a Digital Audio Workstations (DAW) including the use of keyboard shortcuts.
5. Record/Edit audio and MIDI performances in a DAW.
6. Describe subtractive synthesis including oscillators, filters, ADSR in hardware and software synthesizers.
7. Create MIDI Continuous Controller data in a Digital Audio Workstation.
8. Organize a DAW session for audio and MIDI recording.

MUSC 1402

Music Technology II

Credit hours: 2

Builds on the concepts covered in Music Technology I. Examines the uses of Musical Instrument Digital Interface (MIDI) and virtual instruments in the modern Digital Audio Workstation (DAW) including the creation of templates in ProTools, use of continuous controllers for realism, creation of stems, and the use of sample libraries and various virtual instruments. Studies in greater depth the processes of contemporary music notation including midi importation into notation software and creation of professional-looking scores and parts complete with all the necessary dynamics, phrasing, articulations, and performance instructions. Software fee of \$16 applies. Lab access fee of \$17 for computers applies.

Course Learning Outcomes

1. Organize a DAW session for audio and MIDI recording.
2. Create templates for writing and recording within the DAW.
3. Convert MIDI tracks to audio files.
4. Explore sample libraries and virtual instruments.
5. Demonstrate synthesized sound creation and manipulation.

MUSC 1410

Survey of Commercial Music Careers

Credit hours: 1

Introduces optimal career paths in contemporary music. Covers careers including but not limited to film composition, arranging, production, film music editing, studio engineering, performance, and education. Emphasizes practical skills in entrepreneurship, marketing, and networking.

Course Learning Outcomes

1. List the wide-ranging possibilities of careers in music media;
2. Define skills and habits of an entrepreneurial musician;
3. Identify individual attributes that contribute to successful business practice;
4. Differentiate the new and old music business models;
5. Identify the importance of networking;
6. Explain the financial value of developing multiple streams of income;
7. Describe copyright and licensing appropriate for a commercial musician;
8. Compare perspectives of industry professionals.

MUSC 1800

Introduction to Music Education

Credit hours: 3

Introduces the music education profession including history, philosophy, professional communities, career opportunities, and music teaching standards. Emphasizes the place of music and the arts in education, the role of government in schools, meeting the challenges of 21st century education. Covers personal, professional, and musical skills necessary for successful music teaching and learning. Requires observation of music classrooms in public and private school settings outside of scheduled class time. Includes micro teaching and a final portfolio and interview which culminates in matriculation to the music education degree.

Course Learning Outcomes

1. Describe the history and basic philosophical tenets of the education and music education profession in America.
2. Explain the importance of music and the arts in educational settings.
3. Apply the basic principles of planning for instruction.
4. Identify personality traits and align with qualities of competent music teachers.
5. Articulate their emerging philosophy of teaching.
6. Identify elementary and secondary music classroom instruction methods in various public and private school settings.
7. Teach musical and non musical concepts in beginning micro teaching experiences.
- 8 - Explain how sound is processed in the human brain and its effect on the human body.
8. Assemble materials for a final teaching portfolio and interview process as entrance requirements to the degree program.

MUSC 1810

Contemporary Theory and Improvisation I

Credit hours: 3

Studies the fundamental building blocks of jazz and contemporary music theory and how each concept can be applied in performance, improvisation, analysis, arranging, and composition. Introduces standard practices of contemporary theory and aural skills including chord symbology, chord-scale theory, basic chord function, target tone strategies, voice-leading, and various applications of tension and release.

Course Learning Outcomes

1. Compare tension and release within the paradigms of theory and aural skills and its use as an improviser.
2. Identify chord symbols and their relationship to chord-scale theory.
3. Identify the contemporary approach to functional harmony in a major and minor key.
4. Assemble a comprehensive list of improvisational/theoretical devices including available chord extensions, avoid notes, basic harmonic progressions, upper-structures, melodic cells, target tones, guide tones, voice-leading, etc.
5. Apply theoretical concepts through written and performed exercises.
6. Analyze and transcribe canonical recordings.

MUSC 2001

Diction for Singers I

Credit hours: 1

Teaches the International Phonetic Alphabet (IPA) as it pertains to the English, Italian and Latin languages. Applies IPA directly to song literature for each language. Provides basic reading, comprehension, and grammar skills in the Italian and Latin languages. Course lab fee of \$15 for support applies.

Course Learning Outcomes

1. Translate Italian and Latin into IPA (the International Phonetic Alphabet).
2. Explain basic IPA rules and exceptions for each language.
3. Translate Italian and Latin lyrics into English with the help of a dictionary.
4. Speak and sing Italian with correct accent and cadence.
5. Speak and sing Latin with correct accent and cadence.
6. Speak and sing English with correct accent and cadence.

MUSC 2002

Diction for Singers II

Credit hours: 1

Teaches proficiency in the International Phonetic Alphabet (IPA) as it pertains to the German and French languages. Applies IPA directly to song literature for each language. Provides basic reading, comprehension, and grammar skills in each language.

Course lab fee of \$15 for support applies.

Course Learning Outcomes

1. Translate German and French into IPA (the International Phonetic Alphabet).
2. Explain basic IPA rules and exceptions for each language.
3. Translate foreign language lyrics into English with the help of a dictionary.
4. Speak and sing German with correct accent and cadence.
5. Speak and sing French with correct accent and cadence.

MUSC 2110

Music Theory III

Credit hours: 3

Studies the diatonic and chromatic materials of common practice music theory. Covers the analysis and composition of music using chromatic chords such as secondary dominants, diminished seventh chords, Neapolitan chords, and Italian, French and German sixth chords. Practices multiple methods of modulation.

Course Learning Outcomes

1. Analyze advanced music theory concepts fluently, including chromatic harmony.
2. Interpret music cast in the large conventional forms of common-practice tonality.
3. Explain the role of symmetry in the breakdown of tonality.
4. Identify introductory principles of rhythmic design in multiple musical traditions.
5. Compose music that employs advanced chromatic techniques.

MUSC 2125

Music Theory IV

Credit hours: 3

Surveys compositional techniques used by post-tonal composers. Builds on the knowledge and skills learned in the tonal music theory classes.

Course Learning Outcomes

1. Identify diatonic and chromatic harmonic structures fluently.
2. Compose music in modes from multiple musical traditions.
3. Identify advanced principles of rhythmic design in multiple musical traditions.
4. Interpret atonal and 12-tone music using pitch-class set and serial analysis.

MUSC 2130

Aural Skills III

Credit hours: 1

Provides training in the aural identification of intervals, triad inversions and chord progressions. Practices rhythmic dictation of syncopated rhythms and asymmetric and mixed meters, and melodic dictation of disjunct melodies and two-part dictation. Studies the solfege movable "Do" system in major, minor keys and modes with coordinating Kodaly hand signs.

Course Learning Outcomes

Please contact the department for information.

MUSC 2140
Aural Skills IV

Credit hours: 1

Provides further training in the aural identification of intervals, triad inversions and chord progressions. Practices rhythmic dictation of complex rhythm patterns and asymmetric and mixed meters. Teaches four-part harmonic dictation. Completes study of the solfege movable "Do" system.

Course Learning Outcomes

Please contact the department for information.

MUSC 2190

Rhythm Section Workshop

Credit hours: 1

Surveys common rhythm section practices for a contemporary ensemble. Explores historically important rhythm sections in American popular music, common arranging and orchestration choices, communication strategies, vocabulary, and notation for a rhythm section. Provides techniques for developing a stronger working relationship with rhythm section performers as a non-rhythm section performer, composer, producer, or songwriter.

Course Learning Outcomes

1. Identify important rhythm sections in American popular music history.
2. Analyze arranging and orchestration techniques associated with various styles, musicians, and record labels.
3. Compare common roles and relationships of various rhythm section instruments.
4. Notate professional charts for a non-rehearsing rhythm section.
5. Identify common communication strategies for a rhythm section.
6. Describe ways to prepare oneself for working with or within a professional rhythm section.

MUSC 2210

Contemporary Theory and Improvisation II

Credit hours: 2

Builds on skills and knowledge developed in MUSC 1810. Further develops exercises and practice strategies based on the surveyed concepts in MUSC 1810 applied to real-world scenarios. Develops recognition and application of theoretical concepts through transcription and analysis in addition to performance. Introduces common academic systems of solo analysis including the methodologies of Jerry Coker and David Baker. Reinforces aural skills through call-and-response activities and masterclass-style lectures. Introduces strategies for learning repertoire, developing ear-training, applying advanced theoretical concepts, developing recall, and incorporating self-assessment into their practice.

Course Learning Outcomes

1. Improvise over common song forms with incrementally increasing complexity.
2. Transcribe and analyze solos using the analytical systems of David Baker, Jerry Coker, and Jamey Aebersold.
3. Develop creative practice strategies for learning and improvising over repertoire with respect to rhythm, melody, harmonic clarity, use of space, and idiomatic language.
4. Demonstrate improvisational concepts through theorization, notation, and performance.

MUSC 2350

Fundamentals of Conducting

Credit hours: 2

Provides an introduction to the basics of conducting. Focuses on baton technique, score reading, interpretation and rehearsal.

Course Learning Outcomes

1. Conduct beat patterns;
2. Exhibit proper podium presence and good baton technique;
3. Communicate ensemble entrances, cues, and releases with clarity;
4. Coordinate expressive directional gestures with musical passages;
5. Define basic music terms in a conductor's score;
6. Demonstrate basic score analysis with appropriate score markings.

MUSC 2400

Digital Audio Workstation

Credit hours: 2

Explores the Digital Audio Workstation, including shortcuts and commands for maximizing effectiveness and understanding. Covers the basics of the software interface, audio and MIDI recording and editing, effects, and creating a final product. Software fee of \$16 applies. Lab access fee of \$17 for computers applies.

Course Learning Outcomes

1. Display the main application layouts.
2. Utilize application shortcuts.
3. Edit a project in the Digital Audio Workstation using traditional editing, beat detective, and elastic audio.
4. Describe the use of Effects in real world applications, including EQ, compression, delay, reverb, chorus, etc.
5. Demonstrate how to use groups and bussing.
6. Describe the operation and use of automation.
7. Take raw tracks to create a final mix using editing, effects, sends and returns, compression and EQ.

MUSC 2420

Music Production Basics

Credit hours: 2

Introduces the basics of music production. Analyzes various aspects of contemporary music including sound and part selection for each instrument in the rhythm section. Discusses various recording and production techniques used in current music productions. Introduces students to technical production tools and techniques including but not limited to phasers, chorus, flange, delay, echo, reverb, compression, eq, filters, and distortion. Introduces the students to mixing and steps required to produce a final product. Software fee of \$16 applies. Lab access fee of \$17 for computers applies.

Course Learning Outcomes

1. Build ear-training in a production context through recognition of gain-based and time-based effects;
2. Analyze production elements of various contemporary genres;
3. Identify production potential in original compositions;
4. Define basic production techniques relating to layering, filters, audio manipulation, etc.;
5. Demonstrate comping and tuning techniques necessary for a final production;
6. Design a mix with appropriate consideration to stereo image and depth;

MUSC 245R

Private Lessons II

Credit hours: 1

Offers twelve 60-minute private lessons. Designed to meet the individual needs of the student in developing skills and techniques. Does not fulfill music major degree requirements. May be repeated as desired.

Course fee of \$443 for support applies.

Course Learning Outcomes

1. Demonstrate initiative and discipline with consistent personal practice.
2. Apply suggestions and technical instructions provided by the teacher.
3. Demonstrate progress in technical studies such as scales and etudes.
4. Articulate the musical, technical, and stylistic components that are characteristic of the performance pieces.
5. Demonstrate final performance of two pieces.

MUSC 250R

Private Lessons for Music Majors

Credit hours: 1

Offers twelve 60-minute private lessons for music majors. Focuses on the individual needs of the student in developing skills and techniques. Requires participation in weekly performance class. Includes juried evaluations. May be repeated as desired. Course fee of \$443 for support applies.

Course Learning Outcomes

1. Show initiative and discipline with consistent personal practice.
2. Demonstrate the ability to follow, and put into practice, the suggestions and technical instructions provided by the teacher.
3. Demonstrate progress in technical studies such as scales and etudes.
4. articulate the musical, technical, and stylistic components that are characteristic of the performance pieces.
5. Demonstrate the musical, technical, and stylistic components that are characteristic of the performance pieces.
6. Perform assigned repertoire in performance class.
7. Prepare pieces for a jury, as required for lower division proficiencies, showing the ability to memorize and also perform with an accompanist as applicable.

MUSC 251R

Performance Class

Credit hours: 1

Provides additional performance experience for music majors. Develops an ability to offer and receive constructive criticism. Explores performance-related topics such as practice strategies, performance anxiety, interpretive phrasing, technical mastery, memorization and jury preparation. May be repeated for a maximum of 12 credits toward graduation.

Course Learning Outcomes

1. Prepare performance pieces, as required for lower division performance proficiencies, incorporating the music and technical guidelines provided by the teacher.
2. articulate musical ideas and suggestions to their peers in a constructive manner.
3. Demonstrate an increased ability to manage performance anxiety.
4. Discuss issues related to performance practice.
5. Perform memorized pieces with an emphasis on detailed phrasing, technical mastery, and appropriate interpretation.

MUSC 290R

Independent Study

Credit hours: 1 to 3

Individual projects to be negotiated by student and instructor on a case-by-case basis to be approved by the departmental advisor. May be repeated for a maximum of 4 credits toward graduation.

Course Learning Outcomes

Please contact the department for information.

MUSC 3005

Vocal Literature I

Credit hours: 1

Presents an overview of the English and Italian art song literature from 1500 to present. Provides performance training of stylistic elements appropriate for each time period.

Course Learning Outcomes

1. Identify the major composers of song literature in the English and Italian languages from 1500 to present.
2. Discuss the major poets of the British, American, and Italian song literature.
3. Describe the historical background and genre development of British and Italian song literature.
4. Describe similarities and differences between Italian, British, and American song literature, including aspects of culture, diction, poetry, and nationalism.
5. Perform selections in both languages, demonstrating correct diction and knowledge of appropriate stylistic elements.

MUSC 3006

Vocal Literature II

Credit hours: 1

Presents an overview of the French and German art song literature from 1500 to present.
Provides performance training of stylistic elements appropriate for each time period.

Course Learning Outcomes

1. Identify the major composers of song literature in the French and German languages from 1500 to present.
2. Discuss the major poets of the French and German song literature.
3. Describe the historical background and genre development of French and German song literature.
4. Describe similarities and differences between French and German song literature, including aspects of culture, diction, poetry, and nationalism.
5. Perform selections in both languages, demonstrating correct diction and knowledge of appropriate stylistic elements.

MUSC 3025

Songwriting I

Credit hours: 2

Studies the creative processes and techniques involved in commercial songwriting. Covers the essential elements of lyric writing, setting lyrics to melody, and utilizing functional harmony. Explores the process of developing a production plan for a song demo. Software fee of \$16 applies. Lab access fee of \$17 for computers applies.

Course Learning Outcomes

1. Write lyrics that demonstrate appropriate text-setting, rhyme scheme, thematic continuity, and formal consideration;
2. Set lyrics to melody, demonstrating appropriate alignment with lyric characteristics;
3. Discuss the song form including intro, verse, chorus, bridge, etc;
4. Develop a basic production plan and chord chart for a song demo.
5. Write a song that demonstrates the melody/bass relationship and pedal point;

MUSC 3030

Jazz and Contemporary Arranging I

Credit hours: 2

Develops skills in arranging for small jazz and contemporary instrumental ensembles. Introduces common publishing practice for engraving and notation. Develops concepts and techniques to write for 1-3 voices and rhythm section. Arrange a composition for a small instrumental ensemble and develop strategies for planning, executing, and editing a successful arrangement quickly. Create a custom engraving template for their preferred notation software. Focuses on the application of texture, harmonization, orchestration, voicing structures, form, and style. Lab access fee of \$17 applies. Software fee of \$16 applies.

Course Learning Outcomes

1. Arrange music for small ensemble such as a combination of trumpet, trombone, saxophone, and rhythm section.
2. Compose a variety of open and closed position chord voicings.
3. Compose passages of music with various approach techniques such as the diminished approach, chromatic approach, diatonic approach, and dominant approach.
4. Arrange music using various instrumental textures including homophony, polyphony, unison, and various combinations.
5. Identify common practice when writing for a rhythm section.
6. Assemble an engraving template that meets the publishing industry's standard.

MUSC 306R

Advanced Keyboard Skills

Credit hours: 1

Provides advanced study in piano technique, sight-reading, and ensemble skills. Develops pedagogical skills through masterclasses and teaching beginners. May be repeated for maximum of 12 credits toward graduation. Course lab fee of \$36 applies.

Course Learning Outcomes

1. Perform major and harmonic minor scales in octaves, 3rds, 6ths, and 10ths.
2. Perform major and harmonic minor arpeggios (ARP).
3. Perform standard chord progressions (CP).
4. Realize figured bass notation (FB).
5. Demonstrate sight-reading abilities (SR).
6. Demonstrate ensemble abilities through piano duets (PD) and instrumental accompanying (IA).
7. Implement basic piano pedagogy principles (PP).

MUSC 3409

Secondary General Music Methods

Credit hours: 2

Introduces materials and techniques for general music classes; computer-assisted instruction and integrated technology; facility with accompanying folk instruments; philosophic foundations of music education; and program development and instructional design.

Course Learning Outcomes

1. Develop music learning activities and assessments using state and national standards.
2. Apply instructional strategies using accepted general music teaching methodologies.
3. Analyze music literature (songs and recordings) to discover developmentally appropriate musical concepts for use in lesson planning and repertoire selection.
4. Play classroom instruments with proficiency such as: recorder, ukulele, autoharp, guitar, and various rhythm instruments.
5. Apply general music methodologies including alternative ensembles, music explorations/appreciation courses, music technology, guitar, etc.
6. Research the design of lessons and units in non-performance environments.

MUSC 3412

Music Career Development

Credit hours: 3

Examines entrepreneurial skills required for success in the music industry. Covers the music businesses and the current trends within the industry. Develops assets for student success including EPK, Bio, website and resume's/CV's. Explores the development of funding sources for music projects and basic music accounting practices. Covers sync fees, performance rights organizations (PRO), and other royalties. Encourages students to explore and develop multiple streams of income. Lab access fee of \$17 for computers applies.

Course Learning Outcomes

1. Describe various career options within the music industry.
2. Create a personalized plan for career success.
3. Develop a marketing plan including social media, web development, social networking, blogging, and other online self-promotion.
4. Discuss the development of residual income via performance rights organizations, sync fees, and other licensing opportunities.
5. Create an imaginary corporation, including an understanding of LLC, Sub S, basic tax concepts, and self-employment structure.

MUSC 3415

Instrumental Pedagogy and Literature I

Credit hours: 2

Provides students the opportunity to study the pedagogy and literature of their major instrument. Examines various pedagogical approaches and incorporates in-class teaching demonstrations. Includes the selection of appropriate solo and chamber literature for beginning and intermediate levels.

Course Learning Outcomes

1. Demonstrate knowledge of the sequence, tools, materials, and philosophy of teaching an instrument at a beginning and intermediate level.
2. Discuss motivational principles for successful learning and performance.
3. Assess the technical, musical and personal needs of individual students.
4. Identify styles and technical requirements in beginning and intermediate level repertoire.
5. Teach a logical and accessible sequence of technical skills with a careful selection of appropriate repertoire.

MUSC 3416

Instrumental Pedagogy and Literature II

Credit hours: 2

Provides students the opportunity to study the pedagogy and literature of their major instrument. Examines various pedagogical approaches and incorporates in-class teaching demonstrations. Includes the selection of appropriate solo and chamber literature for advanced levels.

Course Learning Outcomes

1. Demonstrate knowledge of the sequence, tools, materials, and philosophy of teaching an instrument at an advanced level.
2. Discuss motivational principles for successful learning and performance.
3. Assess the technical, musical and personal needs of individual students.
4. Identify styles and technical requirements in advanced level repertoire.
5. Teach a logical and accessible sequence of technical skills with a careful selection of appropriate repertoire.

MUSC 3450

Music History and Literature I WE

Credit hours: 3

Covers the history of European music from ancient times to the Classic era. Surveys periods, genres, composers, works, performance practice, and sources. Emphasizes musical meaning, style, and interpretation.

Course Learning Outcomes

1. Distinguish the styles, genres, aesthetics, and theories of music from Antiquity to the early Classical eras.
2. Identify the important composers and repertoire from those periods.
3. Synthesize the relationship of music to the other arts and to the social developments in the periods studied.
4. Compose a variety of disciplinarily appropriate texts within multiple situations and for multiple audiences.

MUSC 3451

Music History and Literature II WE

Credit hours: 3

Covers the history of European-sphere music from the Classic era to the present. Surveys periods, genres, composers, works, performance practice and sources. Emphasizes musical meaning, style and interpretation.

Course Learning Outcomes

1. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.
2. Distinguish the styles, genres, aesthetics, and theories of music from the Romantic era through twenty-first century.
3. Identify the important composers and repertoire from the Romantic era through twenty-first century.
4. Synthesize the relationship of music to the other arts and to the social developments in the periods studied.

MUSC 349G

Global Musical Styles and Ideas GI

Credit hours: 3

Investigates musical traditions of the world; equips students with requisite skills for understanding and analyzing music as an art in historical and cultural contexts using an integrative approach that includes selected styles and genres, critical reading and writing skills, and mastery of conceptual issues related to the universality and interconnectedness of music.

Course Learning Outcomes

1. Describe cultures covered in the class and outline the role or function music plays in those cultures.
2. Identify connections and influences from world genres on western music throughout history and the reverse impact of western music on world genres.
3. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
4. Evaluate how one's own cultural values compare with those from different backgrounds.
5. Contrast the use of music in society among different cultures.
6. Interrelate knowledgeably, reflectively, responsibly, and respectfully with a society of increasing intercultural connections.
7. Analyze global or intercultural issues.

MUSC 360R

Commercial Music Private Lessons

Credit hours: 1

Offers twelve 30-minute private lessons. Focuses on the individual needs of the student, developing skills and techniques in the commercial industry including production, songwriting, arranging, and improvisation. May be repeated as desired. Course fee of \$270 for private instruction applies.

Course Learning Outcomes

1. Prepare regularly for lessons.
2. Apply the suggestions and technical instructions provided by the teacher.
3. Demonstrate progress in the studied area.
4. Present a completed product in its entirety.
5. Describe the musical, technical, and/or stylistic components that are characteristic of the completed performance or presentation.

MUSC 373R

Advanced Small Ensembles

Credit hours: 1

Provides opportunities for performing in small groups of select musicians. Studies music of various styles and periods. Some public performances will be required. May be repeated as desired.

Course Learning Outcomes

1. Acknowledge the need for personal practice and preparation for group rehearsals.
2. Demonstrate technical ability during group rehearsals and performances.
3. Understand the rules of rehearsal etiquette, including promptness, concentration, and respect for other group members.
4. Demonstrate attention during coaching sessions, as well as a willingness to incorporate suggestions.
5. Articulate elements of musical style, musicianship, and expression to the repertoire.

MUSC 379R

Studio Recording Workshop

Credit hours: 1

Provides hands-on opportunities in a recording studio. Examines the studio environment including: microphone types, polar patterns, stereo micing techniques, analog patchbay usage, microphone preamps and general studio procedures. Provides opportunities for students to record various student compositions and projects. Explores the Dante protocol and its usage in the studio. May be repeated for a maximum of 6 credits toward graduation. Lab access fee of \$85 for computers applies. Software fee of \$52 for computers applies.

Course Learning Outcomes

1. Demonstrate advanced studio performance techniques such as timing, intonation, and sight-reading.
2. Adapt changes in performance styles and techniques based on producer's requests.
3. Demonstrate efficient operation of a DAW.
4. Demonstrate engineering skills that facilitate effective collaboration with the producer and performer.
5. Produce a professional recording within a compressed timeline while maintaining high quality standards and positive communications with the engineer and performers.

MUSC 3800

Junior Recital

Credit hours: 1

Provides a solo recital experience for students during their junior year.

Course Learning Outcomes

1. Present a 30 to 45 minute recital of art music for their major instrument or voice.
2. Demonstrate advanced artistic performance skills such as intonation, tone, technique, and musicality.
3. Work with an accompanist and demonstrate proficiency in ensemble skills.
4. Facilitate publicity for the recital and prepare a program for the audience.
5. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Self-motivation as demonstrated by presenting a successful recital.

MUSC 4130
Scoring and Arranging

Credit hours: 2

Studies techniques of scoring and arranging music for orchestra, band, choir, and small ensembles. Software fee of \$16 applies. Course Lab fee of \$17 for computers applies.

Course Learning Outcomes

Please see the department for information.

MUSC 450R

Advanced Private Lessons for Music Majors

Credit hours: 1

Offers twelve 60-minute private lessons for music majors. Focuses on the individual needs of the student in developing advanced skills and techniques. Requires participation in weekly performance class. Includes juried evaluations. May be repeated as desired. Course fee of \$443 for support applies.

Course Learning Outcomes

1. Show initiative and discipline with consistent personal practice.
2. Demonstrate the ability to follow, and put into practice, the suggestions and technical instructions provided by the teacher.
3. Demonstrate progress in technical studies such as scales and etudes.
4. Perform assigned repertoire in performance class.
5. Prepare pieces for a jury, as required for upper division proficiencies, showing the ability to memorize and also perform with an accompanist as applicable.
6. Demonstrate progress in technical studies.
7. Demonstrate the musical, technical, and stylistic components that are characteristic of the performance pieces.

MUSC 451R

Performance Class

Credit hours: 1

Provides advanced performance experience for music majors. Develops an ability to offer and receive constructive criticism. Explores performance-related topics such as practice strategies, performance anxiety, interpretive phrasing, technical mastery, memorization and jury preparation. May be repeated for a maximum of 12 credits toward graduation.

Course Learning Outcomes

1. Prepare performance pieces, as required for upper division performance proficiencies, incorporating the music and technical guidelines provided by the teacher.
2. articulate musical ideas and suggestions to their peers in a constructive manner.
3. Demonstrate an increased ability to manage performance anxiety.
4. Show professionalism through collaborating with their peers to increase musicianship and proficiency.
5. Demonstrate ability to communicate issues related to performance practice.
6. Perform memorized pieces with an emphasis on detailed phrasing, technical mastery, and appropriate interpretation.

MUSC 455R

Private Lessons for Music Performance Majors

Credit hours: 2

Offers twelve 60-minute private lessons for music performance majors. Focuses on the individual needs of the student in developing advanced skills and techniques. Requires participation in weekly performance class. Includes recital preparation and juried evaluations. May be repeated as desired. Course fee of \$443 for recital preparation applies.

Course Learning Outcomes

1. Show initiative and discipline with consistent personal practice.
2. Demonstrate the ability to follow, and put into practice, the suggestions and technical instructions provided by the teacher.
3. Demonstrate progress in technical studies.
4. Select performance pieces that combine well in recital format and demonstrate appropriately advanced levels of technical skill.
5. Verbally articulate the musical, technical, and stylistic components of the performance pieces.
6. Demonstrate the musical, technical, and stylistic components of the performance pieces.
7. Perform assigned repertoire in performance class.
8. Prepare pieces for a jury, as required for upper division performance major proficiencies, demonstrating the ability to memorize and also perform with an accompanist as applicable.

MUSC 470R

Studio Arranging and Producing

Credit hours: 3

Covers theoretical concepts of composing, arranging, production, and rough mixing in the recording/production studio in various styles and applications. Incorporates practical experience in a working professional studio. Provides in-depth access and exposure to professional-level sample libraries and sequencing techniques. Applies principles of orchestration, both traditional and contemporary, in the classroom and studio environment. Emphasizes communication skills with recording artists, musicians and engineers. Covers logistical protocols for scheduling, booking of studios and musicians, studio demeanor and ethics, and working with clients. May be repeated for a maximum of 12 credits towards graduation. Software fee of \$52 applies. Lab access fee of \$85 for computers applies.

Course Learning Outcomes

1. Analyze arranging and producing techniques in a variety of styles and applications.
2. Demonstrate basic arranging/producing techniques in traditional and contemporary forms.
3. Create a successful arrangement and production together with assigned partner.
4. Discuss studio protocol and logistics of hiring, booking, and dealing with musicians and artists.
5. Communicate successfully with engineers, musicians and clients.
6. Describe the characteristics of masterworks in various styles including pop, jazz, folk, music theater, experimental and electronic.

MUSC 4780

Pre-Service Student Teaching

Credit hours: 2

Provides placement in a secondary public school setting in one weekly class or ensemble in preparation for the final student teaching experience. Requires score preparation, assistance with sectionals, teaching music literacy concepts and mini lessons, and other work as assigned by the supervisor and cooperating teacher. Includes peer observations in various school settings. Provides formal observations by content faculty.

Course Learning Outcomes

1. Implement professional behaviors as outlined by UVU Secondary Education "Professional Dispositions."
2. Apply age appropriate instruction on the voice/various instruments to individual students, small sections, and large ensembles.
3. Select developmentally appropriate repertoire and thoroughly prepare the score for teaching and conducting.
4. Assist with program administration skills in support of performing ensembles.
5. Teach music literacy in both performance and non-performance classes.
6. Lead engaging, productive, and efficient ensemble rehearsals and academic music classrooms.
7. Assist with effective musical assessments for individuals and ensembles.
8. Research the design of curricular units in both ensembles and non- performance classes.
9. Develop foundations of effective classroom management.

MUSC 4785

Student Teaching Seminar

Credit hours: 2

Provides support for the student teaching experience. Includes classroom management, ongoing content mentorship, supervision of conducting and score preparation, faculty and peer feedback, and assistance with senior portfolio. Requires written assignments and off-campus peer observations.

Course Learning Outcomes

1. Analyze teaching samples for effectiveness in a music classroom.
2. Demonstrate effective classroom management strategies.
3. Prepare musical scores for teaching and rehearsal.
4. Implement "professional dispositions."
5. Manifest collegial behaviors within student teaching peer group.
6. Incorporate improvements according to written and verbal feedback.
7. Exhibit strong classroom presence.
8. Refine classroom procedures.
9. Create logistical plans for an ensemble first week.

MUSC 4800

Senior Recital

Credit hours: 1

Provides a solo recital experience for students during their senior year. Prepares students for a professional music career including preparation of a comprehensive portfolio.

Course Learning Outcomes

1. Present a 45 to 60 minute recital of art music for their major instrument or voice;
2. Demonstrate advanced artistic performance skills such as intonation, tone, technique, and musicality;
3. Work with an accompanist and demonstrate proficiency in ensemble skills;
4. Prepare a program for the audience.

MUSC 481R

Internship in Music II

Credit hours: 1 to 8

Provides an opportunity for upper-division students to receive college credit and work in a music-related field. Offers students the opportunity to focus on a specific career path and prepare themselves to enter the profession. Applies academic concepts to actual work experiences. Requires approval of faculty sponsor and completion and acceptance of application. Also requires completion of an orientation, completion of Master Agreement between UVU and employer, completion of goals and tasks as required by academic department, and completion of final evaluation. May be repeated for a total of 8 credits towards graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Network within a commercially-related music business.
2. Develop effective time management skills.
3. Demonstrate proper professional etiquette.
4. Identify the application of the student's experience to the commercial industry.
5. Assemble skills unique to the internship experience.

MUSC 492R

Advanced Topics in Music

Credit hours: 1 to 3

Provides a senior-level assessment of student competency in preparation for entering the commercial music industry. Investigates topics that may include but are not limited to advanced mixing techniques, advanced midi orchestration and composition, advanced composition in unfamiliar styles, in depth study of various types of synthesis, advanced studio production/recording techniques, and advanced marketing and business creation practices. Software fee of \$52 applies. Lab access fee of \$85 for computers applies.

Course Learning Outcomes

1. Analyze advanced topics in the commercial music industry.
2. Create a final product that aids a student's professional portfolio.
3. articulate their project in a coherent way to a scholarly audience and a casual observer.
4. Identify application of the course material to the professional field.

NSS 2010

Introduction to National Security WE

Credit hours: 3

Categorizes elements of the national security field. Explores the national security system, focusing on contemporary issues. Analyzes formulation and execution of national security policy through diplomacy, intelligence operations, and military force.

Course Learning Outcomes

1. Examine the problems and issues related to US national security policy.
2. Explain the US national security system and policy-making process.
3. Describe the agencies and institutions involved in the national security arena.
4. Identify national security interests used during various periods of US history.
5. Analyze the various political, social, economic, military, legal, and ethical goals and values at play in national security.
6. Apply various decision frameworks used by policy-makers and leaders in developing and executing national security policies.
7. Evaluate the context, evolution, risks, and linkages of national security issues, alternatives, and solutions.
8. Demonstrate professional writing skills.

NSS 301R

National Security Area Studies

Credit hours: 3

Examines the national security issues associated with a particular geographic area in the global community. May be repeated for a maximum of 9 credits toward graduation.

Course Learning Outcomes

1. Analyze specific challenges, conflicts, and tensions associated within and emanating from the region
2. Identify major actors in the region and their roles in various alliances, partnerships, and other associations
3. Evaluate the United States' major national security interests in the region
4. Explain the United States' policies and strategies with regard to the region and specific countries in the geographical area
5. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Analytical thinking and reading skills. 2 - Logical reasoning and speaking skills. 3 - Persuasive writing skills.

NSS 3050

US Intelligence Community

Credit hours: 3

Examines the US Intelligence Community (IC) and its core responsibilities and processes. Assesses the IC's two-fold role to support policy makers and operations, the customer-driven intelligence production cycle, how national foreign intelligence requirements are generated and prioritized, what activities are authorized and which activities are prohibited, intelligence oversight by Congress, and privacy concerns. Evaluates the missions, roles, responsibilities, and authorities of the (IC) constituent agencies and assess the IC's intelligence collection disciplines.

Course Learning Outcomes

1. Identify the core elements of the US intelligence Community
2. Describe the roles and powers of the constituent departments and agencies within the IC
3. Examine current problems and issues related to US intelligence policy and practice
4. Analyze the intelligence production cycle
5. Assess the IC's intelligence collection disciplines
6. Apply the authorities governing the IC and its operations

NSS 3750

Advanced Technologies in National Security

Credit hours: 3

Introduces students to a variety of emerging technologies which have the potential to cause major both geopolitical and socioeconomic disruptions. Covers a wide range of technologies, including artificial intelligence, hypersonic and space technologies, robotics/autonomous systems, artificial intelligence, biotechnologies, quantum information sciences, blockchain, and cybersecurity. Examines these technologies and analyzes their potential impacts on national security.

Course Learning Outcomes

1. Identify the opportunities, threats, and potential disruptions to US national security raised by emerging technologies.
2. Discuss the basic functionality and implications of various emerging technologies including artificial intelligence, quantum information sciences, hypersonics, drones, autonomous weapons, cyberweapons, and others.
3. Examine how these technologies can potentially converge with another to increase functionality.
4. Apply the strategic, moral, and socioeconomic decisions that policymakers face in these fields.

NSS 3850

Ethics and Intelligence

Credit hours: 3

Focuses on the ethical challenges that face individuals and agencies within the United States Intelligence Community. Examines specific ethical issues associated with the collection, retention, and dissemination of intelligence. Analyzes the delicate balance between protecting national security and civil liberties. Uses case study analysis to identify and solve individual and organizational ethical dilemmas at both the national and international levels.

Course Learning Outcomes

1. Analyze key historical developments of both legal and ethical systems as they relate to the United States Intelligence Community.
2. Identify concepts for determining moral behavior and making ethical decisions.
3. Apply different theories of ethics to contemporary issues in national security and intelligence collection.
4. Provide practical solutions to common ethical dilemmas confronting individuals and agencies within the United States Intelligence Community.

NSS 4210

Law of War WE

Credit hours: 3

Examines the law that governs situations of armed conflict, including the history and development of the law. Assesses major contemporary issues in this area of the law, to include detention policy, drone warfare, terrorism as a tactic of war, and preemptive force.

Course Learning Outcomes

1. Classify the core sources, elements, and principles of the law of war.
2. Formulate when and how to apply law of war sources to specific situations, persons, or actions.
3. Compare the various entities involved in armed conflict.
4. Analyze contemporary law of war issues.
5. Apply key research and writing skills.

NSS 4250

National Security Career Strategies

Credit hours: 3

Emphasizes the development of effective techniques for successfully locating, applying for and securing employment as well as advancing in a National Security-related career path. Includes industry and job research, demonstration, role play, development of writing materials, and application exercises. Provides preparation for internship and career entry experience.

Course Learning Outcomes

1. Identify personal strengths, skills and characteristics.
2. Describe the professionalism and the value of networking in locating job leads and creating a career.
3. Prepare pre-employment documents including resumes, cover letters, writing samples, reference sheets and applications.
4. Prepare for the interview process including dress, grooming, questions and answers, concluding the interview, and follow up.
5. Create a portfolio to showcase transferable skills including writing, computer/software proficiency, leadership, etc.
6. Evaluate interview performance and make appropriate improvements.
7. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Increased awareness of their own strengths and weaknesses as potential employees. 2 - Increased confidence in their ability to locate and secure employment in the National Security field. 3 - A better understanding of the National Security field and the job-search process.

NSS 4300

Intelligence Cycle and Collections

Credit hours: 3

Describes the intelligence collection and production cycle. Evaluates the nature, organization, activities, and key issues surrounding the methods of intelligence and counterintelligence collection. Examines historical development and utilizations of the dominant collection activities, including human intelligence, geospatial intelligence, signals intelligence, measurement and signature intelligence, and their role in American statecraft. Explores significant policy issues related to intelligence collection in the U.S. experience, including legal, moral, ethical, organizational, strategic, and performance issues, and measures of effectiveness. Applies specific skills in writing and open source intelligence collection.

Course Learning Outcomes

1. Discuss the major steps in the intelligence collection and production cycle.
2. Evaluate the role and utility of the dominant methods of intelligence collection.
3. Examine the major legal, policy, and operational issues related to intelligence collection and production.
4. Test skills in intelligence collection, analysis, and writing.

NSS 4400

Statecraft and Strategy

Credit hours: 3

Analyzes the theory, history, practice, and challenges of statecraft and strategy in U.S. national security. Examines the various methods of statecraft that are available to policymakers. Evaluates how these methods have been used successfully in the pursuit of national interests and purposes. Assesses instruments of national power, including military power; economic strategy; intelligence; the use of information, disinformation, and propaganda; various types of diplomacy, political, moral, and psychological influence; and other instruments of soft power.

Course Learning Outcomes

1. Assess the dimensions of power and strategy in contemporary international politics.
2. Recognize major individuals, key ideas, and challenges in current strategy and statecraft environment.
3. Employ best practices and tactics of international negotiation, bargaining, and mediation.
4. Evaluate contemporary foreign policy debates.

NSS 4600

National Security Law

Credit hours: 3

Evaluates the distribution of national security powers amongst the three branches of government. Reviews the laws and policies that govern the legality of war, military operations in wartime, intelligence collection, protection of national security information, foreign intelligence surveillance, covert action, special military operations, offensive counterterrorism operations, detention and interrogation of terrorism suspects, and other current issues in the national security area.

Course Learning Outcomes

1. Analyze the sources of U.S. and international law that apply in the national security context
2. Examine the role of the courts in the development of U.S. national security policy
3. Assess the roles of various government, non-government, and international actors in the national security law field
4. Compare the powers of the political branches in the development and execution of national security policy
5. Evaluate the evolution of U.S. national security law in the current political and threat climate

NSS 475R

Current Topics in National Security

Credit hours: 3

Presents selected topics in National Security and will vary each semester. Requires a special project related to the area of study. May be repeated with different topic areas for a maximum of 9 credits toward graduation.

Course Learning Outcomes

1. Develop a systemic perspective in understanding and assessing national security dynamics
2. Apply basic concepts and techniques in national security
3. Apply models using fictional and real life examples
4. Identify common topics and issues in national security

NSS 4800

Intelligence Analysis and Tradecraft

Credit hours: 3

Appraises structured analytic techniques commonly embraced as sound tradecraft within the Intelligence Community (IC) and applies these techniques in the context of actual intelligence cases. Applies the structured analytic techniques of decomposition and visualization, idea generation, scenarios and indicators, hypothesis generation and testing, assessment of cause and effect, challenge analysis, and decision support. Evaluates IC analytic standards and discuss ethical considerations.

Course Learning Outcomes

1. Explain the analytic techniques employed in the US Intelligence Community
2. Examine particular cases in recent IC practices
3. Apply key structured analysis techniques
4. Describe IC analytic standards and ethical considerations related to intelligence practice

NSS 491R

Directed Readings and Special Projects in National Security

Credit hours: 1 to 3

Offers independent study as directed in reading, individual projects, etc., at the discretion and approval of the department chair. May be repeated for a maximum of 9 credits.

Course Learning Outcomes

1. Engage in independent study and academic discussion on national security topics.
2. Analyze readings in national security subjects.
3. Examine current research on national security issues.
4. Apply current research techniques to national security issues

NSS 4990

National Security Capstone Seminar

Credit hours: 3

Includes readings and discussions about a variety of complex national security problems and issues. Offers directed research project tailored to each student's special interests.

Course Learning Outcomes

1. Analyze an advanced national security issue.
2. Complete the critical steps of the research process.
3. Write a well organized, well argued, and clearly written paper.
4. Present research before a group of peers and faculty.

NURS 2300

Nursing Health Assessment

Credit hours: 2

Introduces the health history interview and physical assessment for patients across the lifespan. Uses a holistic approach in identifying health care needs of the patient within the context of standards of nursing practice.

Course Learning Outcomes

1. Identify components of a health history interview and physical assessment for patients across the lifespan.
2. Perform basic health education in relation to assessment findings.
3. Discuss basic therapeutic communication skills in performing health history, physical assessment, and health education respecting individual differences and cultural diversity.
4. Use assessment findings to determine the health status of individuals and to formulate basic nursing diagnoses.
5. Discuss legal and ethical guidelines regarding privacy and confidentiality.

NURS 2305

Nursing Health Assessment Laboratory

Credit hours: 1

Integrates knowledge, behaviors and skills from current and previous courses in lab and simulation settings. Provides opportunities to perform health assessments. Prepares students to enter the clinical setting. Course Lab fee of \$22 applies.

Course Learning Outcomes

1. Perform health history interview and physical assessment for patients.
2. Document health history interview and physical assessment findings and nursing diagnoses.
3. Practice basic therapeutic communication skills in performing health history, physical assessment, and health education respecting individual differences and cultural diversity.
4. Evaluate the health status of patients based on individualized, holistic assessment, and data collection from multiple sources.
5. Apply legal and ethical guidelines regarding privacy and confidentiality to the assessment process

NURS 2310

Nursing Pharmacology

Credit hours: 3

Examines general principles of drug therapies, including medication administration, pharmacotherapeutics, and dosage calculations. Focuses on major drug categories and prototypes in each category. Serves as a basis for understanding drug therapy as an important part of health care.

Course Learning Outcomes

1. Describe general principles that govern the control, use, selection, and administration of therapeutic agents.
2. Explain expected and altered physiology related to the use of therapeutic agents.
3. Identify pharmacotherapeutics, pharmacodynamics, and pharmacokinetics of selected drugs.
4. Differentiate interactions and adverse reactions for selected drugs.
5. Relate the administration of selected drugs and complementary and integrative health therapies to the standards of nursing practice.
6. Identify ethical and legal standards related to the nurse's role in pharmacology.
7. Calculate medication dosages including special dosing considerations.

NURS 2320

Fundamentals of Nursing Care

Credit hours: 2

Promotes safe patient care for individuals across the lifespan. Emphasizes nursing interventions based on an individualized patient assessment to promote quality care and risk reduction. Course fee of \$102 for online assessment & review tools applies.

Course Learning Outcomes

1. Identify nursing interventions essential for providing quality nursing care.
2. Discuss rationale for basic nursing interventions and principles of documentation.
3. Describe principles of therapeutic communication.
4. Identify personal, patient, and workplace safety threats, and interventions to reduce risk.
5. Discuss principles of medication administration, following guidelines for safety and documentation.
6. Explore elements of clinical judgment and standards of nursing practice.
7. Identify principles of interprofessional communication, collaboration, and delegation.
8. Discuss legal and ethical standards related to nursing care.

NURS 2325

Nursing Practice Simulation and Skills Lab I

Credit hours: 2

Provides opportunity to practice safe patient care for patients across the lifespan. Integrates knowledge, behaviors and skills from current and previous courses in lab, simulation and clinical settings. Prepares students to engage in the clinical setting and provide basic nursing care.

Course Lab fee of \$169 applies.

Course Learning Outcomes

1. Perform fundamental nursing interventions including documentation with rationale.
2. Practice basic therapeutic communication skills in performing nursing care.
3. Maintain personal, patient, and workplace safety including medication administration.
4. Apply elements of clinical judgment and standards of nursing practice in planning and caring for patients.
5. Apply legal and ethical standards related to providing nursing care.
6. Demonstrate awareness in bridging cultural and linguistic barriers or differences in caring for patients.
7. Identify areas for individual development based on self-evaluation of performance.

NURS 2410

Nursing Care of Adults with Common Health Needs

Credit hours: 3

Incorporates theories of nursing care for adult patients with common health needs and builds upon concepts learned in current and previous courses. Emphasizes pharmacotherapeutics, clinical judgment, and health assessment, promotion, and teaching in caring for patients with common health needs. Integrates standards of nursing practice in caring for patients and their support systems. Course fee of \$102 for online assessment & review tools applies.

Course Learning Outcomes

1. Interpret patient assessment and objective monitoring data for adult patients with common health needs.
2. Prioritize nursing care based on individualized holistic patient assessment data and evidence-based practice for adult patients with common health needs.
3. Formulate a nursing plan of care for adult patients with common health needs.
4. Examine principles of interprofessional communication, collaboration, delegation and consultation.
5. Examine the impact of stress management and lifestyle choices on health.
6. Apply theories of change, teaching and learning in relation to health.
7. Discuss health initiatives in relation to levels of prevention.

NURS 2415

Nursing Care of Adults with Common Health Needs Clinical

Credit hours: 2

Provides clinical opportunities to care for adult patients with common physiological problems in healthcare settings. Incorporates pharmacotherapeutics, clinical judgment, and health assessment, promotion, and teaching in management of patients with common health needs. Integrates standards of nursing practice in delivery of care to patients and their support systems.

Course Learning Outcomes

1. Identify priority nursing care based on individualized holistic patient assessment data and evidence-based practice for adult patients with common health needs.
2. Formulate nursing plan of care for adult patients with common health needs.
3. Evaluate outcomes of nursing interventions according to formulated nursing plan of care with appropriate documentation.
4. Discuss ethical principles and legal, professional and institutional standards of practice.
5. Maintain personal, patient, and workplace safety practices.
6. Use therapeutic communication and patient education respecting individual differences and cultural diversity.
7. Identify examples of interprofessional communication, collaboration, and delegation.

NURS 2420

Nursing Care of the Aging Population

Credit hours: 2

Introduces the aging process and changes with aging. Identifies special needs of older adults and nursing interventions to meet those needs. Prepares students to meet the needs of the increasing elderly population including caring for patients with chronic illnesses and end-of-life concerns. Includes a service learning component requiring visits to a community setting with active seniors.

Course Learning Outcomes

1. Identify standards of practice for gerontological nursing.
2. Use standards of nursing practice to provide care for older adults.
3. Perform nursing interventions including health education and screening to promote health and prevent disease and injury in older adults.
4. Incorporate components of individual differences, cultural diversity and spirituality in caring for older adults.
5. Use therapeutic communication to foster development of caring relationships.
6. Discuss advanced directives, concepts of grief, and death and dying related to older adults and family members.
7. Distinguish differences between changes associated with aging and disease processes.

NURS 2430

Mental Health Nursing

Credit hours: 2

Examines psychosocial and neurobiological aspects of disorders of cognition, mood and behavior. Explores trends in nursing and interprofessional care of persons with psychiatric disorders. Integrates standards of nursing practice in the core for patients with mental health needs and their support systems.

Course Learning Outcomes

1. Analyze communication techniques to establish and maintain therapeutic relationships while respecting individual differences and cultural diversity.
2. Prioritize nursing care based on individualized holistic patient assessment data and evidence-based practice for patients focusing on cognitive, affective, and behavioral functioning.
3. Formulate a nursing plan of care for patients with mental health needs.
4. Discuss basic concepts of neurobiology as related to disorders of cognition, mood and behavior.
5. Apply current neurobiological, psychosocial and environmental treatments for patients with mental health needs.
6. Compare and contrast roles and functions of mental health professionals, advocacy organizations, and peer support groups.
7. Discuss ethical and legal standards related to mental health needs.

NURS 2435

Mental Health Nursing Clinical

Credit hours: 1

Provides clinical opportunities to care for patients with mental health needs. Integrates standards of nursing practice in delivery of care to patients and their support systems with an emphasis on mental health care.

Course Learning Outcomes

1. Demonstrate therapeutic communication skills and awareness in bridging cultural and linguistic barriers or differences in establishing and maintaining therapeutic relationships.
2. Prioritize nursing care based on individualized holistic patient assessment data and evidence-based practice for patients with cognitive, affective, or behavioral dysfunctions.
3. Formulate a nursing plan of care for patients with mental health needs that emphasize safety, maintain dignity, and promote independence.
4. Evaluate outcomes of nursing interventions according to a formulated nursing plan of care with appropriate documentation.
5. Collaborate with interprofessional treatment teams and therapeutic teams.
6. Apply ethical and legal principles to advocate for patients with mental health needs.

NURS 2445

Nursing Practice Simulation and Skills Lab II

Credit hours: 1

Integrates nursing knowledge, behaviors, and skills from current and previous courses in lab and simulation settings. Prepares students for care of patients with common health needs, mental health needs, and conditions related to aging. Course Lab fee of \$169 applies.

Course Learning Outcomes

1. Prioritize nursing care based on individualized holistic patient assessment data and evidence-based practice.
2. Recognize individualized patient response to pharmacological and non- pharmacological interventions.
3. Safely perform selected nursing skills for patients with common health needs, mental health needs, and conditions related to aging.
4. Demonstrate therapeutic communication and patient education while respecting individual differences and cultural diversity.
5. Identify the outcomes of an implemented individualized teaching plan.
6. Evaluate complementary and integrated health practices.
7. Demonstrate awareness in bridging cultural and linguistic barriers or differences.
8. Identify areas for individual development based on self-evaluation of performance.

NURS 3330

Nursing Care of Individuals with Complex Health Needs

Credit hours: 2

Incorporates concepts learned in current and previous courses into principles of nursing care for patients with complex health needs. Emphasizes pathophysiology, pharmacotherapeutics, monitoring, and interventions required in caring for patients in acute and unstable conditions. Integrates standards of nursing practice in caring for patients and their support systems. Course fee of \$102 for online assessment & review tools applies.

Course Learning Outcomes

1. Interpret patient assessment findings including selected monitoring and diagnostic data for patients with complex health needs.
2. Prioritize nursing care based on individualized holistic patient assessment data and evidence-based practice for patients with complex health needs.
3. Formulate nursing plan of care for patients with complex health needs.
4. Discuss ethical and legal standards related to the care of patients with acute and unstable conditions.
5. Examine principles of interprofessional communication, collaboration, delegation and consultation.

NURS 3335

Nursing Care of Individuals with Complex Health Needs Clinical

Credit hours: 2

Provides clinical opportunities to care for patients with complex health needs. Incorporates pathophysiology, pharmacotherapeutics, monitoring, and interventions required in management of patients in acute and unstable conditions. Integrates standards of nursing practice in delivery of care to patients and their support systems.

Course Learning Outcomes

1. Prioritize nursing care based on individualized holistic patient assessment data and evidence-based practice for patients with complex health needs.
2. Formulate nursing plan of care for patients with complex health needs.
3. Evaluate outcomes of nursing interventions according to formulated nursing plan of care with appropriate documentation.
4. Discuss ethical principles and legal, professional, and institutional standards of practice.
5. Evaluate personal, client, and workplace safety.
6. Demonstrate therapeutic communication and patient education respecting individual and cultural differences.
7. Practice principles of interprofessional communication, collaboration, delegation and consultation.

NURS 3340

Nursing Care of Women Children and Developing Families

Credit hours: 3

Explores application of the nursing process to address health issues of women, children and developing families. Emphasizes safety and quality of nursing care.

Course Learning Outcomes

1. Describe the common physical and psychological process of pregnancy, labor, and birth.
2. Describe common growth and development of infants through adolescents.
3. Discuss health promotion and teaching for women, children and families.
4. Describe major complications associated with pregnancy and birth.
5. Explore common health problems and appropriate nursing care of children from infancy through adolescence.
6. Analyze contemporary sociocultural, legal, and ethical issues associated with women, children and families.

NURS 3345

Nursing Care of Women Children and Developing Families Clinical

Credit hours: 1

Provides clinical and/or laboratory opportunities to apply the nursing process to address health issues of women, children and developing families.

Course Learning Outcomes

1. Use the nursing process to provide basic care during pregnancy, labor, and childhood.
2. Explore principles of holistic nursing care for families and their support systems.
3. Demonstrate health promotion and teaching for women, children and families.
4. Explore the use of evidence based research in the treatment of common health problems of women and children.
5. Assess sociocultural, legal, and ethical issues associated with women, children and families.

NURS 3355

Nursing Practice Simulation and Skills Lab III

Credit hours: 1

Integrates nursing knowledge, behaviors, and skills from current and previous courses in lab and simulation settings. Prepares students to care for women, children, developing families, and individuals with complex and critical conditions. Course lab fee of \$169 applies.

Course Learning Outcomes

1. Prioritize nursing care based on individualized holistic patient assessment data and evidence-based practice.
2. Evaluate individualized patient response to pharmacological and non-pharmacological interventions.
3. Practice implementation of patient care with members of the treatment team to include delegation, communication, and collaboration.
4. Demonstrate therapeutic communication and patient education respecting individual differences and cultural diversity.
5. Appraise the outcomes of an implemented individualized teaching plan.
6. Safely perform selected nursing skills for children experiencing common physiological problems, women experiencing low-risk childbirth, and adults experiencing complex physiological problems.
7. Use clinical judgement for prioritizing nursing care in a critical, emergency, or disaster situation.
8. Demonstrate sensitivity in bridging cultural and linguistic barriers or differences.
9. Identify areas for individual development based on self-evaluation of performance.

NURS 3400

Patient Care Coordination and Management

Credit hours: 1

Focuses on the core roles of the nurse as a provider of care, manager of care, and member of the profession. Incorporates aspects of evidence-based nursing practice. Explores the scope of nursing practice related to national and local healthcare regulations. Course fee of \$102 for online assessment & review tools applies.

Course Learning Outcomes

1. Analyze the nurses patient care coordination role as a member of the interprofessional healthcare team.
2. Navigate the process of professional licensing and employment.
3. articulate the scope of nursing practice, national and local healthcare regulations, and standards of safety.
4. Determine strategies for effective time management and prioritization of patient care.
5. Explore methods for promoting patient safety, continuity of care, and patient advocacy.

NURS 3405

Patient Care Coordination and Management Preceptorship

Credit hours: 2

Provides clinical experiences in coordinating and managing the care of a small group of patients. Focuses on the core roles of the nurse as a provider of care, manager of care, and member of the profession. Incorporates aspects of delegation, prioritization, time management, communication, and group dynamics.

Course Learning Outcomes

1. Incorporates principles of interprofessional communication, collaboration, delegation, and consultation.
2. Ensure patient safety and continuity of care at admission, shift change, transfer, and discharge.
3. Prioritize time and other resources to coordinate and manage the care of a small group of patients.
4. Participate in quality improvement activities such as error prevention and incident reporting.
5. Evaluate nursing interventions and patient outcomes according to evidence-based practice guidelines.

NURS 3440

Pharmacology for the Practicing Nurse

Credit hours: 2

Emphasizes clinical judgement, patient teaching, and evaluation of patient outcomes. Explores in depth the pharmacodynamics, pharmacokinetics, and pharmacotherapeutics of medications and complementary and integrative health therapies.

Course Learning Outcomes

1. Analyze pharmacodynamic, pharmacokinetic, pharmacogenomic, and pharmacotherapeutic use of medications to maximize therapeutic effectiveness while minimizing adverse reactions and enhancing patient safety.
2. Evaluate the use of complimentary and integrative health therapies and pharmacotherapeutics.
3. Examine social, cultural, legal, ethical, economic, and political aspects of pharmacology within the current health care environment.
4. Explore current issues of substance use and potential abuse.
5. Perform individualized patient education regarding prescribed dosing, expected effects, possible side effects, and any special precautions.
6. Perform a medication reconciliation as part of an individualized treatment plan.
7. Navigate issues related to complex medication regimens.

NURS 3445

Nursing Practice Simulation and Skills Lab IV

Credit hours: 1

Integrates nursing knowledge, behavior, and skills from current and previous courses in lab and simulation settings. Prepares students for entry-level practice as a registered nurse. Course Lab fee of \$169 applies.

Course Learning Outcomes

1. Prioritize nursing care based on individualized holistic patient assessment data and evidence-based practice.
2. Adapt patient care according to evaluation of individualized patient response to pharmacologic and non-pharmacologic interventions.
3. Coordinate patient care with members of the treatment team to include delegation, communication, and collaboration.
4. Demonstrate therapeutic communication and patient education respecting individual differences and cultural diversity.
5. Evaluate the outcomes of an individualized nursing plan of care.
6. Demonstrate sensitivity in bridging cultural and linguistic barriers or differences.
7. Identify areas for individual development based on self-evaluation of performance.

NURS 4230

Palliative Care in Nursing

Credit hours: 3

Describes the principles of palliative care nursing throughout the illness trajectory. Explores personal emotions, beliefs and values in understanding the nature of suffering. Examines basic principles of palliative care within a quality of life framework.

Course Learning Outcomes

1. Define the need for palliative care throughout the illness trajectory.
2. Describe principles of palliative care and how they address physical, psychological, spiritual and social well-being.
3. Assess patient's needs based on the physical, psychological, spiritual and social quality of life model.
4. Implement palliative care principles across settings to improve care for the seriously ill and complex patients.
5. Examine own personal emotions, beliefs and values regarding death and dying.

NURS 4320

Nursing in the Community

Credit hours: 2

Explores professional nursing practice in community-based and community-focused settings to promote and preserve the health of populations. Emphasizes nursing's impact on behaviors that promote health and reduce risk. Includes principles of family and community assessments, epidemiology, and environmental health.

Course Learning Outcomes

1. Integrate concepts of community health into personal nursing practice.
2. Differentiate community-based and community-focused nursing.
3. Apply basic concepts of epidemiology to a selected community.
4. Research a population-focused health teaching need in a selected community.
5. Describe how legal and ethical principles pertain to community nursing practice.
6. Discuss the link of environmental exposures, including those associated with air, water, food/agriculture, chemicals/products, to illness and disease across the lifespan.
7. Describe the primary, secondary and tertiary interventions associated with public health emergencies and disasters.
8. Discuss the roles of advocacy and assurance in community-based and community- focused nursing.

NURS 4325

Nursing in the Community Clinical

Credit hours: 1

Applies professional nursing practice in community-based and community-focused settings to promote and preserve the health of populations. Utilizes family and community assessments, epidemiological and environmental health principles to plan and implement health promotion and risk reduction programs within the community.

Course Learning Outcomes

1. Research a population-focused health need.
2. Conduct a home, workplace, and/or community assessment for accessible, acceptable, affordable, appropriate, and available essential services.
3. Implement a primary intervention through service learning in a selected community.
4. Apply legal and ethical principles in community nursing practice.

NURS 4340

Genomics in Nursing and Health

Credit hours: 2

Explores the expanding science of genomics and related fields, with emphasis on implications for nursing practice. Examines current and developing genetic and genomic concepts and technologies as they relate to nursing practice and health.

Course Learning Outcomes

1. Discuss relationship of genomics to health, disease prevention, screening, diagnostics, prognostics, selection of treatment, and monitoring of treatment effectiveness.
2. Identify genomic-related health assessment findings that influence plan of care and health outcomes.
3. Use health promotion and disease prevention practices that consider genetic and genomic influences on personal and environmental risk factors for clients across the lifespan.
4. Identify accurate, appropriate, and current genetic and genomic information, resources, services, and/or technologies for specific patients.
5. Advocate for patients access to genetic/genomic services, and for autonomous, informed, genetic- and genomic-related decision-making.
6. Evaluate impact and effectiveness of genetic and genomic technology, information, interventions, and treatments on patient outcomes.
7. Weigh ethical, ethnic/ancestral, cultural, religious, legal, fiscal, and societal issues related to genetic and genomic information and technologies.

NURS 441G

Nursing in Global Perspective GI

Credit hours: 3

Explores nursing and health care issues in a global perspective to promote culturally competent health care in a diversifying population.

Course Learning Outcomes

1. Demonstrate knowledge and recognition of complexities inherent in global and/or intercultural issues related to nursing and health care.
2. Interrelate knowledgeable, reflectively, responsibly, and respectfully with a society of increasing intercultural connections.
3. Discuss essential aspects of culturally sensitive health assessment and culturally competent nursing care.
4. Describe health and health care from a whole-planet perspective.
5. Discuss health effects of globalization, including pollution, spread of infectious diseases, new chronic diseases, nurse migration, etc.
6. Discuss the major functions and primary public health goals of the World Health Organization and other international health organizations.
7. Address ethical issues related to globalization of health care.
8. Assess issues of accessibility, affordability and sustainability in evaluating adequacy of health systems.

NURS 4500

Nursing Leadership

Credit hours: 3

Explores leadership concepts and assists students to develop knowledge and skills necessary for leadership in nursing care delivery. Discusses leadership concepts related to nursing roles as providers of care, managers of care and members of the profession.

Course Learning Outcomes

1. Analyze concepts and theories of leadership in nursing.
2. Compare and contrast formal and informal leadership roles in nursing.
3. Apply concepts and strategies to promote and enhance professional and interdisciplinary collaboration including conflict resolution, values clarification and mentoring others.
4. Discuss aspects of professional development, including mentoring and continuing education.
5. Discuss concepts and attitudes conducive to personal and professional flourishing in an ever-changing health care environment.
6. Identify values and interests through the history of the nursing profession.
7. Identify strategies for developing leadership competencies.

NURS 4510

Clinical Assessment and Reasoning

Credit hours: 2

Develops skills of systematic history taking, clinical examination and clinical reasoning with a focus on people with complex health problems. Explores critical thinking skills and habits as well as nursing process and other clinical judgment models.

Course Learning Outcomes

1. Perform comprehensive patient assessment for people with complex health needs.
2. Demonstrate knowledge and skill in selection and use of assessment tools and technologies
3. Develop enhanced critical thinking skills and habits in clinical assessment and reasoning.
4. Apply nursing process, problem-solving, and other models of clinical reasoning and judgment.
5. Identify ethical, ethnic/ancestral, cultural, religious, legal, financial, and societal factors in assessing and planning care.
6. Apply standards for quality and safety in clinical assessment and reasoning.

NURS 4520

Navigating Health Systems

Credit hours: 3

Examines health systems, including the relationships between delivery, access, utilization and patient outcomes. Explores how organizational and economic structures, political, sociocultural, and legal factors influence the design and functions of health services.

Course Learning Outcomes

1. Identify the roles of nursing within micro, macro and complex health systems.
2. Discuss trends in nursing's involvement in health policy formation.
3. Assess potential barriers to navigating health systems, including health literacy, and use information technology and management to navigate systems.
4. Participate in development and implementation of imaginative and creative strategies to enable systems to change.
5. Describe how health care is organized and financed, including the implications of business principles such as patient and system cost factors.
6. Examine the interconnectedness of nursing care, patient outcomes and reimbursements for services.
7. Explore legal and ethical concerns associated with health care availability, access and utilization of health care for vulnerable populations.

NURS 4540

Research and Theory in Nursing Practice WE

Credit hours: 4

Prepares nurses to find, evaluate and apply evidence as a foundation to propose creative, innovative, or evidence-based solutions to clinical practice problems. Explores selected nursing theories and conceptual models, fundamentals of the research process, and relationships between theory, practice and research.

Course Learning Outcomes

1. Explain interrelationships of nursing theory, research and practice.
2. Discuss application of nursing theories and conceptual frameworks in nursing research and practice.
3. Compare and contrast methods of scientific inquiry with other problem-solving methods, including brainstorming, intuition and other creative or non-linear methods.
4. Describe essential elements of quantitative and qualitative research methods in nursing and health.
5. Discuss legal and ethical issues in nursing research.
6. Use information systems to retrieve nursing and health literature and research findings.
7. Compose discipline-specific written works using evidence-based literature from nursing and other disciplines to influence nursing practice.
8. Identify discrepancies between research, best practices, and current clinical practice.

NURS 4550

Quality and Safety in Nursing WE

Credit hours: 3

Explores quality and safety initiatives in health care. Develops knowledge and skills to create and maintain a culture of quality and safety through monitoring and improving outcomes of care processes.

Course Learning Outcomes

1. Compare and contrast the roles of nursing and other health professions in creating and maintaining cultures of safety and quality in a variety of health care systems.
2. Apply principles of safety science including categories of errors and hazards in care, human factors, systems theory and safety-enhancing technologies.
3. Apply principles and elements of quality science and quality tools, including systems theories, information technologies, health literacy, quality assessment methods and approaches for improving care.
4. Identify human and technological factors involved in creating and maintaining cultures of safety and quality in health systems, including personal values, team communication and collaboration.
5. Recognize cognitive and physical limits of human performance as well as inherent limitations of information technology and other safety-enhancing technologies.
6. Apply theory, evidence, and collaborative skills in planning, implementing and measuring improvements in processes of care.
7. Discuss potential and actual impact of local and national patient safety resources, initiatives and regulations.
8. Compose a variety of disciplinary-appropriate texts within multiple situations and for multiple audiences.

NURS 6000

Leadership Development

Credit hours: 2

Provides opportunities for students to examine the role of the graduate nurse leader within the evolving healthcare system. Explores requisite skills necessary to lead in complex environments, facilitate improved patient outcomes, and institute quality improvement strategies as they gain an understanding of the interconnectedness of academia and practice settings and apply leadership concepts in an interprofessional context.

Course Learning Outcomes

1. Examine the role of the graduate level nurse as leader within the context of health professions, health systems, and health policy.
2. Analyze key characteristics of complex educational and health care environments and their impact on the nursing leadership role.
3. Explore the interconnectedness and interdependence of clinical practice settings and academics and the dynamics of interprofessional collaboration.
4. Analyze leadership characteristics that enhance professional credibility and strengthen nurse leaders within the context of organizational leadership.
5. Critically evaluate individual leadership competencies and characteristics.
6. Examine the nurse leader's responsibility in continuous improvements in quality and safety outcomes within the nursing profession and within interprofessional healthcare teams.

NURS 6050

Nursing Informatics

Credit hours: 2

Introduces nursing informatics theory, evolving practice applications, and skill development. Discusses human factors essential to effective application of nursing informatics in practice. Applies technical skills and processes for the integration of nursing informatics into nursing education and clinical practice settings.

Course Learning Outcomes

1. Identify current trends and issues in nursing informatics and their impact on healthcare delivery and nursing education.
2. Apply theory related to computer-human interfaces, ethics, confidentiality and privacy, caring, and nursing informatics to nursing education and practice.
3. Evaluate the use of information and computer technology used to support the delivery of safe, high-quality healthcare.
4. Analyze current information systems used in nursing practice, administration, research, and education.
5. Explore the use of virtual environments for instruction, content sharing, commerce, and provision of health-related services.
6. Demonstrate strategies for using the virtual learning environment to teach a selected nursing topic.

NURS 6200

Advanced Nursing Theory

Credit hours: 2

Provides students opportunities to critique and deconstruct extant and emerging theories as they relate to nursing. Explores the relationships among theory, knowledge, science, and evidence-based nursing practice. Facilitates the advancement of nursing practice based on theoretical principles.

Course Learning Outcomes

1. Explore the theory development process within the context of nursing practice.
2. Critique extant and emerging theories as applied to nursing practice.
3. Analyze the influence of theory in the areas of knowledge development, science, and evidence-based nursing practice.
4. Appraise the applicability of theory to nursing practice.
5. Synthesize elements of current theoretical frameworks to inform nursing practice, research, and education.
6. Explore the theory development process within the context of nursing practice.

NURS 6250

Advanced Nursing Research

Credit hours: 3

Prepares students to explore, critique, synthesize, and utilize appropriate research findings to resolve nursing problems and improve outcomes. Incorporates various research designs in the development of nursing practice. Applies research methodology and ethical considerations in development of a research proposal for evidence-based practice.

Course Learning Outcomes

1. Integrate philosophical, theoretical, and conceptual frameworks within the research process.
2. Identify appropriate research methodology and designs in the planning of evidence-based nursing research.
3. Apply ethical, legal, and regulatory considerations in the design of nursing research.
4. Critique trustworthiness of quantitative and qualitative nursing research studies.
5. Develop a defensible research proposal.
6. Use evidence in evaluating nursing practice outcomes.
7. Complete data analysis of both qualitative and quantitative findings using current analysis procedures.

NURS 6300

Advanced Nursing in Health Systems and Policy

Credit hours: 2

Prepares students for their developing role as change agents within the workforce. Provides students opportunity to explore current health care policies, including the effects policies have on social determinants of health, current health care systems and nursing practice. Identifies ways to influence change and advance nursing and health care in the future.

Course Learning Outcomes

1. Explore principles of systems, change theory and evidenced-based practice in nursing and health care.
2. Discuss local, national, and global health care policies with emphasis on current nursing practice.
3. Analyze social determinants of health and health inequities at all levels of the socio-ecological model.
4. Compare and contrast government health programs with private sector programs in providing healthcare for individuals, families, communities and populations.
5. Analyze health care disparities and marginalization of historically oppressed populations.
6. Propose evidence-based healthcare policy changes that address social determinants of health and outcome inequities.

NURS 6350

Patho/Pharmacology for the Nurse Educator

Credit hours: 3

Focuses on pathophysiological and pharmacological processes across the lifespan and the development of clinical reasoning skills that distinguish the relationships between normal physiology and the specific system alterations produced by injury and disease. Gives particular attention to etiology, pathogenesis, developmental and environmental influences and the clinical manifestations of major health problems with pharmacologic interventions to students enrolled in the nursing education program.

Course Learning Outcomes

1. Analyze medications' influence on pathology at the cellular level in order to advance the patient to optimal health.
2. Develop strategies to promote patient education and safety regarding indications, effects, and potential adverse effects of commonly prescribed medications.
3. Evaluate the varied effects of medications on altered physiologic states based on individual patient characteristics including age, ethnicity, and comorbidities.
4. Integrate principles of pathophysiology and pharmacology into teaching and educational materials in various settings.
5. Examine pharmacogenomic impacts on drug prescription practices and usage.

NURS 6450

Health Assessment for the Nurse Educator

Credit hours: 3

Applies concepts of health assessment for individuals, families, and communities. Develops strategies for teaching assessment skills. Uses diagnostic reasoning as the primary means of collecting and analyzing data. Incorporates ethical and cultural factors in comprehensive health assessments.

Course Learning Outcomes

1. Perform comprehensive physical, psychosocial, developmental, occupational, and cultural assessments in a concise and systematic manner.
2. Identify the contribution of genetic, genomic, and epigenetic influence on patient pathophysiology.
3. Analyze history, physical examination, diagnostic procedures, and laboratory data to formulate a diagnosis.
4. Document health assessment data in a concise, accurate, and logical manner.
5. Analyze ethical, legal, and socio-cultural issues associated with advanced health assessment.
6. Perform a community epidemiological assessment to propose solutions to an identified problem.

NURS 6500

Curriculum Design and Development

Credit hours: 3

Explores curriculum design and development in nursing and incorporates reviewing, restructuring, and developing curricula to meet identified learning needs. Enhances student skill and understanding of curricular processes designed to foster and advance nursing education.

Course Learning Outcomes

1. Create nursing curriculum congruent with professional standards, guidelines, and competencies, and with the institution's mission, values, and philosophy or organizing frameworks.
2. Formulate desired program learning outcomes based on current standards of nursing practice and trends in nursing and healthcare.
3. Identify desired cognitive, affective, and behavioral learning outcomes for programs, courses, and learning activities.
4. Analyze how program and course learning outcomes reflect interprofessional collaboration, research, and contemporary standards of practice.
5. Plan classroom, laboratory, and/or clinical learning activities to support achievement of program outcomes, consistent with safe and effective practice in a culturally and ethnically diverse global society.
6. Develop programs, courses, learning activities, instructional materials, and evaluation methods which are appropriate for delivery methods and reflect educational theory, interprofessional collaboration, research, and national patient health and safety goals.
7. Critically evaluate the challenges and opportunities for curriculum design and development in nursing.

NURS 6600

Teaching Nursing in the Classroom Setting

Credit hours: 2

Focuses on facilitating learning in classroom settings. Incorporates aspects of the philosophy of adult education and adult learning theory, the teaching process and self-evaluation.

Course Learning Outcomes

1. Analyze a variety of classroom teaching strategies appropriate to adult learner needs, desired learner outcomes, content, and context.
2. Develop classroom teaching strategies based on educational theory and evidence-based teaching practices as they pertain to nursing education.
3. Engage in self-reflection and continued learning to improve teaching practices that facilitate learning in the classroom.
4. Create opportunities for learners to develop their critical thinking and critical reasoning skills.
5. Explore teaching strategies that provide opportunities for learners to develop their critical thinking and clinical reasoning skill.

NURS 6605

Teaching Nursing in the Classroom Setting Practicum

Credit hours: 2

Focuses on the application of teaching skills in classroom settings. Incorporates aspects of the philosophy of adult education and adult learning theory, the teaching process, and self-evaluation. Provides practicum experience in the teaching environment.

Course Learning Outcomes

1. Implement a variety of classroom teaching strategies appropriate to adult learner needs, desired learner outcomes, content, and context in the nursing classroom setting.
2. Apply classroom teaching strategies based on educational theory and evidence-based teaching practices as they pertain to nursing education in the classroom setting.
3. Create opportunities for learners to develop their critical thinking and critical reasoning skills in the nursing classroom setting.
4. Demonstrate skilled oral, written, and electronic communication that reflects an awareness of self and others, along with an ability to convey ideas in the classroom setting.

NURS 6650

Teaching Nursing in the Clinical Setting

Credit hours: 2

Focuses on effective teaching skills for clinical settings. Includes ways to cultivate interprofessional relationships and promote positive clinical learning environments. Promotes the establishment of appropriate teacher-learner relationship in the clinical setting.

Course Learning Outcomes

1. Design safe student learning environments that support the development of thoughtful, constructive evaluation of nursing skills and clinical judgement.
2. Evaluate efficacy of collegial interprofessional relationships to support student learning in the clinical environment.
3. Adapt a variety of evidence-based teaching strategies to meet learner needs and achieve established outcomes in clinical settings.
4. Incorporate cultural perspectives and skill level of individual learners in the adaptation of clinical learning experiences.

NURS 6655

Teaching Nursing in the Clinical Setting Practicum

Credit hours: 2

Focuses on applying effective teaching skills for clinical settings. Includes evaluation of clinical learning environments' ability to facilitate student learning and promote patient safety.

Course Learning Outcomes

1. Provide safe learning environments where students can engage in thoughtful and constructive self and peer evaluation of clinical skills and clinical reasoning
2. Collaborate with students, faculty colleagues, and clinical agency personnel to promote positive clinical-learning environments
3. Design evidence-based teaching strategies based on learner needs and desired outcomes in the context of clinical settings
4. Adapt clinical teaching skills to students with varying cultural differences and experience levels
5. Create opportunities in the clinical setting for student nurses to develop their critical thinking and clinical reasoning skills

NURS 6700

Evaluation of Learning Outcomes

Credit hours: 3

Explores the application of various methods of evaluation, measurement and grading of learning outcomes. Applies assessment techniques to various aspects of nurse education.

Course Learning Outcomes

1. Identify learner outcomes in the domains of cognitive, psychomotor and affective learning.
2. Develop instruments to evaluate learning outcomes in the cognitive, psychomotor and affective domains.
3. Analyze the reliability and validity of evaluation methods designed to promote learning outcomes achievement.
4. Develop formative and summative assessment instruments to evaluate student learning.
5. Explore underlying values of evaluation, instruments, and measurement.
6. Develop a scholarly, outcomes-based, learning evaluation project.

NURS 6795

Synthesis of Teaching Practice Practicum

Credit hours: 3

Provides students the opportunity to synthesize research findings through the development, implementation and evaluation of a teaching project related to nursing.

Course Learning Outcomes

1. Assess needs for the project within the context of current health policies and/or protocols.
2. Synthesize evidence-based practice to address a selected nursing problem.
3. Develop learning objectives, teaching strategies, and expected outcomes for a teaching project.
4. Incorporate research, theories, and/or frameworks in the development of a teaching project.
5. Demonstrate leadership principles in organizing, implementing, evaluating and presenting a teaching project.

NUTR 1020

Foundations of Human Nutrition

Credit hours: 3

For students interested in various health care professions. Considers basic principles of human nutrition. Studies factors that influence nutritive requirements and maintenance of nutritional balance. Examines relationships between proper nutrition and social, mental and physical well-being. Canvas Course Mats \$70/McGraw applies

Course Learning Outcomes

1. Describe the basic nutrients for optimal health
2. Evaluate computerized dietary programs
3. Describe the breakdown of nutrients as related to digestion, absorption and metabolism
4. Describe the role of fluids and electrolytes in good nutrition
5. Describe specific dietary needs as they relate to specific illness and disease
6. Analyze health problems resulting from malnutrition
7. Analyze controversial nutrition topics and quackery claims
8. Apply nutritional information received from a variety of sources

PADM 6000

Public Administration

Credit hours: 3

Explores senior-level administrative functions within a public services organization. Analyzes and assesses positive and negative practices within public service organizations, including managerial actions and bureaucracy.

Course Learning Outcomes

1. Examine administrative functions relating to administering, managing, and leading public service organizations.
2. Evaluate impactful practices that lead to effective and efficient public services delivery while balancing community needs with resource requirements.
3. Analyze public service administrative practices within different public operations.
4. Assess effective public service organizational leadership and management to enhance operations and delivery services.
5. Critique public service administrative practices to better deal with public agency bureaucracy and managerial actions.

PADM 6010

Public Administration Finance and Budgeting

Credit hours: 3

Analyzes financial and budgeting operations occurring in the public sector. Assesses funding streams, budget development, financial management concerns, and fiduciary responsibilities of public service leaders.

Course Learning Outcomes

1. Examine financial and budgeting operations within public services.
2. Evaluate common accounting practices within public services.
3. Analyze budgets within different public service organizations.
4. Assess fiduciary responsibilities of public services administrators and accountants.
5. Critique current financial and budgetary practices within public services.

PADM 6020

Public Administration Policy and Evaluation

Credit hours: 3

Provides the investigative, ethical, and development tools needed to form public policy and evaluate program success. Develops analysis skills to examine new ideas, test their viability, determine program needs, and organize to meet these needs. Addresses how to make policy, how to assess if policy is working, and how to fix the flaws in existing policy.

Course Learning Outcomes

1. Explore approaches for solving practical problems facing public and nonprofit organizations using policy analysis.
2. Evaluate policies with the view of formulating policy specific to stakeholders in the public services.
3. Apply research from the policy analysis field with specific emphasis on public service administration.
4. Use multicriteria decision-making to evaluate public policy within public service.

PADM 6030

Legal Issues for Public Administration

Credit hours: 3

Evaluates the law and its application within the public services. Examines constitutional principles in relation to public service functions.

Course Learning Outcomes

1. Evaluate the federal and state constitutionality of public service operations.
2. Evaluate legal practices within the public services.
3. Analyze case laws relating to public service operations.
4. Assess the impact of current laws and ordinances as they relate to state and local public service operations.
5. Examine the role of ethics in public service operations and administration.
6. Critique public service practices found to be unlawful, unconstitutional, or unethical.

PADM 6040

Organizational Behavior in Public Administration

Credit hours: 3

Examines organizational behavior within the public services and compares and contrasts it to the private sector. Researches the public services to make comparisons and develop a theoretical basis, for use in administrative decision-making in dealing with organizations and their people. Applies conceptual frameworks, case discussions, and skill-oriented activities which include: motivation, learning and development, group dynamics, leadership, communication, power and influence, change, diversity, organizational design, and culture. Helps participants acquire skills and analytic concepts to improve organizational relationships and effectiveness.

Course Learning Outcomes

1. Analyze human behavior in the public services from an individual, group, and organizational perspective, compared to private sector workplaces.
2. Develop frameworks and tools to effectively analyze and approach various organizational situations.
3. Integrate course materials with personal workplace experiences.
4. Analyze personal beliefs, assumptions, and behaviors with respect to how individuals, groups, and organizations act in order to expand options and approaches to increase effectiveness.

PADM 6050

Public Administration Leadership and Ethics

Credit hours: 3

Analyzes leadership approaches within the public services. Identifies the need for people-centric leadership that serves both the public servants and the community. Uses case study analysis to differentiate between leadership approaches to people and the management of processes. Explores ethical issues in public service delivery.

Course Learning Outcomes

1. Differentiate the role of leadership vs. management in public service.
2. Evaluate extant public service leadership practices.
3. Analyze public service leadership epistemologies and philosophies.
4. Assess the impact certain leadership practices have on the public services.
5. Synthesize leadership approaches and their applicability to public services.
6. Analyze ethical behavior within the public service.
7. Synthesize solutions to public sector ethical dilemmas through case study methodology.

PADM 6060

Research Methods for Public Administration

Credit hours: 3

Identifies qualitative and quantitative research methods within a public services framework. Introduces the impact social science discovery has on the formulation of public policy. Illustrates research designs utilized within qualitative and quantitative methodologies.

Course Learning Outcomes

1. Evaluate the use of qualitative and quantitative research methods to better address focused interests.
2. Evaluate the use of research methods within public services to help design the most efficient research question.
3. Analyze social science discovery and public policy within a public service delivery venue.
4. Assess research designs to better formulate research study and methodology in public service organizations.
5. Critique the use of research methodologies in public service organizations to better understand trends and improve operations.

PADM 6070

Human Resource Management

Credit hours: 3

Examines the services provided by a manager of a human resources department. Provides an overview of human resource management. Focuses on the role of managers and how they develop effective and efficient human resources practices that support the strategic goals of their organization.

Course Learning Outcomes

1. Evaluate the human resource management needs of public organizations.
2. Examine some of the major issues confronting public personnel managers.
3. Analyze how an organization's human resource management practices can influence employees.
4. Develop skills in the areas human resource management organizations operate.

PADM 6900

Public Administration Capstone Project

Credit hours: 3

Teaches synthesis of public service/emergency services coursework and primary/secondary research to formulate a public policy or empirical work relating to public services administration.

Course Learning Outcomes

1. Examine the role of public services within the community.
2. Evaluate current trends in public services delivery.
3. Analyze empirical works as they relate to public services delivery.
4. Critique public policies as they relate to the public and emergency services.
5. Create an original, workable, and current strategic/operational plan for a specific sector within the public services as approved by the instructor.

PAS 6701

Human Anatomy for the Physician Assistant I

Credit hours: 1

Provides an in-depth, graduate-level understanding of human anatomy using a regional approach with instruction via lecture, simulation, and prosected cadavers. Helps students correlate the interactions between diverse structures and systems. Aligns content with the clinical medicine series. This is the first in a three-course series.

Course Learning Outcomes

1. Identify anatomical structures using terminology appropriate for physician assistant practice.
2. Differentiate anatomic structures, organs, and systems.
3. Correlate the relationship between anatomic structure and function.
4. Evaluate human anatomy using electronic imaging and prosected cadavers.
5. Discriminate between normal and abnormal human anatomy.
6. Integrate knowledge of human anatomy into clinically relevant scenarios.

PAS 6702

Human Anatomy for the Physician Assistant II

Credit hours: 1

Provides an in-depth, graduate-level understanding of human anatomy using a regional approach with instruction via lecture, simulation, and prosected cadavers. Helps students correlate the interactions between diverse structures and systems. Aligns content with the clinical medicine series. This is the second in a three-course series.

Course Learning Outcomes

1. Identify anatomical structures using terminology appropriate for physician assistant practice.
2. Differentiate anatomic structures, organs, and systems.
3. Correlate the relationship between anatomic structure and function.
4. Evaluate human anatomy using electronic imaging and prosected cadavers.
5. Discriminate between normal and abnormal human anatomy.
6. Integrate knowledge of human anatomy into clinically relevant scenarios.

PAS 6703

Human Anatomy for the Physician Assistant III

Credit hours: 1

Provides an in-depth, graduate-level understanding of human anatomy using a regional approach with instruction via lecture, simulation, and prosected cadavers. Helps students correlate the interactions between diverse structures and systems. Aligns content with the clinical medicine series. This is the third and final course in this series.

Course Learning Outcomes

1. Identify anatomical structures using terminology appropriate for physician assistant practice.
2. Differentiate anatomic structures, organs, and systems.
3. Correlate the relationship between anatomic structure and function.
4. Evaluate human anatomy using electronic imaging and prosected cadavers.
5. Discriminate between normal and abnormal human anatomy.
6. Integrate knowledge of human anatomy into clinically relevant scenarios.

PAS 6711

Physiology/Pathophysiology for the Physician Assistant I

Credit hours: 2

Examines how the human body functions from the cellular level to the interaction of organs and systems. Introduces functions related to anatomy and associations with common dysfunctions and diseases. Delivers content in an organ system-based approach with the goal of preparing physician assistant students for clinical practice. Aligns content with the clinical medicine series. This is the first of a three-course series.

Course Learning Outcomes

1. Explain human physiology and normal physiologic function.
2. Differentiate human physiology from the cellular level to the systems level including how function and homeostasis are maintained.
3. Integrate physiologic concepts in clinical contexts.
4. Evaluate abnormal physiologic function.
5. Propose probable symptoms based on physiologic dysfunction.

PAS 6712

Physiology/Pathophysiology for the Physician Assistant II

Credit hours: 2

Examines how the human body functions from the cellular level to the interaction of organs and systems. Introduces functions related to anatomy and associations with common dysfunctions and diseases. Delivers content in an organ system-based approach with the goal of preparing physician assistant students for clinical practice. Aligns content with the clinical medicine series. This is the second of a three-course series.

Course Learning Outcomes

1. Explain human physiology and normal physiologic function.
2. Differentiate human physiology from the cellular level to the systems level including how function and homeostasis are maintained.
3. Integrate physiologic concepts into clinical contexts.
4. Evaluate abnormal physiologic function.
5. Propose probable symptoms based on physiologic dysfunction.

PAS 6713

Physiology/Pathophysiology for the Physician Assistant III

Credit hours: 2

Examines how the human body functions from the cellular level to the interaction of organs and systems. Introduces functions related to anatomy and associations with common dysfunctions and diseases. Delivers content in an organ system-based approach with the goal of preparing physician assistant students for clinical practice. Aligns content with the clinical medicine series. This is the third and final course in this series.

Course Learning Outcomes

1. Explain human physiology and normal physiologic function.
2. Differentiate human physiology from the cellular level to the systems level including how function and homeostasis are maintained.
3. Integrate physiologic concepts into clinical contexts.
4. Evaluate abnormal physiologic function.
5. Propose probable symptoms based on physiologic dysfunction.

PAS 6721

Clinical Medicine I

Credit hours: 3

Teaches students to recognize, diagnose, and manage common medical conditions covering all organs and systems. Organizes the clinical medicine content into sets of modules. This is the first in a four-course series.

Course Learning Outcomes

1. Recognize signs and symptoms of common medical conditions across the lifespan (infant, child, adolescent, adult, elderly) in the primary care setting.
2. Develop a differential diagnosis for acute and chronic medical conditions and mental health disorders.
3. Select appropriate diagnostic studies based on a patient's chief complaint, history, signs, symptoms, and physical exam findings.
4. Interpret results of the most commonly used diagnostic tests for each organ system.
5. Develop a diagnosis based on information gathered from patient history, physical exam, and results of any diagnostic studies.
6. Create a treatment plan consisting of pharmacologic and non-pharmacologic interventions including guidelines for follow-up.
7. Discuss how to compassionately educate a patient about disease/condition, pharmacologic and non-pharmacologic interventions, expected prognosis, and potential complications.
8. Identify patient referral guidelines and collaboration processes with other healthcare professionals.

PAS 6722

Clinical Medicine II

Credit hours: 3

Teaches students to recognize, diagnose, and manage common medical conditions covering all organs and systems. Organizes the clinical medicine content into a set of modules. This is the second in a four-course series.

Course Learning Outcomes

1. Recognize signs and symptoms of common medical conditions across the lifespan (infant, child, adolescent, adult, elderly) in the primary care setting.
2. Develop a differential diagnosis for acute and chronic medical conditions and mental health disorders.
3. Select appropriate diagnostic studies based on a patient's chief complaint, history, signs, symptoms, and physical exam findings.
4. Interpret results for most commonly used diagnostic exams for each organ system.
5. Develop a diagnosis based on information gathered from patient history, physical exam, and results of any diagnostic studies.
6. Create a treatment plan consisting of pharmacologic and non-pharmacologic interventions including guidelines for follow-up.
7. Discuss how to compassionately educate a patient about disease/condition, pharmacologic and non-pharmacologic interventions, expected prognosis, and potential complications.
8. Identify patient referral guidelines and collaboration processes with other health care professionals.

PAS 6723

Clinical Medicine III

Credit hours: 3

Teaches students to recognize, diagnose, and manage common medical conditions covering all organs and systems. Organizes the clinical medicine content into sets of modules. This is the third in a four-course series.

Course Learning Outcomes

1. Recognize signs and symptoms of common medical conditions across the lifespan in the primary care setting.
2. Develop a differential diagnosis for acute and chronic medical conditions and mental health disorders.
3. Select appropriate diagnostic studies based on a patient's chief complaint, history, signs, symptoms, and physical exam findings.
4. Interpret results of the most commonly used diagnostic tests for each organ system.
5. Develop a diagnosis based on information gathered from patient history, physical exam, and results of any diagnostic studies.
6. Create a treatment plan consisting of pharmacologic and non- pharmacologic interventions including guidelines for follow-up.
7. Discuss how to compassionately educate a patient about disease/condition, pharmacologic and non- pharmacologic interventions, expected prognosis, and potential complications.
8. Identify patient referral guidelines and collaboration processes with other health care professionals.

PAS 6724

Clinical Medicine IV

Credit hours: 1

Teaches students to recognize, diagnose, and manage common medical conditions covering all organs and systems. Organizes the clinical medicine content into sets of modules. This is the fourth and final course in this series.

Course Learning Outcomes

1. Recognize signs and symptoms of common medical conditions across the lifespan (infant, child, adolescent, adult, elderly) in the primary care setting.
2. Develop a differential diagnosis for acute and chronic medical conditions and mental health disorders.
3. Select appropriate diagnostic studies based on a patient's chief complaint, history, signs, symptoms, and physical exam findings.
4. Interpret results of the most commonly used diagnostic tests for each organ system.
5. Develop a diagnosis based on information gathered from patient history, physical exam, and results of any diagnostic studies.
6. Create a treatment plan consisting of pharmacologic and non-pharmacologic interventions including guidelines for follow-up.
7. Discuss how to compassionately educate a patient about disease/condition, pharmacologic and non-pharmacologic interventions, expected prognosis, and potential complications.
8. Identify patient referral guidelines and collaboration processes with other health care professionals.

PAS 6731

Pharmacology/Pharmacotherapy for the Physician Assistant I

Credit hours: 3

Applies clinical principles of pharmacology, pharmacokinetics, and pharmacodynamics. Focuses on the concepts of pharmacotherapy necessary for clinical prescribing decisions and includes discussion about side effects, complications, dosages, and contraindications. Aligns content with the clinical medicine series. This is the first in a four-course series.

Course Learning Outcomes

1. Explain the desired effects of pharmacologic interventions.
2. Identify mechanisms of action, adverse actions, and interactions of medications.
3. Calculate proper dosing and route of administration for desired therapy.
4. Differentiate drug classifications.
5. Generate accurate written and verbal prescriptions/orders appropriate for disease states.
6. Communicate orders to the healthcare team and pharmacy in a clear, legal, and safe manner.
7. Generate instructions for patients on all aspects of a prescribed medication in a clear, legal, and safe manner.

PAS 6732

Pharmacology/Pharmacotherapy for the Physician Assistant II

Credit hours: 3

Applies clinical principles of pharmacology, pharmacokinetics, and pharmacodynamics. Focuses on the concepts of pharmacotherapy necessary for clinical prescribing decisions and includes discussion about side effects, complications, dosages, and contraindications. Aligns content with the clinical medicine series. This is the second in a four-course series.

Course Learning Outcomes

1. Explain the desired effects of pharmacologic interventions.
2. Identify mechanisms of action, adverse actions, and interactions of medications.
3. Calculate proper dosing and route of administration for desired therapy.
4. Differentiate drug classifications.
5. Generate accurate written and verbal prescriptions/orders appropriate for disease states.
6. Communicate orders to the healthcare team and pharmacy in a clear, legal, and safe manner.
7. Generate instructions for patients on all aspects of a prescribed medication in a clear, legal, and safe manner.

PAS 6733

Pharmacology/Pharmacotherapy for the Physician Assistant III

Credit hours: 3

Applies clinical principles of pharmacology, pharmacokinetics, and pharmacodynamics. Focuses on the concepts of pharmacotherapy necessary for clinical prescribing decisions and includes discussion about side effects, complications, dosages, and contraindications. Aligns content with the clinical medicine series. This is the third of a four-course series.

Course Learning Outcomes

1. Explain the desired effects of pharmacologic interventions.
2. Identify mechanisms of action, adverse actions, and interactions of medications.
3. Calculate proper dosing and route of administration for desired therapy.
4. Differentiate drug classifications.
5. Generate accurate written and verbal prescriptions/orders appropriate for disease states.
6. Communicate orders to the healthcare team and pharmacy in a clear, legal, and safe manner.
7. Generate instructions for patients on all aspects of a prescribed medication in a clear, legal, and safe manner.

PAS 6734

Pharmacology/Pharmacotherapy for the Physician Assistant IV

Credit hours: 3

Applies clinical principles of pharmacology, pharmacokinetics, and pharmacodynamics. Focuses on the concepts of pharmacotherapy necessary for clinical prescribing decisions and includes discussion about side effects, complications, dosages, and contraindications. Aligns content with the clinical medicine series. This is the fourth and final course in this series.

Course Learning Outcomes

1. Explain the desired effects of pharmacologic interventions.
2. Identify mechanisms of action, adverse actions, and interactions of medications.
3. Calculate proper dosing and route of administration for desired therapy.
4. Differentiate drug classifications.
5. Generate accurate written and verbal prescriptions/orders appropriate for disease states.
6. Communicate orders to the healthcare team and pharmacy in a clear, legal, and safe manner.
7. Generate instructions for patients on all aspects of a prescribed medication in a clear, legal, and safe manner.

PAS 6741

Clinical Skills I

Credit hours: 4

Teaches the knowledge and skill set needed for history taking, focused and comprehensive physical examination, and use of diagnostic studies. Emphasizes patient dignity and autonomy as well as provider communication skills. Develops oral and written documentation skills appropriate for medical records. Aligns content with the clinical medicine series. This is the first in a three-course series.

Course Learning Outcomes

1. Perform a general survey including vital signs.
 2. Complete a comprehensive patient history.
3. Demonstrate proper technique in performing physical examination skills appropriate to each organ system.
4. Perform comprehensive focused history taking and physical exams.
5. Recognize normal and abnormal exam findings.
6. Interpret basic diagnostic studies based on history and physical examination.
7. Perform clinical procedures appropriate to the primary care setting.
8. Document accurately the subjective and objective components of the patient encounter.

PAS 6742

Clinical Skills II

Credit hours: 3

Teaches the knowledge and skill set needed for history taking, focused and comprehensive physical examination, and use of diagnostic studies. Emphasizes patient dignity and autonomy as well as provider communication skills. Develops oral and written documentation skills appropriate for medical records. Aligns content with the clinical medicine series. This is the second in a three-course series.

Course Learning Outcomes

1. Perform a general survey including vital signs.
 2. Complete a comprehensive patient history.
3. Demonstrate proper technique in performing physical examination skills appropriate to each organ system.
4. Perform comprehensive focused history taking and physical exams.
5. Recognize normal and abnormal exam findings.
6. Interpret basic diagnostic studies based on history and physical examination.
7. Perform clinical procedures appropriate to the primary care setting.
8. Document accurately the subjective and objective components of the patient encounter.

PAS 6743

Clinical Skills III

Credit hours: 3

Teaches the knowledge and skill set needed for history taking, focused and comprehensive physical examination, and use of diagnostic studies. Emphasizes patient dignity and autonomy as well as provider communication skills. Develops oral and written documentation skills appropriate for medical records. Aligns content with the clinical medicine series. This is the third and final course in this series.

Course Learning Outcomes

1. Perform a general survey including vital signs.
 2. Complete a comprehensive patient history.
3. Demonstrate proper technique in performing physical examination skills appropriate to each organ system.
4. Perform comprehensive focused history taking and physical exams.
5. Recognize normal and abnormal exam findings.
6. Interpret basic diagnostic studies based on history and physical examination.
7. Perform clinical procedures appropriate to the primary care setting.
8. Document accurately the subjective and objective components of the patient encounter.

PAS 6751

Clinical Decision Making I

Credit hours: 1

Provides the opportunity to work through clinical scenarios coinciding with the clinical medicine series and content covered in other courses within a small group, case-based setting. This is the first in a three-course series.

Course Learning Outcomes

1. Obtain a focused patient history.
2. Evaluate pertinent positive and negative review of system findings.
3. Interpret normal and abnormal physical examination and diagnostic study findings.
4. Evaluate when to order appropriate diagnostic studies.
5. Construct a differential diagnosis based on history, physical, and diagnostic studies.
6. Formulate a working diagnosis based on history, physical, and diagnostic studies.
7. Generate a treatment plan including patient education and follow-up.
8. Integrate social determinants of health into the formulation of patient treatment plans.
9. Convey patient information to other members of the healthcare team through written and verbal communication.

PAS 6752

Clinical Decision Making II

Credit hours: 1

Provides the opportunity to work through clinical scenarios coinciding with the clinical medicine series and content covered in other courses within a small group, case-based setting. This is the second in a three-course series.

Course Learning Outcomes

1. Obtain a focused patient history.
2. Evaluate pertinent positive and negative review of system findings.
3. Interpret normal and abnormal physical examination and diagnostic study findings.
4. Evaluate when to order appropriate diagnostic studies.
5. Construct a differential diagnosis based on history, physical, and diagnostic studies.
6. Formulate a working diagnosis based on history, physical, and diagnostic studies.
7. Generate a treatment plan including patient education and follow-up.
8. Integrate social determinants of health into the formulation of patient treatment plans.
9. Convey patient information to other members of the healthcare team through written and verbal communication.

PAS 6753

Clinical Decision Making III

Credit hours: 1

Provides the opportunity to work through clinical scenarios coinciding with the clinical medicine series and content covered in other courses within a small group, case-based setting. This is the third and final course in this series.

Course Learning Outcomes

1. Obtain a focused patient history.
2. Evaluate pertinent positive and negative review of system findings.
3. Interpret normal and abnormal physical examination and diagnostic study findings.
4. Evaluate when to order appropriate diagnostic studies.
5. Construct a differential diagnosis based on history, physical, and diagnostic studies.
6. Formulate a working diagnosis based on history, physical, and diagnostic studies.
7. Generate a treatment plan including patient education and follow-up.
8. Integrate social determinants of health into the formulation of patient treatment plans.
9. Convey patient information to other members of the healthcare team through written and verbal communication.

PAS 6761

Behavioral Medicine

Credit hours: 3

Focuses on how to identify, diagnose, and manage patients with a variety of mental and behavioral disorders in diverse populations across the lifespan. Covers topics such as normal and abnormal development, domestic violence, end of life care, diversity in medicine, health literacy, mental and behavioral disorders, as well as substance abuse.

Course Learning Outcomes

1. Differentiate normal and abnormal development.
2. Explain how challenges to development can impact chronic disease of adults.
3. Explain the psychological effects of early childhood trauma, chronic disease, and terminal disease on the patient and the patient's family.
4. Screen patients for domestic violence.
5. Explain how social determinants and health literacy of a population can impact health and access to care.
6. Strategize ways in which PAs can impact health disparities in clinical practice through understanding of health literacy, social determinants of health, and cultural competency.
7. Appraise the origins of one's own culture and how that may impact patient care of diverse populations.
8. Correlate risk factors for common disorders in behavioral medicine with appropriate screening, community resources, and interprofessional collaboration with specialists for effective treatment of all populations.

PAS 6762

Personal and Clinical Leadership

Credit hours: 3

Introduces the foundations of professional practice and leadership in the clinical setting. Includes the principles of managing conflict, self-reflection, mindful practice, and patient safety awareness in clinical practice.

Course Learning Outcomes

1. Demonstrate the principles of leadership in an interprofessional setting.
2. Contrast different communication and learning styles.
3. Demonstrate empathy in communicating bad news.
4. Explain how self-reflection and mindful practice can improve clinical outcomes.
5. Manage factors impacting provider well-being.
6. Discuss methods to identify and mitigate personal bias in patient care.
7. Evaluate the management of conflict in workplace settings.
8. Distinguish the factors that impact patient safety and medical errors.

PAS 6771

Physician Assistant Profession

Credit hours: 2

Introduces the origin of the PA profession, PA professional organizations, and the culture of American medicine. Covers topics including credentialing, certification, team-based care, and the future trends of the PA profession.

Course Learning Outcomes

1. Summarize the history and origins of the PA profession.
2. Identify the purpose and function of each of the major professional organizations serving the PA profession.
3. Describe the regulations and requirements for clinical practice as a physician assistant.
4. List the steps required to become licensed as a physician assistant in Utah.
5. Analyze medical ethics in the clinical practice setting.
6. Defend the importance of interprofessional relationships in the provision of quality patient care.

PAS 6772

Special Populations

Credit hours: 3

Teaches the knowledge and skill set needed for history taking, focused and comprehensive physical examination, and use of diagnostic studies and assessment tools for patient populations with unique characteristics. Emphasizes shared decision-making, cultural awareness, and vulnerabilities of patient populations covered in this course.

Course Learning Outcomes

1. Create an evidence-based plan for health maintenance, disease prevention, and normal conditions and stages for pediatric patients.
2. Demonstrate compassion and cultural awareness of transitional care and end of life care for patients with chronic conditions.
3. Compare methods of identifying high-risk patients.
4. Distinguish between the various types of team models and team compositions relating to chronic disease management.
5. Strategize ways in which PAs can reduce health disparities in clinical practice through understanding of LGBT community health literacy, social determinants of health, and cultural competency.

PAS 6773

Health Promotion and Disease Prevention

Credit hours: 3

Teaches the basic principles of wellness, health promotion, and disease prevention in the clinical setting. Covers topics including epidemiology, screening for common preventable diseases, interventions (in some cases), as well as complementary and alternative medicine.

Course Learning Outcomes

1. Describe health disparities that exist locally and nationally.
2. Examine methods used to overcome health disparities.
3. Defend the importance and impact of screenings and immunizations in preventive health.
4. Explain patient behaviors in the context of health behavior theories.
5. Create interventions to address common health disparities in the community and region.
6. Combine appropriate methods of complementary and alternative medicine in primary care.
7. Create management strategies for preventable conditions.

PAS 6774

Supplemental Topics in Medicine

Credit hours: 1

Examines specialized topics in patient care with emphasis on collaboration with other healthcare professionals. Includes topics in nutrition, genetics, dental health, and team-based care.

Course Learning Outcomes

1. Develop treatment plans for common dental, genetic, and nutrition issues that present in primary care settings.
2. Outline the basic genetic principles underlying disability and disease.
3. Provide basic nutrition counseling to patients.
4. Collaborate with other healthcare professionals to provide comprehensive patient care.
5. Describe the roles of interprofessional healthcare team members.

PAS 6775

Health Care Delivery Systems and Medical Ethics

Credit hours: 2

Provides an overview of the United States healthcare delivery system, healthcare policy, quality care, patient safety, and prevention of medical errors. Reviews the role of the physician assistant in the healthcare system.

Course Learning Outcomes

1. Differentiate components of the healthcare delivery system in the United States.
2. Identify techniques for preventing medical errors.
3. Advocate for patient safety and the proper venue to promote change.
4. Apply medical ethics in physician assistant practice.
5. Explain the concept of telemedicine.
6. Participate in a telemedicine encounter.
7. Discuss how different EMR platforms impact system-based practice.
8. Navigate an EMR chart.
9. Discuss the principles of medical coding, billing, and reimbursement.

PAS 6776

Physician Assistant Practice

Credit hours: 1

Prepares the physician assistant to enter clinical practice. Covers applications for registration for PANCE and national provider identification (NPI) numbers. Focuses on the importance of accurate and complete documentation related to patient care. Teaches students to create customized career development tools. Includes a PANCE review course.

Course Learning Outcomes

1. Create a checklist of required licenses, certifications, and registrations necessary for professional PA practice.
2. Submit application for physician assistant national certification examination (PANCE).
3. Distribute customized curriculum vitae, LinkedIn and Doximity profiles, and cover letters to specific job opportunities in Utah.
4. Identify appropriate medical malpractice insurance.
5. Discuss state regulations and requirements for entry into PA practice.
6. Discuss the credentialing process and use of CAQH ProView for credentialing data maintenance.
7. Formulate a plan to review medical knowledge for successfully passing the PANCE.

PAS 6781

Capstone I

Credit hours: 1

Mentors students in creating the foundation for a robust professional portfolio based on competency domains and entrustable professional activities. Helps students develop the ability to critically review medical literature and determine what skills and training are most needed for a selected area of interest. This is the first in a three-course series.

Course Learning Outcomes

1. Identify credible sources of medical literature and professional information using accepted common databases.
2. Discuss how to frame research questions.
3. Analyze research methods including sampling methods, basic biostatistics, and outcomes within the literature.
4. Generate a summary of identified references on a chosen topic.
5. Explain limitations of medical research.
6. Formulate a plan to complete entrustable professional activities in an area of interest.

PAS 6782

Capstone II

Credit hours: 1

Mentors students in initiating a robust professional portfolio. Helps students create a single space where all documentation of competency will be organized and accessible. Prepares students to work independently and in teams to further skills and training relevant to selected areas of interest. This is the second in a three-course series.

Course Learning Outcomes

1. Assemble a robust and comprehensive literature review from peer-reviewed articles in areas of interest.
2. Create a continuing medical education (CME) exercise in an area of interest.
3. Complete multiple entrustable professional activities (EPAs) in areas of interest.
4. Develop professional relationships that will lead to letters of recommendation in areas of interest.

PAS 6783

Capstone III

Credit hours: 1

Mentors students in completing a robust professional portfolio. Helps students finalize a single space where all documentation of competency will be organized and accessible for potential employers and future growth. Prepares students to work independently and in teams to show skills and training relevant to selected areas of interest. This is the third and final course in this series.

Course Learning Outcomes

1. Present a complete and professional portfolio in a selected area of interest.
2. Convince colleagues and potential employers of preparedness to succeed in a clinical or academic setting.
3. Demonstrate an organized method for ongoing tracking of professional accomplishments.
4. Review research based on peer-reviewed and credible sources.

PAS 6790

Family Medicine I-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in practicing the principles of family medicine. Facilitates experience in outpatient evaluation of patients across the lifespan (infant, child, adolescent, adult, and elderly) including preventive medicine and acute and chronic illness. This is a five-week supervised clinical practical experience (SCPE) and the course syllabus reflects both the first and second courses in this series. May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6791

Family Medicine II-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in practicing the principles of family medicine. Facilitates experience in outpatient evaluation of patients across the lifespan (infant, child, adolescent, adult, and elderly) including preventive medicine and acute and chronic illness. This is a five-week supervised clinical practical experience (SCPE) and the course syllabus reflects both the first and second courses in this series. May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6792

Behavioral and Mental Health Care-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with an opportunity to learn, understand and gain clinical experience in practicing the principles of behavioral and mental health care conditions. Facilitates experience in outpatient / inpatient evaluation of patients across the lifespan (adolescent, adult, and elderly) including acute and chronic illness. This is a five-week supervised clinical practical experience (SCPE). May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform behavioral assessments essential to the specialty.
4. Counsel patients on healthy behavioral practices with emphasis on compliance to treatment plans.
5. Demonstrate professional conduct.
6. Use problem solving skills in assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6793

Womens Health-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in managing common gynecologic disorders. Includes obstetrical experience with routine prenatal and postpartum care, and may include labor and delivery. Comprises women's health care in an inpatient / outpatient setting across the lifespan (adolescent, adult, and elderly) including preventive medicine and acute and chronic illness. This is a five-week supervised clinical practical experience (SCPE). May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in the assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6794

Pediatrics-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in practicing the principles of pediatric medicine. Facilitates experience in outpatient evaluation of patients across the lifespan (prenatal, neonatal, infant, child, adolescent) including preventive medicine and acute and chronic illness. This is a five-week supervised clinical practical experience (SCPE). May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in the assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6795

Emergency Medicine-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in practicing the principles of emergency medicine. Facilitates experience in the evaluation of patients across the lifespan (infant, child, adolescent, adult, and elderly). Includes learning skills needed for the appropriate triage, stabilization, diagnosis, and management of patients with significant traumatic injuries, acute illnesses, acute complications of chronic illnesses, as well as the management of less life-threatening problems. This is a five-week supervised clinical practical experience (SCPE). May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6796

Surgery-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in practicing the principles of surgery. Facilitates experience in pre-operative, intra-operative, and post-operative evaluation and management of patients across the lifespan (adolescent, adult, and elderly) including acute, chronic, and emergent conditions in the inpatient, outpatient, and operating room settings. This is a five-week supervised clinical practical experience (SCPE). May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in the assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6797

Internal Medicine-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in practicing the principles of internal medicine. Facilitates experience in either an outpatient setting, inpatient setting, or a combination of both, caring for adult and elderly patients with acute, chronic, and/or preventive care needs. This is a five-week supervised clinical practical experience (SCPE). May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in the assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6798

Elective Rotation I-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in a specific area of interest approved by the faculty from a variety of surgical, family medicine, or internal medicine specialties or subspecialties. Enables students to learn to recognize conditions treated by these specialties, so they can refer patients appropriately and/or work in a supportive role for such specialists. This is a five-week supervised clinical practical experience (SCPE). May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PAS 6799

Elective Rotation II-Supervised Clinical Practice Experience

Credit hours: 3

Provides the physician assistant student with clinical experience in a specific area of interest approved by the faculty from a variety of surgical, family medicine, or internal medicine specialties or subspecialties. Enables students to learn to recognize conditions treated by these specialties, so they can refer patients appropriately and/or work in a supportive role for such specialists. This is a five-week supervised clinical practical experience (SCPE). May be graded credit/no credit.

Course Learning Outcomes

1. Perform a complete comprehensive history and physical examination appropriate for the specialty.
2. Communicate in a patient-centered, culturally sensitive manner through spoken and written word with patients and other medical providers.
3. Perform clinical procedures essential to the specialty.
4. Counsel patients on health promotion and disease prevention.
5. Demonstrate professional conduct.
6. Use problem solving skills in assessment, diagnosis, and management of patient conditions.
7. Provide advocacy and support to assist patients in obtaining quality care and in dealing with the complexities of health care delivery systems.
8. Evaluate medical literature critically in order to use current practice guidelines.
9. Apply principles of evidence-based medicine to patient care.

PETE 2120

Fitness for Secondary Physical Educators

Credit hours: 1

Provides and enhances preservice teachers' abilities to teach Fitness for Life and other health-related fitness concepts and classes for students in grades 6-12. Focuses on evaluation and performance of a variety of developmentally appropriate fitness activities. Trains preservice teachers to develop appropriate lesson plans for secondary students, as well as how to help individual students develop personalized fitness programs.

Course Learning Outcomes

1. Define and utilize appropriate terminology for health-related and skill-related fitness concepts.
2. Explain and calculate target heart rate for youth and adults.
3. Use appropriate fitness tests to assess health-related and skill-related fitness in youth and adults.
4. Develop personalized fitness programs for youth and adults.
5. Perform and describe various aerobic fitness exercises, including cross training, circuit training, and a variety of aerobic activities.
6. Explain and perform a variety of anaerobic fitness exercises, including plyometric training and weight- training.
7. List and explore recreational activities appropriate for developing fitness in youngsters and adults.
8. Explain nutritional information essential for optimum fitness in youngsters and adults.
9. Calculate and explain the differences between body composition and BMI.

PETE 2140

Teaching Target Games

Credit hours: 2

Addresses the teaching skills, content analysis, planning and experience to instruct target games such as archery, golf, bocce, bowling, and disc golf for grades 7-12. Focuses on implementing developmentally appropriate progressions for teaching key skills and strategies.

Course Learning Outcomes

1. Create developmentally appropriate grade 7-12 lesson and unit plans for target games.
2. Deliver in class peer teaching experiences through best teaching practices.
3. Evaluate individual teaching practices about target games through critical reflection.
4. Demonstrate professional physical education behavior in a secondary teaching setting.

PETE 2150

Elementary Physical Education SPARK Method

Credit hours: 2

Prepares future classroom teachers, recreation leaders, and interested health and fitness professionals to instruct physical activity classes. Focuses on experiential learning.

Course Learning Outcomes

1. Develop a quality elementary physical education program based on the SPARK model;
2. Teach SPARK lesson plans successfully;
3. Manage children in an active environment using appropriate class management strategies;
4. Assess children's improvement using authentic assessment techniques.

PETE 2240

Teaching Invasion and Net Games

Credit hours: 2

Addresses the teaching skills, content analysis, planning and experience to instruct invasion and net games such as team handball, lacrosse, ultimate frisbee, pickleball, speedminton, and tennis for grades 7-12. Focuses on implementing developmentally appropriate progressions for teaching key skills and strategies.

Course Learning Outcomes

1. Create developmentally appropriate grade 7-12 lesson and unit plans for invasion and net games.
2. Deliver in class peer teaching experiences through best teaching practices.
3. Evaluate individual teaching practices about invasion and net games through critical reflection.
4. Demonstrate professional physical education behavior in a secondary teaching setting.

PETE 2340

Teaching Recreational and Outdoor Pursuits

Credit hours: 2

Addresses the teaching skills, content analysis, planning and experience to instruct outdoor and lifetime pursuits such as strength training, disc games, orienteering, yoga, cooperative games and rock climbing for grades 7-12. Focuses on implementing developmentally appropriate progressions for teaching key skills and strategies.

Course Learning Outcomes

1. Create developmentally appropriate grade 7-12 lesson and unit plans for recreation and outdoor pursuits.
2. Deliver in class peer teaching experiences through best teaching practices.
3. Evaluate individual teaching practices about recreation and outdoor pursuits through critical reflection.
4. Demonstrate professional physical education behavior in a secondary teaching setting.

PETE 2500

Skill Analysis and Competency for PETE Majors

Credit hours: 3

Provides instruction in all fundamental motor skills, movement concepts, and various fundamental sport skills. Covers appropriate progressions, lead-up activities, and games. Includes tinikling, lummi sticks, jump rope, juggling, and other activities appropriate for K-12 physical education. Requires initial assessment for skillful performance in physical education content areas. Canvas Course Mats of \$70/McGraw applies.

Course Learning Outcomes

1. Demonstrate all fundamental motor skills.
2. Demonstrate a variety of fundamental sport skills.
3. Analyze others' performances of fundamental motor skills and sport skills.
4. Demonstrate various K-12 physical education activities, including tinikling, lummi sticks, jump rope, juggling, et cetera.
5. Explain all movement concepts found on Graham's wheel.
6. List performance indicators, difficulties to watch for, and teaching cues for at least 16 fundamental motor skills.
7. Differentiate between initial, elementary, and mature stages in order to choose developmentally appropriate progressions.
8. Plan steps to demonstrate skillful performance in a minimum of four physical education content areas.

PETE 2700

Foundations of Physical Education K-12 Teacher Education

Credit hours: 3

Introduces the Physical Education K-12 Teacher Education Program. Includes introductions to National Initial Physical Education Teacher Standards, NASPE Standards, Appropriate Practices documents, Professional Associations, History and Philosophy of Physical Education, and Motor Development theories. Prepares students to succeed in the UVU PETE Program.

Course Learning Outcomes

1. Demonstrate an understanding of the basis of motor development;
2. Demonstrate knowledge of changes in motor behavior across the lifespan;
3. Identify physical growth, physiological, cognitive, perceptual, and aging characteristics associated with the motor development of performers;
4. Identify historical perspectives of physical education issues and legislation;
5. Identify philosophical perspectives of physical education issues and legislation;
6. Demonstrate behaviors that are consistent with the belief that all students can become physically educated individuals;
7. Participate in activities that enhance collaboration and lead to professional growth and development;
8. Demonstrate behaviors that are consistent with the professional ethics of highly qualified teachers;
9. Plan and implement a schedule that will take them to graduation in a timely manner.

PETE 3100

Introduction to Physical Education Pedagogy

Credit hours: 3

Promotes the acquisition and application of effective teaching skills for K-12 physical education, including focus on the National Standards for Physical Education. Includes observations and experiences with K-12 students and faculty. Introduces and works toward meeting the National Initial Physical Education Teacher Education Standards. Introduces content necessary to succeed in all upper-division PETE courses.

Course Learning Outcomes

1. Create a positive class climate that allows all students to learn effectively.
2. Minimize off- task behavior and discipline problems.
3. Utilize the Generic Levels of Skill Proficiency to choose appropriate tasks for skill development.
4. Provide developmentally appropriate cues and feedback to students at all levels of skill development.
5. Utilize informing, extending, refining, and applying appropriately during lesson planning and teaching episodes.
6. Write lesson plans that clearly tie stated learning outcomes to all tasks and assessments.
7. Reflectively use systematic observation instruments to improve teaching.
8. Compare teaching and student learning related to the psychomotor, cognitive, and affective domains.
9. Consider unique characteristics of each teaching situation.

PETE 3450

Special Populations in Physical Education

Credit hours: 3

Involves planning and conducting physical education programs for children with special needs. Incorporates hands-on experiences working with individual with special needs. Analyzes of a variety of possible adaptations for individuals with physical, sensory, emotional, and/or intellectual impairments.

Course Learning Outcomes

1. Demonstrate understanding of laws related to working with special populations in physical education.
2. Demonstrate comprehension of content and skills required to pass the APENS (Adapted Physical Education National Standards) examination.
3. Utilize the PAPTECA model (planning, assessment, prescribing, teaching, evaluating, consulting, advocating).
4. Contribute to the multidisciplinary (IEP) team working with students with special needs.
5. Individualize physical education programs for individuals with special needs.

PETE 4200

Methods of Teaching Elementary Physical Education

Credit hours: 3

Promotes the analysis and development of elementary physical education curricula. Promotes curricular concepts through reading, lecture/discussion, movement, self-appraisal, and teaching children. Requires application of educational principles and techniques necessary for effective teaching in the elementary school. Emphasizes appropriate selection of curriculum content and transition to teaching/learning models. Offers unit and lesson planning and evaluation. Includes a substantial field experience. Course lab fee of \$78 applies.

Course Learning Outcomes

1. Develop a quality elementary physical education program.
2. Structure an elementary physical educational curriculum to fulfill the needs and interests of the children and their community.
3. Motivate elementary physical education students to achieve and maintain a health-enhancing level of physical activity and fitness.
4. Teach children to perform a variety of developmentally appropriate motor skills and movement patterns.
5. Teach children to apply knowledge of concepts, principles, strategies and tactics related to movement and performance.
6. Teach children to exhibit responsible personal and social behavior that respects self and others.
7. Teach children to recognize the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction.

PETE 4250

Methods of Teaching Secondary Physical Education

Credit hours: 3

Provides opportunities for application of learning from all previous courses to the successful teaching of secondary physical education. Emphasizes the attainment of all current National Initial Physical Education Standards at the acceptable level or above.

Course Learning Outcomes

1. Design lesson and unit plans for secondary physical education aligned with NASPE and Utah standards.
2. Align all teaching and assessment with lesson and unit behavioral objectives, focusing on student outcomes.
3. Summarize instructional models in a physical education setting.
4. Teach the secondary student learner.
5. Examine legal concepts associated with teaching secondary physical education.
6. Promote student learning in cognitive, affective, and psychomotor domains.

PETE 4400

Assessment in Physical Education

Credit hours: 3

Examines the need for valid assessment in K-12 physical education programs. Introduces a variety of assessment instruments. Analyzes the use of assessment to enhance learning and reliably determine student progress toward stated objectives. Promotes the development of a meaningful grading system that communicates student progress toward course objectives and SHAPE America standards.

Course Learning Outcomes

1. Elucidate the need for quality assessment in K-12 physical education programs.
2. Describe the concepts of validity and reliability, and how they apply to assessment and grading.
3. Construct a variety of rubrics useful in K-12 physical education programs.
4. Use appropriate rubrics for assessing K-12 physical education students in the psychomotor, cognitive, and affective domains.
5. Create written exams that accurately assess student comprehension.
6. Develop grading procedures that enhance and measure each student's progression toward becoming physically educated, as defined by the SHAPE America standards.
7. Demonstrate comprehension of basic statistics in physical education; including mean, median, mode, and standard deviation.
8. Assemble assessments into a useful electronic portfolio.

PETE 4900

Student Teaching Seminar for Physical Education

Credit hours: 1

Supports student teachers during their student teaching experience. Examines each student's teaching experiences. Encourages students to integrate learning from all professional education and content courses. Discusses concerns related to current teaching experiences as well as future experiences. Investigates job seeking criteria and opportunities.

Course Learning Outcomes

1. Employ concepts, assumptions, and debates central to the process of inquiry in the study of physical activity.
2. Describe various communication strategies for use with learners, school, colleagues, parent/guardians, and the community.
3. Use computers and other technologies to communicate, network, and foster inquiry.
4. Reflect on the appropriateness of the program design, used by the school at which she/he is student teaching, on the development of physically educated individuals.
5. Identify strategies to become an advocate in the school and community to promote a variety of physical activity opportunities.
6. Report on their establishment of productive partnerships with parents/guardians and counselors/colleagues to support learner growth and well-being.
7. Identify signs of learner distress and seek help as appropriate.
8. Examine and comply with laws related to learner rights and teacher responsibilities.

PHIL 1000

Introduction to Philosophy HH

Credit hours: 3

Designed to investigate major philosophical ideas from the Pre-Socratic era to the present. Students should develop philosophical skills through supervised analysis of readings in epistemology (knowledge), metaphysics (reality), ethics (values), and social philosophy. Emphasizes the articulation, assessment, and discussion of fundamental religious, social, political issues through class discussions, lectures, media, and writing projects.

Course Learning Outcomes

Please contact the department for information.

PHIL 120R

Philosophy Forum

Credit hours: 1

Introduces students to the interchange of traditional and contemporary philosophical issues in various venues. Provides enriched learning situations in which students may interact with noted guest scholars. Includes lectures, symposia, field trips, outreach projects, and activities oriented to engage students in philosophical discourse. Meets in conjunction with the Philosophy Club. Grading is on a credit/no credit basis. May be repeated for a total of four credits toward the AA/AS, BA/BS degree.

Course Learning Outcomes

Please see the department for information.

PHIL 1610

Introduction to Western Religions HH

Credit hours: 3

For students majoring in humanities related disciplines and other students interested in the academic study of religion. Presents the comparative study of the history, ritual, "theology," and ethical beliefs of the major western religions including Judaism, Christianity, Islam, Zoroastrianism, Baha'i, and nontraditional religious belief in the western world. Explores similarities and differences between them by examining the primary sources and sacred texts along with the unique beliefs and practices of each tradition.

Course Learning Outcomes

Please contact the department for information.

PHIL 1620

Introduction to Eastern Religions HH

Credit hours: 3

For students majoring in humanities-related disciplines and other students interested in the academic study of religion. Presents the comparative study of the history, ritual, "theology," and ethical beliefs of the major eastern religious traditions including Hinduism, Jainism, Buddhism, Sikhism, Taoism, Confucianism, and Shintoism. Explores similarities and differences between them by examining the primary sources and sacred texts along with the unique beliefs and practices of each tradition.

Course Learning Outcomes

Please contact the department for information.

PHIL 2000

Formal Logic I

Credit hours: 3

Introduces the basic elements of categorical logic as well as formalized propositional logic and formalized first-order quantificational logic. Includes Venn diagrams, proofs, truth tables, tableaux and translations from natural language.

Course Learning Outcomes

1. Utilize the basic concepts, method, and theories in formal approaches to deductive logic.
2. Apply the basic concepts, methods, and theories of formal logic.
3. Describe the historical and philosophical context for the development of formal logic.
4. Appreciation of the role of formal logic in contemporary philosophy and other disciplines.
5. Awareness of the content of the sub- discipline of formal logic.

PHIL 2110

Ancient Greek Philosophy HH WE

Credit hours: 3

Provides students with an overview of the history and evolution of philosophical thought from its origins in pre-Socratic philosophers through Aristotle. Reviews the influence of pre-Socratic ideas upon the work of Plato and Aristotle and the impact of Greek philosophy on the evolution of Western philosophy, science, and culture. Requires writing-intensive assignments.

Course Learning Outcomes

1. Describe the differences between various Presocratic conceptions of the first causes of nature, the cosmos, and human life.
2. Explain how Presocratic views contain the origins of Western science and signal the movement away from mythologically based interpretations of these phenomena.
3. Describe the precise characteristics of and justifications for Plato's conception of the perfect human society, and understand precisely how this is related to his conception of the human soul.
4. Explain the difference between knowledge and appearance in Plato's thought.
5. Interpret Plato as a writer of dialogues, and therefore as dramatist as well as a philosopher; this entails a deep appreciation for Plato's use of allegory, myth, and historical characters such as Socrates, in addition to the philosophical method of testing hypotheses according to logical reasoning.
6. Apply basic principles of Aristotelian logic including his scheme of ten categories, his conception of the syllogism and modal logic, and his use of inductive, deductive, and dialectical reasoning.
7. Develop a sophisticated understanding of Aristotle's conception of nature, substance, God, and difficulties inherent in acquiring knowledge of such subjects.
8. Explain Aristotle's conception of nature, substance, and God.

PHIL 2150

Early Modern Philosophy HH

Credit hours: 3

Provides an overview of the history and evolution of ideas in Western culture during the modern period of philosophy from Descartes through Kant. Focuses on the dialogue between rationalism and empiricism, and examines Kant's attempt to bridge the gap between these two approaches. Requires writing-intensive assignments.

Course Learning Outcomes

Please see the department for information.

PHIL 290G

Marginalized Philosophies HH GI

Credit hours: 3

Explores philosophical traditions and approaches outside or at the margins of the philosophical mainstream as it appears in contemporary North America, such as Asian philosophy, African philosophy, Indigenous philosophy, comparative philosophy, queer theory, philosophies of gender and disability, Black philosophy, liberation philosophy, and feminist philosophy. Introduces students to the complexity and diversity of philosophical practice in an increasingly globalized world.

Course Learning Outcomes

1. Evaluate how one's own cultural values compare with those from different backgrounds
2. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups
3. Analyze global or intercultural issues
4. Examine the complexity and diversity of texts in marginalized traditions
5. Construct conceptual tools to productively critique and better understand the mainstream Western philosophical tradition
6. Compare the values, methods, and problematics of marginalized traditions to each other and/or to mainstream traditions
7. Formulate written work that uses tools and standards of marginalized traditions

PHIL 295R

Directed Readings

Credit hours: 1 to 3

Provides an opportunity for second year students to do in-depth research within the discipline of Philosophy. Study is limited to advanced work beyond that which can be completed in existing, available classes. A proposal must be submitted and approved by the department prior to enrollment.

Course Learning Outcomes

Please contact the department for information.

PHIL 355G

Moral Philosophy GI

Credit hours: 3

Surveys the global history of moral and ethical philosophy from ancient to contemporary figures. Focuses on the following issues and theories: the good, moral reasoning and judgment, objectivism vs. conventionalism and relativism, natural law theory, ethical egoism, hedonism, virtue ethics, deontology, consequentialism, utilitarianism, materialism, moral sentiment, roles of emotion and reason in ethical and moral deliberation and judgment, as well as race, gender, and sexuality in ethics.

Course Learning Outcomes

1. Compare the main ethical and moral theories characteristic of Western and non-Western philosophical traditions.
2. Identify the central issues and problems characteristic of moral philosophy.
3. Apply varying theories to hypothetical and/or concrete moral issues and dilemmas.
4. Identify contemporary moral issues and ethical debates.
5. Analyze global or intercultural issues.
6. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
7. Evaluate how one's own cultural values compare with those from different backgrounds.

PHIL 367G

Engaging Religious Diversity

Credit hours: 1 to 3

Explores how religious communities engage one another and examines the implications of these interactions for religious conflict, spiritual identity, and the role of religion in societal contexts. Employs the tools from diverse disciplines to study the phenomenon of religious encounter in both historical and contemporary contexts. Investigates theories of religious diversity, American religious history, interreligious leadership practices, and narrative encounters.

Course Learning Outcomes

1. Demonstrate competence in navigating the complexities of religious and ethical diversity.
2. Develop skills that strengthen inclusion and equity.
3. Strengthen critical and creative reasoning related to religious, spiritual, and secular identities.
4. Articulate and evaluate one's own values and their relationship with other worldview identities.
5. Analyze and evaluate global or intercultural issues as they relate to religious diversity.
6. Demonstrate awareness of stereotypical cultural conceptions and recognize the variety and complexity of different religious and cultural groups.

PHIL 3680

Interreligious Studies Practicum

Credit hours: 3

Engages religious, spiritual, and secular diversity through experiential learning opportunities. Explores how religious and worldview diversity affects the ethical, social, civil, and personal dimensions of the human experience. Provides opportunities for students to apply the theories and principles studied in the other Interreligious Studies Certificate courses.

Course Learning Outcomes

1. Demonstrate competence in navigating contexts of religious and ethical diversity.
2. Develop skills that strengthen inclusion and equity.
3. articulate and evaluate one's own values and their relationship with other worldview identities.
4. Demonstrate appreciative knowledge of the diverse ways of believing and living in various communities.

PHIL 480R

Philosophy Capstone Prep

Credit hours: 1

Prepares students to successfully complete a Philosophy Research Capstone thesis. Provides resources for formulating a thesis, identifying faculty adviser(s), and completing a one-page thesis proposal and an annotated bibliography of works to be consulted for the thesis project. May be repeated for a maximum of 2 credits toward graduation.

Course Learning Outcomes

1. Determine a Philosophy Research Capstone senior thesis topic.
2. Summarize the thesis project.
3. Produce an annotated bibliography of works to be consulted for the thesis.
4. Receive approval for the thesis project from thesis adviser(s).

PHIL 4910

Philosophy Research Capstone WE

Credit hours: 3

To be taken during the student's last semester in the baccalaureate program. Includes writing a senior thesis, which points to post-baccalaureate career path or graduate school goals. Covers advanced Philosophy research and writing instruction. Encourages students to explore the ethical dimensions of their desired professional or graduate research interests. Involves the creation of a professional portfolio helpful in applying to graduate school or seeking employment.

Course Learning Outcomes

1. Develop a senior thesis project of significant philosophical interest and complexity
2. Explain clearly and thoroughly both the philosophical dimensions of their project, and the arguments that will be offered in support of the thesis developed
3. Defend a thesis using rigorous argument, and citing relevant sources and evidence in support
4. Assemble a portfolio of their work suitable for supporting graduate school, or other employment, application
5. Demonstrate the values of intellectual independence, curiosity, and self-reflection during oral defense of their project

PHYS 1010

Elementary Physics PP

Credit hours: 3

For students interested in a one-semester survey physics course. Covers the fundamentals of classical and modern physics. Includes mechanics, fluids, heat, waves and sound, electricity and magnetism, light, optical, relativity, atomic and nuclear physics. Includes lectures, classroom interaction, demonstration, and problem solving. Canvas Course Mats \$105/Pearson applies.

Course Learning Outcomes

1. Explain how our observations of nature can be enhanced beyond human sensory perception by the use of measurement technologies.
2. Describe motion in terms of Newton's Laws.
3. Show by example what is meant by a "conservation law" in physics.
4. Give specific examples of conservation of energy, conservation of momentum and conservation of angular momentum in ordinary, daily life.
5. Discuss the inverse square law of gravity and how it relates to free-fall and orbital motion.
6. Give examples of the three laws of thermodynamics.
7. Discuss the wave nature of light and sound with examples from daily life.
8. Explain the laws of static electricity, the origin of magnetism and the law of electromagnetic induction as it relates to every day electricity use.

PHYS 1700

Descriptive Acoustics PP

Credit hours: 3

Introduces the science of sound, music and speech and the physical principles and technology used to manipulate, store and broadcast it.

Course Learning Outcomes

1. Define the basic terminologies of acoustics.
2. Apply scientific models to analysis of hearing, speech and musical instruments.
3. Identify the physical principles involved in common situations involving sound such as hearing, speech, audio systems, listening environments, and musical instruments.
4. Outline how acoustics is important in a discipline of their choice.

PHYS 2010

College Physics I PP

Credit hours: 4

For students desiring a two semester algebra based course in applied physics. Covers mechanics, fluids, waves, heat, and thermodynamics. Canvas Course Mats \$81/Pearson applies.

Course Learning Outcomes

1. Identify causal forces in arbitrary mechanics problems.
2. Show by example how forces produce vector class accelerations.
3. Calculate responses of mechanical systems to forces.
4. Explain the origins and impacts of torques.
5. Explain the laws of thermodynamics.
6. Demonstrate the use of conservation laws in physics.
7. Analyze oscillatory behavior in elastic systems.
8. Explain wave phenomena for sound, light, and material waves.
9. Quantify the mechanical properties that characterize solids and fluids.

PHYS 2015

College Physics I Lab

Credit hours: 1

Designed to accompany PHYS 2010. Provides firsthand experience with the laws of mechanics, fluids, waves, heat, thermodynamics, and data analysis. Course Lab fee of \$15 applies.

Course Learning Outcomes

1. Use Newton's Laws to identify forces acting on objects.
2. Calculate the motion that arises from forces using Newton's Laws of Motion.
3. Use simple statistics to characterize data.
4. Use data loggers and sensors to conduct measurements on physical systems.

PHYS 2020
College Physics II PP

Credit hours: 4

A continuation of PHYS 2010. Covers electricity, magnetism, waves, sound, optics, and nuclear physics. Canvas Course Mats \$81/Pearson applies.

Course Learning Outcomes

Please see the department for information.

PHYS 2025

College Physics II Lab

Credit hours: 1

Designed to accompany PHYS 2020. Provides firsthand experience with the laws of electricity, waves, optics, nuclear physics, and data analysis. Course Lab fee of \$15 applies.

Course Learning Outcomes

1. Use the Laws governing electricity, magnetism, and optics - including Coulomb's, Gauss', Faraday's, Ohm's, Kirchoff's, Lenz's, and Maulus' laws - to identify forces acting on stationary and moving objects which possess charge or predict the behavior of light.
2. Analyze current and voltage behavior in simple student-constructed circuits.
3. Use simple statistics to characterize data.
4. Use data loggers and sensors to conduct measurements on physical systems.

PHYS 2210

Physics for Scientists and Engineers I PP

Credit hours: 4

Introduces mechanics, fluid dynamics, thermodynamics, vibrations, and waves to the budding scientist or engineer utilizing the quantitative tools of calculus. Includes 1 hour of recitation per week.

Course Learning Outcomes

1. Apply Newton's laws of motion in vector form to static structures in equilibrium and free bodies subject to a net force.
2. Apply strategic problem solving to complex physical systems.
3. Use unit analysis and arguments of scale to make order of magnitude estimates of physical quantities.
4. Apply principles of conservation of energy and momentum to dynamic systems under the influence of conservative and non-conservative forces.
5. Distinguish between systems reasonably described by forces acting on point particles and those requiring descriptions of extended objects, by calculating centers of mass and moments of inertia for simple bodies.
6. Describe orbits for a two body system such as the Earth and Sun or Earth and satellite using Newton's law of gravity and conservation of angular momentum.
7. Calculate pressure-derived forces in simple systems, such as those involving buoyancy, fluids in motion as described by Bernoulli's law and those static fluid situations described by Pascal's law.
8. Analyze systems subject to oscillatory or wave behavior.
9. Describe relationships between pressure and volume and temperature and entropy in simple gases using the three laws of thermodynamics.

PHYS 2215

Physics for Scientists and Engineers I Lab

Credit hours: 1

Designed to accompany PHYS 2210. Provides firsthand experience with the laws of mechanics, thermal physics, vibrations, and waves. Introduces methods of scientific data analysis. Course Lab fee of \$15 applies.

Course Learning Outcomes

1. Use Newton's Laws to identify forces acting on objects and calculate their accelerations and resulting velocities from that information.
2. Use conservation laws such as conservation of momentum and conservation of energy to predict the motion of objects undergoing non-constant forces.
3. Apply rotational versions of Newton's Laws and Conservation Laws to predict the angular displacement, angular velocity, and angular acceleration of rigid bodies.
4. Use statistics to characterize data.
5. Use data loggers and sensors to conduct measurements on physical systems.

PHYS 2220

Physics for Scientists and Engineers II PP

Credit hours: 4

Continues from PHYS 2210. Covers electricity and magnetism, including Maxwell's equations. Develops the theory of electromagnetic waves and optics. Presents introductory electronics and modern physics topics. Includes one hour of recitation.

Course Learning Outcomes

1. Analyze electric and magnetic fields arising from distributions of electric charges and currents, and their effect on test charges and test currents.
2. Demonstrate mastery of Coulomb's Law, Gauss's Law for both electric and magnetic fields, Faraday's law of electromagnetic induction and Ampere's law of magnetic circulation.
3. Analyze simple circuits containing networks of resistors, capacitors and inductors using Kirchoff's laws for both AC and DC examples.
4. Qualitatively and quantitatively describe the fundamental nature of electromagnetic radiation.
5. Show mastery of geometric optics as evidenced through analysis of systems of thin lens and mirrors, telescopes and microscopes.
6. Describe properties of waves, such as superposition, interference and diffraction, resonance, and polarization using clear examples of each.
7. Apply the central tenets of Special Relativity to the motion of objects at high speed and to the changes in electric and magnetic fields that are observed in different inertial frames.
8. Outline the development of modern physics as evidenced in the quantization of the electromagnetic field to explain blackbody radiation and the photoelectric effect and in the development of the Bohr model of the atom.

PHYS 2225

Physics for Scientists and Engineers II Lab

Credit hours: 1

Accompanies PHYS 2220. Provides students first hand experience with the laws of electricity and magnetism, electric circuits, and optics. Emphasizes principles of data collection and analysis.

Course Learning Outcomes

1. Use the Laws governing electricity and magnetism - including Coulomb's, Gauss', Faraday's, Ohm's, Kirchoff's, and Lenz's Law to identify forces acting on stationary and moving objects which possess charge.
2. Use principles governing the functions of resistors, capacitors, diodes, and DC and AC power supplies to predict and analyze current and voltage behavior in simple student constructed circuits.
3. Use simple statistics to characterize data.
4. Use data loggers and sensors to conduct measurements on physical systems.
5. Use principles of polarization, interference, diffraction - and the effects of mirrors and lenses - to predict and explain the behavior of light.

PHYS 3010

Physics Experiments for Secondary Education

Credit hours: 1

For secondary education students. Emphasizes physics or chemistry. Addresses pedagogical methods for student physics laboratory exercises and demonstrations. Studies currently available commercial laboratory equipment for teaching physics in a lab setting. Includes ideas and methods for building inexpensive demonstrations and lab exercises. Provides training in safe and effective use of lab equipment.

Course Learning Outcomes

Please see the department for information.

PHYS 3110

Modern Physics I

Credit hours: 3

Addresses topics of error analysis and statistics, wave mechanics, special relativity, development of quantum mechanics, and atomic physics.

Course Learning Outcomes

1. Quantify uncertainties in physics experiments, assess their types and importance, and make correct statistical fits to data.
2. Demonstrate understanding and application of wave equations to various classical and quantum mechanical systems.
3. Demonstrate an understanding of the key concepts and experiments that gave rise to quantum mechanics.

PHYS 3115

Introduction to Experimental Physics I WE

Credit hours: 2

Introduces selected experiments of classical and modern physics in a laboratory setting. Addresses topics of measurement, error analysis, data analysis, and report writing.

Course Learning Outcomes

1. Discuss the connection between measurements and the physical interpretation of the measurements.
2. Calculate standard deviation and perform error propagation.
3. Graph appropriate results using Excel or a similar program, using correct labels, including units, and figure captions.
4. Orally communicate the contents of an experiment in the form of a short, informal talk to peers.
5. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

PHYS 3120

Modern Physics II

Credit hours: 3

Covers topics in special and general relativity, and addresses applications of modern quantum mechanics including molecular physics, solid state physics, statistical mechanics, nuclear physics, particle physics, and cosmology.

Course Learning Outcomes

1. Calculate velocity, time, energy, momentum, and other measurable quantities in different frames of reference.
2. Explain a wide variety of observed phenomena using the principles of quantum mechanics.
3. Describe how general relativity gives rise to an understanding of cosmology and extreme astrophysical objects.
4. Elucidate how nuclear and particle properties are measured.

PHYS 3125

Introduction to Experimental Physics II WE

Credit hours: 2

Introduces selected experiments of classical and modern physics in a laboratory setting. Addresses topics of measurement, data analysis, report writing.

Course Learning Outcomes

1. Write clear and grammatically correct laboratory reports that include an introduction, an experimental setup, a results and a conclusion section with good organization.
2. Describe the interplay between theoretical and experimental progress in physics in the context of a physics experiment.
3. Orally communicate the contents of an experiment in the form of a short, informal talk to peers.
4. Create a student-directed group project that includes data collection and analysis.
5. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

PHYS 3230

Principles of Electronics for the Physical Sciences

Credit hours: 3

Introduces electronic measurement instruments commonly used in experimental physics laboratories. Covers principles of electronic measurements using transducers, solid-state devices, circuit analysis, logic circuits, and computers. Includes lab experience. Course lab fee of \$45 for materials applies.

Course Learning Outcomes

Please see the department for information.

PHYS 3300

Mathematical Physics

Credit hours: 3

Covers the applications of mathematical tools to experimental and theoretical research in the physical sciences. Introduces problems and systems common to physical science that can be modeled by the application of vector and tensor algebra, curvilinear coordinates, linear algebra, complex variables, Fourier series and transforms, differential and integral equations.

Course Learning Outcomes

1. Expand functions of multiple variables using the Binomial Theorem and Taylor series expansions about arbitrary points.
2. Use complex algebra and Euler's theorem for simplification and re-expression of trigonometric functions in the operations of calculus.
3. Do eigenvalue and eigenvector problems for physically important systems such as normal mode analysis.
4. Explore functional relationships and estimates of physical properties using the methods of partial differentiation.
5. Use vector calculus in integral and differential forms for vector fields of physical interest.
6. Use the methods of Fourier series for periodic functions and Fourier transforms for non-periodic functions.
7. Solve ordinary differential equations with a variety of techniques.
8. Solve partial differential equations of physical interest with the method of separation of variables.
9. Use sets of orthogonal polynomials, particularly Legendre and Bessel functions, to express the solutions of physically interesting problems.

PHYS 3330

Computational Physics

Credit hours: 3

Covers computational algorithms with specific applications to the description of physical systems. Covers iterative approximation methods, computations using matrices and vectors, numerical integration, solutions of differential equations. Uses a computer programming approach to problem solving.

Course Learning Outcomes

1. Use common computational packages such as MATLAB, Python and Maple (or similar) to solve physics problems.
2. Assemble numerical algorithms for zero-finding, and numerical calculus to produce programs or codes to solve physics problems.
3. Demonstrate how basic numerical routines are used to interpolate, extrapolate, smooth, integrate and differentiate arrays of numbers.
4. Perform linear algebra operations on a computer, including eigenvalue problems and normal mode analysis problems.
5. Solve sets of coupled differential equations using numerical packages.
6. Use orthogonal polynomials and other independent basis sets to Fourier analyze data sets.
7. Produce plots of data products that are informative and well constructed.

PHYS 3400
Classical Mechanics

Credit hours: 3

Treats classical mechanics of particles and systems using advanced mathematical techniques. Covers conservation principles, Lagrangian dynamics, harmonic oscillators, motion of rigid bodies and non-inertial reference frames.

Course Learning Outcomes

Please see the department for information.

PHYS 3500

Thermodynamics

Credit hours: 3

Addresses topics of heat, temperature, ideal gases, laws of thermodynamics, entropy, reversibility, thermal properties of solids, phase transitions, thermodynamics of magnetism, and negative temperature.

Course Learning Outcomes

Please see the department for information.

PHYS 3600

Optics

Credit hours: 3

Covers the phenomena of reflection, refraction, diffraction, interference, optical behavior in materials and lasers. Presents a mathematically rigorous description of optical phenomena. May include equipment-based class projects.

Course Learning Outcomes

1. Describe the electromagnetic spectrum and its classical origin as given by Maxwell's equations, as well as the practical use of geometrical optics and ray-tracing to analyze the optical characteristics of a system of thin lenses and simple mirrors.
2. Represent the propagation of electromagnetic radiation using complex exponential vector forms for the E and B fields correctly accounting for the phase of each term and the phenomena and effects of polarization.
3. Describe the boundary conditions of E and M waves incident on a surface and use these to account for and predict reflection and refraction.
4. Calculate the effects of wave diffraction and interference for electromagnetic radiation in simple configurations in order to analyze spectra resulting from such instances.
5. Describe the interaction of electromagnetic waves with atoms and with bulk materials, correctly describing the processes of scattering, absorption and emission.
6. Describe in detail the operation of a laser, the physics of stimulated emission of radiation, optical cavities, Bose-Einstein statistics, Einstein A and B coefficients, inverted electron populations and metastable states.
7. Describe electromagnetic waves and their origins from the point of view of modern physics and the photon model.
8. Use a variety of optical devices as presented and demonstrated in the course lectures and projects such as interferometers, spectrographs, lasers, beam splitters, etc.

PHYS 4210

Advanced Experimental Techniques

Credit hours: 3

Introduces students to the process of developing, designing, proposing, building, executing, analyzing, revising, and presenting a scientific experiment. Teaches a variety of advanced experimental technical skills and helps students learn to embark independently on scientific research.

Course Learning Outcomes

1. Design an original scientific experiment.
2. Successfully execute scientific experiments.
3. Analyze experimental data.
4. Utilize experimental techniques used in modern physics experimental research.
5. Use instruments used in modern physics experimental research safely and proficiently.
6. Write a persuasive, complete, and accurate proposal for a physics experiment.
7. Give an organized, understandable, and interesting oral presentation of physics research.

PHYS 4410

Electrostatics and Magnetism

Credit hours: 3

Explores the theory of electrostatic phenomena in a mathematically rigorous manner. Covers Gauss' Law, the Laplace and Poisson equations, boundary-value problems, and dielectrics.

Course Learning Outcomes

Please see the department for information.

PHYS 4420
Electrodynamics

Credit hours: 3

Explores the theory of electrodynamic phenomena in a mathematically rigorous manner. Covers Ohm's and Kirchhoff's Laws, magnetic induction, the Biot- Savart Law, Ampere's Law, Ferromagnetism, Plasmas, Maxwell's Equations, and Special Relativity.

Course Learning Outcomes

Please see the department for information.

PHYS 4510
Quantum Mechanics I

Credit hours: 3

Covers postulates of quantum mechanics, state functions of quantum systems, Hermitian Operators, the Schrodinger Equation, eigenfunctions of harmonic oscillators, and particles in potential wells.

Course Learning Outcomes

Please see the department for information.

PHYS 490R

Seminar

Credit hours: 0.5

Exposes students to current research topics in physics and related fields. Provides an opportunity for students to attend bi-weekly lectures presented by department faculty and invited speakers. Lectures are usually a summary of the speaker's recent research results presented at a level appropriate for junior and senior physics majors.

Course Learning Outcomes

Please see the department for information.

PJST 3000

Introduction to Peace and Justice Studies WE

Credit hours: 3

Introduces the student to the important literature, questions, and research programs of peace and justice studies. Explores personal, domestic, national, and international issues. Considers alternative conceptions of violence, war, terrorism, justice/injustice, and peace. Enables the student to become aware of various intellectual and professional disciplines that bear relationships to peace and justice, e.g., history, political theory, international relations, political economy, international law, environmental law, military science, mediation and negotiation.

Course Learning Outcomes

1. Discuss the history and basic theories of justice, violence, war, and peace.
2. Demonstrate how these theories relate to broader moral and political theories, and religious traditions.
3. Discuss the strengths and weaknesses of these theories.
4. Explain how these theories have been and are embedded in, and follow from, historic and contemporary practices of persons, groups, nations, societies, cultures, religions, and states.
5. Discuss how various intellectual and professional disciplines are related to matters of peace, violence, war and justice.
6. Demonstrate critical thinking skills in respect to the course content; and thus, write a paper showing his or her understanding of a particular issue, problem, theory, or research program in the peace and justice studies literature.
7. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

PJST 3400

Conflict Transformation Resolution and Sustainable Peace WE

Credit hours: 3

Uses empirical data to interrogate and explicate organized death in the form of war, revolution, insurgency, or terrorism as a perennial, and one of the most complicated, problems. Uses empirical data and theory to investigate the means of conflict transformation that have been most successful. Presents a basic understanding of how conflict is transformed from (1) an active status to (2) resolution to (3) peaceful stalemate to (4) sustained peace. Explicates the process of moving from active violent conflict to sustainable peace. Explores the roles of peoples, state organizations, institutions, civil society, culture, religion, states, and multilateral organizations.

Course Learning Outcomes

1. Describe the theories, strategies, and challenges of strategic peace-building and conflict transformation.
2. Explain the role of multilateral institutions.
3. Describe the use of humanitarian intervention and the role of human rights in the foreign policy of countries.
4. Explain how mediation, negotiation, and disarmament can play a key role in conflict transformation.
5. Explain an integrated framework for conflict transformation.
6. Present research and understanding of how conflict is transformed from an active status to a peaceful stalemate and sustained peace.
7. Present the roles of people, peoples, states, institutions, civil society, culture, religion, states, and multilateral organizations in the conflict transformation process.
8. Complete research on a topic using persuasive logic, well-reasoned arguments, and appropriately substantiated evidence.

POLS 1100

American National Government AS

Credit hours: 3

Studies history and structure of American National Government, rights and responsibilities of citizens, political institutions, political processes, and governmental policies.

Course Learning Outcomes

1. Explain the key principles and philosophies that influenced the creation of the U.S. Constitution and the American system of government
2. Differentiate between the civil rights and civil liberties protected by the U.S. Constitution
3. Discuss the development and influence of public opinion in the American system of government
4. Describe the American election process, including the nomination and general election processes for local, state, and national offices
5. Explain the function and operation of the institutions of government at the national, state, and local levels of the American political system
6. Analyze current political debates, trends, and challenges facing American society and government

POLS 2100

Introduction to International Relations SS

Credit hours: 3

Discusses logic of power in international relations. Studies idealistic and realistic theories of international relations. Examines reasons why nations go to war. Compares geopolitical thrust and response.

Course Learning Outcomes

Please see the department for information.

POLS 2200
Introduction to Comparative Politics SS

Credit hours: 3

Studies comparative politics and looks at attitudes and causes of political problems. Examines methods and means employed by selected countries to solve political problems, and studies successes and failures of different approaches. Examines the means which different nations employ to deal with political problems. Explores the politics, institutions, and governments of seven selected nations.

Course Learning Outcomes

Please see the department for information.

POLS 230G

Introduction to Political Theory GI

Credit hours: 3

Surveys major Western political theories, from Athenian democracy to the 21st century welfare state. Analyzes such ideologies as republicanism, liberalism, socialism, and fascism, and considers how these ideas have shaped the ways in which people think and nations act. Explores how global cultures have used and abused these ideas, and how students' own political beliefs fit into the history of political ideologies.

Course Learning Outcomes

Please see the department for information.

POLS 3000

Political Analysis

Credit hours: 3

Covers the analytical and quantitative methodologies used in political science and public policy research. Includes statistical analysis, database research, and writing exercises.

Course Learning Outcomes

1. Discuss the challenges present in the attempt to study politics scientifically.
2. Transform an abstract concept into an observable operationalization.
3. Categorize variables into their appropriate level of measurement.
4. Develop an appropriate hypothesis of a relationship between an independent and dependent variable.
5. Identify an appropriate research design to test a hypothesis.
6. Describe the central tendency and dispersion of a variable's distribution using the appropriate statistics.
7. Analyze relationships between variables using the appropriate statistical methods.

POLS 3010

Political Analysis II

Credit hours: 3

Covers advanced political data analysis techniques, including: advanced multiple regression analysis and diagnostics, measurement reliability and validity, the use of statistical-analysis software and presentation of analysis results.

Course Learning Outcomes

1. Perform advanced data analysis on empirical data using statistical-analysis software
2. Analyze data using appropriate statistical methods
3. Evaluate regression models for model fit and assumptions
4. Construct reliable and valid operationalizations
5. Present data analysis results effectively

POLS 3250

Introduction to Law and Politics

Credit hours: 3

Examines the relationship between law and politics. Addresses the impact politics have on the judiciary and the strengths and weaknesses of law as a means of social order. Focuses on general issues of legal and political theory and the social and political function of law.

Course Learning Outcomes

1. Describe the relationship between law and politics
2. Exhibit a passing knowledge of the social, political, and legal aspects of American Jurisprudence
3. Identify the role that law plays in society and the impact that politics have on a judicial system
4. Summarize the main aspects of legal and political theory

POLS 3300

Introduction to Public Administration

Credit hours: 3

Introduces basic concepts and principles in the implementation of public policy, as opposed to the formation of public policy. Includes concepts such as chain of command, hierarchy, and span of control.

Course Learning Outcomes

1. Identify the public sector and interest and distinguish it from the private sector and interest.
2. Distinguish public policy implementation from public policy formation.
3. List fundamental concepts of administration such as hierarchy & span of control.
4. Explain fundamental concepts such as division of labor & chain of command.
5. Explain primary concepts involved in the evaluation of public policy implementation.
6. Identify basic principles of personnel administration.
7. Identify basic principles of budget administration.
8. Explain the legal status, history, and primary responsibilities of regulatory agencies.
9. Perform an academically rigorous study on a case in public administration.

POLS 3310

Introduction to Public Policy WE

Credit hours: 3

Provides an introduction to the process of public policy-making in the United States and to the substance of policy in areas like health policy, environmental policy, and education policy. Introduces students to the fundamental skills of policy analysis and to some of the difficult choices involved in identifying, addressing, and resolving public policy problems.

Course Learning Outcomes

1. Apply the major theories of public policy to policy problems affecting society
2. Examine the moving parts of the policy process in the United States, including the primary actors and institutions involved in the states of the policymaking process
3. Analyze strengths and weaknesses in partisan or news media depictions of policy issues
4. Communicate ideas through writing and class discussion
5. Develop subject matter writing skills through the writing of a policy analysis paper
6. Identify the major theories of public policy

POLS 3320

Nonprofits and The Public Sector

Credit hours: 3

Explores the historical background, development, role, and purposes of nonprofit organizations. Expands awareness of the scope and breadth of the nonprofit sector in the United States, and examines the inner workings of nonprofit organizations as the foundation for further study.

Course Learning Outcomes

1. Identify the distinctive characteristics, functions, and behavior of nonprofit organizations.
2. Analyze the political, social, economic, and legal environments in which nonprofit organizations operate and how this environment creates risks and opportunities for these organizations.
3. Apply theories of management to common nonprofit organizational issues, such as financial management, leadership, management and control, strategic planning and program implementation.
4. Assess the strengths and weaknesses of partnerships between nonprofit and public sector organizations.

POLS 3680
International Political Economy

Credit hours: 3

Focuses on the connection between politics and economics in international relations, including an overview of some of the major issues in the area of international political economy, the international trade and financial systems, the role of multinational corporations, economic development, and economic globalization.

Course Learning Outcomes

Please see the department for information.

POLS 4500

International Conflict and Security

Credit hours: 3

Focuses on causes and theories of conflict in international relations. Includes traditional and emerging threats to international security, as well as policy responses to them.

Course Learning Outcomes

1. Examine the causes and dynamics of international conflict.
2. Apply various theoretical approaches to international conflict and security and other major issues.
3. Assess potential threats to national and international security.
4. Develop responses to conflict resolution.

PORT 1020
Beginning Portuguese II LH

Credit hours: 4

Continuation of PORT 1010. Includes remaining first-year grammar and language concepts plus introduction to literature and cultural readings. Uses eclectic method of instruction, emphasizing conversational exchanges. Lab access fee of \$12 applies.

Course Learning Outcomes

Please see the department for information.

PORT 2010
Intermediate Portuguese I LH

Credit hours: 4

Reviews and builds grammar, reading, and conversation skills learned in the first year courses. Introduces readings and discussions on the history, culture, and literature of Brazil, maintaining a focus on oral proficiency. Lab access fee of \$12 applies.

Course Learning Outcomes

Please see the department for information.

PORT 202G
Intermediate Portuguese II HH GI

Credit hours: 4

Continuation of PORT 2010. Includes remaining grammar and language concepts, literature and cultural readings. Emphasizes literary readings, conversational exchanges as well as creative writing. Lab access fee of \$12 applies.

Course Learning Outcomes

Please see the department for information.

PRLG 4400

Family Law

Credit hours: 3

Covers family issues and drafting of legal documents relating to domestic litigation. Explores case law related to the marriage contract, divorce, adoption, guardianships, paternity, illegitimacy, and prenuptial agreements. Emphasizes family law document production in domestic cases. Lab access fee of \$32 for computers applies.

Course Learning Outcomes

1. Describe the history and development of present domestic law.
2. Identify the various elements of marriage.
3. Define and recognize the grounds for divorce and defenses available to these grounds.
4. Define and recognize the grounds for annulment and defenses available to these grounds.
5. Identify solutions to property settlement problems, including consideration of resulting tax problems.
6. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Desire to advance their careers 2 - Enthusiasm, creativity, cooperation, positive self-esteem, and self-motivation

PRLG 481R

Internship

Credit hours: 1 to 8

Provides actual, on-the-job work experience in a non-paying (volunteer) basis in a law office or other approved law-related situation. Emphasizes successful work experience, especially identifying and solving problems. Completers should be qualified to work in the Paralegal profession. May be repeated for a maximum of 8 credits. May be graded credit/no credit.

Course Learning Outcomes

1. Locate a meaningful position in industry related area
2. Develop individual work objectives
3. Demonstrate understanding of the importance of human relation skills
4. Develop written communications skills using weekly reports
5. Formulate social skills in the work environment
6. Demonstrate understanding of the proper work habits and ethics
7. Evaluate performance objectively and take corrective action when needed

PST 1110

Two Stroke Engine Systems

Credit hours: 2

Studies the theory, diagnosis, and repair of two stroke engines. Emphasizes design and capabilities of the two stroke engine. Includes engine rebuilding techniques and principles, basics of engine fasteners, sealants, and tightening methods.

Course Learning Outcomes

1. Examine two stroke engine systems operation, function, maintenance, and repair.
2. Analyze two stroke engine systems for optimal use and operation.
3. Describe two stroke engine systems, operation, function, maintenance, and repair.
4. Evaluate fluids, sealants, and lubricants used in two stroke engine systems.
5. Describe proper methods of two stroke engine repair and overhaul.
6. Examine tools and fasteners used in the maintenance, repair, and overhaul of two stroke engines.

PST 1115

Two Stroke Engine Systems Lab

Credit hours: 1

Enhances the technical theory covered in the PST 1110 course. Provides an engine laboratory experience by following industry task lists for two stroke engine systems. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual vehicles and vehicle systems of major manufacturers in completing the task lists. Course Lab fee of \$12 for materials applies.

Course Learning Outcomes

1. Describe two stroke small engine system operation, function, maintenance, and repair.
2. Apply basic inspection and repair principles of the two stroke internal combustion small engine operation for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on two stroke small engine components diagnosis.
4. Analyze normal and abnormal two stroke small engine component wear.
5. Demonstrate proper disassembly and reassembly procedures of two stroke small engine components following industry standards.
6. Execute the proper use of electronic service information in the disassembly and reassembly of two stroke small engine components.

PST 1120

Constant Velocity Transmissions and Drive Systems

Credit hours: 2

Studies the theory, operation, diagnosis, and repair of Continuously Variable Transmissions (CVT) in snowmobiles, ATVs, and UTVs. Includes component identification and theory of tuning the CVT for optimal performance. Covers driveshaft and constant velocity boot inspection, diagnosis, and replacement.

Course Learning Outcomes

1. Describe continuously variable transmission systems operation, function, maintenance, and repair.
2. Analyze continuously variable transmission system (CVT) for optimal use and operation.
3. Evaluate fluids, sealants, and lubricants used in continuously variable transmission system (CVT).
4. Describe proper methods of continuously variable transmission (CVT) repair and overhaul.
5. Examine tools and fasteners used in the maintenance, repair, and overhaul of continuously variable transmissions (CVT).

PST 1125

Constant Velocity Transmissions and Drive Systems Lab

Credit hours: 1

Enhances the technical theory covered in the PST 1120 course. Provides a transmission laboratory experience by following industry task lists for continuously variable transmission (CVT) systems. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual vehicles and vehicle systems of major manufacturers in completing the task lists. Course Lab fee of \$12 for materials applies.

Course Learning Outcomes

1. Describe continuously variable transmission system operation, function, maintenance, and repair.
2. Apply basic inspection and repair principles of the continuously variable transmission system operation for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on continuously variable transmission systems.
4. Analyze normal and abnormal continuously variable transmission wear.
5. Demonstrate proper disassembly and reassembly procedures of continuously variable transmission components following industry standards.
6. Execute the proper use of electronic service information in the disassembly and reassembly of continuously variable transmission components.

PST 1210

Four Stroke Small Engine Systems

Credit hours: 2

Studies the theory, diagnosis, and repair of four stroke small engines. Emphasizes design and capabilities of the four stroke small engine. Includes engine rebuilding techniques and principles, basics of engine fasteners, sealants, and tightening methods.

Course Learning Outcomes

1. Analyze four stroke small engine systems for optimal use and operation.
2. Describe four stroke small engine systems, operation, function, maintenance, and repair.
3. Evaluate fluids, sealants, and lubricants used in four stroke small engine systems.
4. Describe proper methods of four stroke small engine repair and overhaul.
5. Examine tools and fasteners used in the maintenance, repair, and overhaul of four stroke small engines.

PST 1215

Four Stroke Small Engine Systems Lab

Credit hours: 1

Enhances the technical theory covered in the PST 1210 course. Provides an engine laboratory experience by following industry task lists for four stroke small engine systems. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual vehicles and vehicle systems of major manufacturers in completing the task lists. Course Lab fee of \$12 for materials applies.

Course Learning Outcomes

1. Describe four stroke small engine system operation, function, maintenance, and repair.
2. Apply basic inspection and repair principles of the four stroke internal combustion small engine operation for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on four stroke small engine components diagnosis.
4. Analyze normal and abnormal four stroke small engine component wear.
5. Demonstrate proper disassembly and reassembly procedures of four stroke small engine components following industry standards.
6. Execute the proper use of electronic service information in the disassembly and reassembly of four stroke small engine components.

PST 2110

Snowmobile Systems

Credit hours: 2

Studies the operation, diagnosis, and repair of snowmobile systems. Emphasizes design, capabilities, and uses of the snowmobile system. Includes instruction on individual systems and how these systems interrelate into the platform as a whole. Stresses safety procedures. Covers advanced repair techniques.

Course Learning Outcomes

1. Discuss various snowmobile systems operation, function, maintenance, and repair.
2. Analyze snowmobile systems for optimal use and operation.
3. Interpret correct snowmobile systems operation and function.
4. Differentiate fluids, sealants, and lubricants used on snowmobile systems.
5. Examine various manufacturers methods of snowmobile systems repair and overhaul.
6. Differentiate tools and fasteners used in the maintenance, repair, and overhaul of snowmobile systems.

PST 2115

Snowmobile Systems Lab

Credit hours: 1

Enhances the technical theory covered in the PST 2110 course. Provides a laboratory experience for snowmobiles by following industry task lists for snowmobile systems. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual vehicles and vehicle systems of major manufacturers in completing the task lists. Covers advanced repair techniques. Stresses safety procedures.

Course Learning Outcomes

1. Describe snowmobile systems operation, function, maintenance, and repair.
2. Apply basic inspection and repair principles of the snowmobile systems operations for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on snowmobile systems components diagnosis.
4. Analyze normal and abnormal wear of snowmobile systems components.
5. Demonstrate proper disassembly and reassembly procedures of snowmobile systems components following industry standards.
6. Execute the proper use of electronic service information in the disassembly and reassembly of snowmobile systems components.

PST 2120

ATV and UTV Systems

Credit hours: 2

Studies the history, operation, diagnosis, and repair of ATV and UTV systems. Emphasizes design, capabilities, and uses of the ATVs and UTVs. Includes instruction on individual systems and how these individual systems interact on the machine as a whole. Stresses safety procedures. Covers advanced repair techniques.

Course Learning Outcomes

1. Discuss various ATV and UTV systems regarding operation, function, maintenance, and repair.
2. Analyze ATV and UTV systems for optimal use and operation.
3. Interpret correct ATV and UTV systems maintenance and repair procedures.
4. Differentiate optimal fluids, sealants, and lubricants used on ATV and UTV systems.
5. Examine various manufacturers methods of ATV and UTV systems repair and overhaul.
6. Differentiate proper tools and fasteners used in the maintenance, repair, and overhaul of ATV and UTV systems.

PST 2125

ATV and UTV Systems Lab

Credit hours: 1

Enhances the technical theory covered in the PST 2120 course. Provides a laboratory experience for ATV and UTVs by following industry task lists for ATV and UTV systems. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual vehicles and vehicle systems of major manufacturers in completing the task lists. Covers advanced repair techniques. Stresses safety procedures.

Course Learning Outcomes

1. Distinguish various manufacturers ATV and UTV systems operation, function, maintenance, and repair.
2. Compare basic inspection and repair principles of various manufacturers ATV and UTV systems operations for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on ATV and UTV systems components diagnosis.
4. Analyze normal and abnormal wear of ATV and UTV systems components.
5. Examine proper disassembly and reassembly procedures of ATV and UTV systems components following industry standards.
6. Model the proper use of electronic service information in the disassembly and reassembly of ATV and UTV systems components.

PST 2130

Small Motorcycles and Scooters

Credit hours: 2

Studies the history, operation, diagnosis, and repair of small motorcycles including dirt bikes and dual purpose motorcycles and scooters. Emphasizes design, capabilities, and uses of the motorcycle systems. Examines motorcycle systems and how these systems interact. Stresses safety procedures.

Course Learning Outcomes

1. Discuss various motorcycle systems regarding operation, function, maintenance, and repair.
2. Analyze motorcycle systems for optimal use and operation.
3. Interpret correct motorcycle systems maintenance and repair procedures.
4. Differentiate optimal fluids, sealants, and lubricants used on motorcycle systems.
5. Examine various manufacturers methods of motorcycle systems repair and overhaul.
6. Differentiate proper tools and fasteners used in the maintenance, repair, and overhaul of motorcycle systems.

PST 2135

Small Motorcycles and Scooters Lab

Credit hours: 1

Enhances the technical theory covered in the PST 2130 course. Provides a laboratory experience for small motorcycles by following industry task lists for off-road bikes and dual purpose motorcycles and scooters. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual motorcycles and scooters and systems of major manufacturers in completing the task lists. Stresses safety procedures.

Course Learning Outcomes

1. Distinguish various manufacturers small motorcycle systems operation, function, maintenance, and repair.
2. Compare basic inspection and repair principles of the small motorcycle systems operations for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on small motorcycle systems component diagnosis.
4. Analyze normal and abnormal wear of small motorcycle systems components.
5. Examine proper disassembly and reassembly procedures of small motorcycle systems components following industry standards.
6. Model the proper use of electronic service information in the disassembly and reassembly of small motorcycle systems components.

PST 2230

Street and Sport Motorcycles

Credit hours: 2

Studies the history, operation, diagnosis, and repair of larger street motorcycles including cruiser style and sport bikes. Emphasizes design, capabilities, and uses of the complex street motorcycle systems. Includes advanced diagnosis and repair of complex street bike systems. Examines motorcycle systems and how these systems interact. Stresses safety procedures.

Course Learning Outcomes

1. Explain motorcycle systems operation, function, maintenance, and repair.
2. Analyze motorcycle systems for optimal use and operation.
3. Demonstrate correct motorcycle systems maintenance and repair.
4. Evaluate fluids, sealants, and lubricants used on motorcycle systems.
5. Describe proper methods of motorcycle systems repair and overhaul.
6. Select proper tools and fasteners used in the maintenance, repair, and overhaul of motorcycle systems.

PST 2235

Street and Sport Motorcycle Lab

Credit hours: 1

Enhances the technical theory covered in the PST 2230 course. Provides a laboratory experience for larger street motorcycles by following industry task lists for larger street motorcycles including cruiser style and sport bikes. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual vehicles and vehicle systems of major manufacturers in completing the tasks. Covers advanced repair techniques. Stresses safety procedures.

Course Learning Outcomes

1. Describe larger street motorcycle systems operation, function, maintenance, and repair.
2. Apply basic inspection and repair principles of the larger street motorcycle systems operations for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on larger street motorcycle systems component diagnosis.
4. Analyze normal and abnormal wear of larger street motorcycle systems components.
5. Demonstrate proper disassembly and reassembly procedures of larger street motorcycle systems components following industry standards.
6. Execute the proper use of electronic service information in the disassembly and reassembly of larger street motorcycle systems componen

PST 2240

Outdoor Power Equipment

Credit hours: 2

Studies the operation, diagnosis, and repair of the most popular segments of the outdoor power equipment market. Emphasizes design, capabilities and uses of lawn mowers, chainsaws, trimmers, edgers, tillers, snow blowers, and generators. Includes instruction on basic maintenance and reliability of these units. Teaches rechargeable and electric outdoor power equipment. Stresses instruction of safety procedures.

Course Learning Outcomes

1. Explain outdoor power equipment systems operation, function, maintenance, and repair.
2. Analyze outdoor power equipment systems for optimal use and operation.
3. Demonstrate correct outdoor power equipment systems maintenance and repair.
4. Evaluate fluids, sealants, and lubricants used on outdoor power equipment systems.
5. Describe proper methods of outdoor power equipment systems repair and overhaul.
6. Select proper tools and fasteners used in the maintenance, repair, and overhaul of outdoor power equipment systems.

PST 2245

Outdoor Power Equipment Systems Lab

Credit hours: 1

Enhances the technical theory covered in the PST 2240 course. Provides a laboratory experience for outdoor power equipment by following industry task lists for the most popular segments of the outdoor power equipment market. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual equipment of major manufacturers in completing the tasks. Includes the study of rechargeable and electric outdoor power equipment. Stresses safety procedures.

Course Learning Outcomes

1. Distinguish various manufacturers outdoor power equipment systems operation, function, maintenance, and repair.
2. Compare basic inspection and repair principles of the outdoor power equipment systems operations for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on outdoor power equipment systems components diagnosis.
4. Analyze normal and abnormal wear of outdoor power equipment systems components.
5. Examine proper disassembly and reassembly procedures of outdoor power equipment systems components following industry standards.
6. Model the proper use of electronic service information in the disassembly and reassembly of outdoor power equipment systems components.

PST 2250

Personal Watercraft

Credit hours: 2

Studies the history, operation, diagnosis, and repair of personal watercraft systems. Includes the study of their unique drive systems and advanced cooling systems. Covers advanced diagnosis and repair of complex personal watercraft systems. Discusses hull repair and graphics installation. Stresses proper safety procedures.

Course Learning Outcomes

1. Explain personal watercraft systems operation, function, maintenance, and repair.
2. Analyze personal watercraft systems for optimal use and operation.
3. Demonstrate correct personal watercraft systems, operation, function, maintenance, and repair.
4. Evaluate fluids, sealants, and lubricants used on personal watercraft systems.
5. Describe proper methods of personal watercraft systems repair and overhaul.
6. Select proper tools and fasteners used in the maintenance, repair, and overhaul of personal watercraft systems.

PST 2255

Personal Watercraft Systems Lab

Credit hours: 1

Enhances the technical theory covered in the PST 2250 course. Provides a laboratory experience for personal watercraft by following industry task lists for the most popular segments of the personal watercraft market. Emphasizes demonstrations, observations, and hands-on participation. Utilizes actual equipment of major manufacturers in completing the tasks. Covers advanced repair techniques of complex personal watercraft systems. Stresses safety procedures.

Course Learning Outcomes

1. Distinguish various manufacturers personal watercraft systems operation, function, maintenance and repair.
2. Compare basic inspection and repair principles of the personal watercraft systems operations for optimal use and operation.
3. Demonstrate the proper use of precision measurement instruments on personal watercraft systems components diagnosis.
4. Analyze normal and abnormal wear of personal watercraft systems components.
5. Examine proper disassembly and reassembly procedures of personal watercraft systems components following industry standards.
6. Model the proper use of electronic service information in the disassembly and reassembly of personal watercraft systems components.

PSY 1010

General Psychology SS

Credit hours: 3

An introductory course in modern scientific psychology. Covers major domains of scientific psychology including biological foundations, sensations, perception, learning, motivation, human development and abnormal psychology. Examines major psychological and professional applications.

Course Learning Outcomes

1. Identify key concepts and theories in the field of psychology.
2. Explain the scientific foundations of psychology.
3. Apply important concepts and findings in psychology to your own life and to society.
4. Apply important life and professional skills such as written communication, critical thinking, and informational literacy.

PSY 1100

Human Development Life Span SS

Credit hours: 3

Explores genetic and environmental influences on human development and behavior from conception and birth through old age and death. Examines typical physical, cognitive, and psychosocial changes at each developmental stage throughout the life span. Explores major theoretical perspectives on human development. Canvas Course Mats \$70/McGraw applies.

Course Learning Outcomes

1. Evaluate human development research.
2. Describe typical human development across the life span.
3. Explain major developmental theories and influences of biology and the environment on human development and behavior.
4. Outline the scientific process, and how it is used to study human development and behavior.

PSY 2020

Psychology as a Science and Profession WE

Credit hours: 3

Exposes students to psychology as a field of study and as a career option and serves as a foundation of their undergraduate education. Teaches the basics of social science writing convention (scholarly tone, precise language, APA style, etc.). Shows how psychology can provide insight into important social and scientific requirements.

Course Learning Outcomes

1. Demonstrate mastery of the basics of social science writing conventions (scholarly tone, precise language, APA style, etc.).
2. Discover reputable scholarly information about psychological research.
3. Create educational and career goals to guide their undergraduate psychology experience.
4. Apply basic psychological principles to societal and/or scientific questions.

PSY 2300

Abnormal Psychology

Credit hours: 3

Examines the psychology, historical explanations, and current biological and psychological theories of abnormal behavior. Emphasizes the description of mental disorders according to the American Psychiatric Association Diagnostic and Statistical Manual. Canvas Course Mats \$42/Lumen applies.

Course Learning Outcomes

1. Explain fundamental aspects of the etiology, diagnosis, and treatment of mental disorders.
2. Describe professional competencies in psychology including ethical standards of behavior, the scientific foundations of assessment and treatment, and cultural competence.
3. Discuss socially- held and personally-held stigmas related to mental health, and the effects of those stigmas on individuals with mental disorders.
4. Apply critical skills such as written communication, ability to work with others, problem-solving and lifelong learning skills.

PSY 3030

Research Methods for Psychology

Credit hours: 4

Explains the logic of the classical true experiment and how it permits causal inferences. Compares and contrasts the benefits and drawbacks of quasi-experimental and correlational research designs. Includes the design of an empirical psychological study. Covers compliance with guidelines for ethical research as codified in law and the American Psychological Association's ethics code. Requires collection, analysis, and presentation of quantitative data for an empirical psychological study. Includes a lab.

Course Learning Outcomes

1. Explain the logic of the classical true experiment and how it permits causal inferences.
2. Compare the benefits and drawbacks of quasi-experimental and correlational research designs.
3. Collaborate with peers to design an empirical psychological study.
4. Comply with guidelines for ethical research as codified in law and the American Psychological Association's ethics code.
5. Interpret quantitative data for an empirical psychological study.

PSY 3110

Statistics for the Behavioral Sciences

Credit hours: 4

Introduces use of statistics for research purposes. Teaches descriptive and inferential statistics. Includes central tendency, variability, correlation and regression, probability (particularly probability distributions), and various inferential techniques such as t-test for independent and dependent samples, one-way and two-way analysis of variance, post-hoc tests, and non-parametric statistics.

Course Learning Outcomes

1. Interpret statistics found in newspapers, magazines, and academic research papers.
2. Integrate statistical practice into behavioral science research.
3. Conduct a statistical analysis in academic settings or other settings.
4. Apply statistical theory to behavioral science research.

REC 1527

Rock Climbing I

Credit hours: 1

Teaches basic rock climbing skills to the beginning rock climber. Includes knot tying, belaying, rappelling, top-rope anchors and site management, beginning lead climbing, and rescue techniques. Course fee of \$20 for equipment applies.

Course Learning Outcomes

1. Describe the history and evolution of rock climbing
2. Tie basic knots used in indoor rock climbing
3. Demonstrate rope and equipment management
4. Demonstrate basic rock climbing techniques
5. Safely and competently operate belay, rappel, and self rescue techniques
6. Conduct responsible rock climbing site management

REC 1535

Backpacking

Credit hours: 1

Covers the basic aspects of backpacking, camping, and wilderness travel. Includes labs, lectures, demonstration, audio-visual and extended field trips. Teaches basic components of backpacking and lifelong values of outdoor recreation. Requires multi-night backpacking trip. Course fee of \$88 for transportation, equipment, and support applies.

Course Learning Outcomes

1. Describe the concepts of backpacking at the beginning and intermediate levels
2. Demonstrate how to comfortably and safely spend time in the backcountry, including equipment, knots, weather, cooking, navigation
3. Discuss minimal impact backpacking practices as part of the Leave No Trace philosophy
4. Develop an appreciation for nature and identify the opportunities it affords
5. Travel safely in the wilderness

REC 1542

Wilderness First Responder

Credit hours: 2

Teaches advanced emergency care specific to situations encountered in a wilderness context. Prepares students for certification exam in Wilderness First Responder (WFR) or Wilderness Emergency Medical Technician Module (WEMT). Experiential Learning Credit must be from a WFR course with at least 72 hrs of contact time.

Course Learning Outcomes

1. Learn the nuances of treating life threatening situations in the wilderness.
2. Learn how to evaluate patients in the wilderness.
3. Learn how to transport patients from the wilderness.
4. Learn how to improvise making medical equipment with what you can find in the field.

REC 1600

Winter Exploration

Credit hours: 1

Teaches basics of snowshoeing, cross-country skiing, and winter camping, including Leave No Trace, cooking, staying warm, and building shelters. Covers risks and hazards of the winter environment. Requires overnight camping. Course lab fee of \$45 course fee for equipment applies.

Course Learning Outcomes

1. Demonstrate ability to dress appropriately for the winter environment;
2. Demonstrate understanding of the hazards of the winter environment;
3. Demonstrate proficiency in winter travel techniques;
4. Demonstrate ability to build a variety of snow shelters.

REC 2200
Foundations of Recreation

Credit hours: 3

Introduces the study of Recreation. Studies the history and philosophy of the field of Recreation. Analyzes problems in areas covered under the umbrella of Recreation. Explores the Recreation sub-disciplines and related career and employment opportunities in this area.

Course Learning Outcomes

Please see the department for information.

REC 2400

Principles of Experiential Education in Recreation

Credit hours: 3

Introduces the principles and concepts of experiential education in the general context of recreation programming and prepares students for further study and skill development in context specific experiential education programming. Teaches history, theory, and ethics in the domain. Offers experience in the use of learning cycles, facilitation, feedback, processing, and effective communication techniques, risk management from both physical and emotional perspectives. Uses pedagogical lecture methods and experiential learning. Requires participation in experiential education programming and observation and participation in programs outside of class time.

Course Learning Outcomes

1. Explain experiential learning theories.
2. Discuss the history and evolution of experiential education.
3. Develop lesson plans for experiential education-based curricula.
4. Evaluate and assess experiential education-based lessons.
5. Apply interpersonal and group dynamics theory and principles of practice.
6. Apply institutional standards and practices of experiential education programs.

REC 2600

Principles of Outdoor and Adventure Education

Credit hours: 3

Teaches leadership of outdoor and adventure education topics necessary for instructing the beginning student. Uses pedagogical lecture methods and experiential learning. Includes industry standard presentations and critiques of orienteering, map reading, packing, backcountry cooking, campsite set-up, food rationing, river crossing, proper clothing, water purification, hygiene, weather forecasting, backcountry travel, Leave NO Trace ethics, and personal risk management. Requires hiking or orienteering assignments outside of class. Prepares students to qualify for certification as Wilderness Stewards through the Wilderness Education Association. Addresses risk management from both physical and emotional perspectives. Uses pedagogical lecture methods and experiential learning. Requires observation and participation in programs outside of class time.

Course Learning Outcomes

1. Explain outdoor and adventure-based learning theories;
2. Discuss the history and evolution of outdoor and adventure education;
3. Develop lesson plans for outdoor and adventure education-based curricula;
4. Evaluate and assess outdoor and adventure education-based lessons;
5. Apply interpersonal and group dynamics theory and principles of practice;
6. Apply institutional standards and practices of outdoor and adventure education programs.
7. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Appreciation of the pedagogical applications of outdoor and adventure education; 2 - Awareness of the risks and responsibilities inherent in delivering outdoor and adventure education in recreation programming; 3 - Dedication to effective and ethical delivery of outdoor and adventure education programs.

REC 2700

Leave No Trace Trainer

Credit hours: 1

Designed to train environmental leaders and interpreters in the delivery of Leave No Trace (LNT) principles and practices. Emphasizes the skills and ethics necessary for low impacts on the environment.

Course Learning Outcomes

1. To be able to describe the six principles of Leave No Trace.
2. To be able to practice skills that pertain to each of the six principles of Leave No Trace.
3. To be able to articulate and practice ethical behavior in the outdoors.
4. To be able to share the principles of Leave No Trace with at least one other person.

REC 3100
Recreation Program Planning

Credit hours: 3

Investigates program planning and development in outdoor programs, camps, agencies, and education organizations. Emphasizes writing of technical program plans that state goals, program organization, curriculum, budgets, marketing, and evaluation.

Course Learning Outcomes

Please see the department for information.

REC 3200

Inclusive Recreation

Credit hours: 3

Recreation service delivery for individuals with disabilities and other under-represented groups. Presents solutions to full recreation participation for individuals with physical, sensory, emotional and/or intellectual impairments. Incorporates hands on experience working with diverse populations. Course fee of \$22 for field entrance charge applies.

Course Learning Outcomes

1. Describe medical and disabling conditions, disorders and impairments that affect an individual's physical, cognitive, emotional and social functioning across the lifespan
2. Apply inclusive practices to the design and operation of accessible recreation and therapeutic recreation programs, services and facilities.
3. Utilize a variety of assistive techniques, adaptive devices and equipment, and program adaptations to assist individuals with illnesses and disabilities to achieve maximum independence
4. Apply local, state, and federal legislation, regulations and standards to recreation and therapeutic recreation services.
5. Promote, advocate, interpret, and articulate the concerns of leisure service systems for all populations and services

REC 3300

Wilderness Skills

Credit hours: 1

Teaches tools and skills needed for surviving in the wilderness. Includes orienteering, map reading, packing, backcountry cooking, campsite set-up, food rationing, river crossing, proper clothing, water purification, hygiene, weather forecasting, backcountry travel, Leave NO Trace ethics, and personal risk management. Course fee of \$30 for transportation, equipment, and support applies.

Course Learning Outcomes

1. Demonstrate basic backcountry cooking and camping techniques;
2. Navigate off-trail environments;
3. Demonstrate ability to orienteer in remote locations;
4. Travel safely in the wilderness;
5. Demonstrate ability to efficiently plan and pack-out for wilderness travel.

REC 3400

Risk Management

Credit hours: 3

Studies outdoor recreation risk management. Focuses on applying models of risk management, negligence, torts, risk management planning, and outdoor recreation safety.

Course Learning Outcomes

1. Discuss the need to be prepared with risk management plans
2. Describe theoretical and philosophic underpinnings of risk management
3. Conduct assessments of risk management policies
4. Develop risk management plans
5. Analyze and evaluate scenarios and behaviors

REC 3500

Recreation Administration

Credit hours: 3

Analyzes the internal organization of a recreation department dealing with finances and accounting, records and reports, publicity and public relations, state and federal legislation, staff organization, coordination of community resources.

Course Learning Outcomes

1. Knowledge of marketing techniques and strategies.
2. Understanding of and ability to apply personnel management techniques, including job analysis, recruitment, selection, training, motivation, career development and evaluation of staff and volunteers.
3. Understanding of and ability to implement principles and procedures related to operation and care of resources, areas, and facilities.
4. Understanding of various techniques of financing, budgeting, and fiscal responsibility.
5. Understanding of and ability to implement public relations and promotions strategies.
6. Knowledge of the legal foundations and responsibilities of leisure service agencies, and the legislative process and the impact of policy formation on leisure behaviors and service in all levels of government, community organizations, and business enterprises.
7. Understanding of legal concepts, including contracts, human rights, property, and torts as applied to leisure service agencies.
8. Understanding the principles of risk management planning, and the ability to participate in the development and implementation of a risk management plan.

REC 420R

Outdoor Leadership and Management Practicum

Credit hours: 2

Provides students with practical work experience (volunteer or paid) either through a program offered by the college or in an existing outdoor or experientially based agency. Includes participation in a 150 hour department approved supervised outdoor recreation service. Examines topics that vary by practicum experience. May be repeated for a total of 6 hours toward graduation. May be graded credit/no credit.

Course Learning Outcomes

1. Apply classroom based learning to practical professional contexts;
2. Develop professional relationships with coworkers, supervisors, clients, and other stakeholders;
3. Recognize personal career interests relative to their practicum experiences;
4. Network with professionals regarding career development and other opportunities.

REC 4400

Natural Resource and Protected Area Management

Credit hours: 3

Examines topics in the management of Nation Parks, National Forests, Bureau of Land Management, and other public lands and protected areas focusing on management strategies and techniques for addressing common resource and social problems in natural resource recreation management. Emphasizes case studies and problem analysis. Course fee of \$30 applies for transportation, support applies.

Course Learning Outcomes

1. Identify the historical roots of park management;
2. Define the models and theoretical foundations of outdoor recreation management;
3. Apply critical problem solving and decision making in the role of a park manager;
4. Discuss the public participation process in natural resource management;
5. Apply recreation resource management techniques;
6. Ability to demonstrate knowledge of conceptual models of park management;
7. Define the agencies that manage public lands and their mandates;
8. Demonstrate proper recreation resource techniques to reduce impacts.

REC 4800

Professional Preparation in Recreation

Credit hours: 1

Prepares the student to make the transition from student to professional in Outdoor Recreation. Includes discussion of internship selection, application materials, interviewing skills, job search, salary negotiation, and other professional issues. Provides mentoring during the internship search process.

Course Learning Outcomes

1. Apply both the federal (U.S.) and traditional job search processes, to produce a complete and thorough profile on usajobs.gov for current and future internships and employment opportunities.
2. Produce meaningful resumes and cover letters.
3. Evaluate the requirements of the student and internship site for an internship experience.
4. Defend the internship site as a valuable step in the education process.
5. Explain the level of professionalism required in the job search and workplace.

REC 481R

Senior Internship

Credit hours: 1 to 8

Provides supervised, hands-on field experience for excellent students preparing to take entry-level positions in recreation. May be repeated for a maximum of 12 credits toward graduation. May be graded Credit/No Credit.

Course Learning Outcomes

1. Apply classroom based learning to practical professional contexts;
2. Develop and maintain professional relationships with coworkers, supervisors, clients, and other stakeholders;
3. Define personal career interests relative to their internship experiences;
4. Develop additional professional development experiences;
5. Network with professionals regarding career development and other opportunities.
6. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Professional demeanor; 2 - Desire to seek further experience in this area or different areas.

RESP 1540

Survey of Respiratory Therapy

Credit hours: 1

Introduces students to the profession of respiratory therapy. Includes field trips and limited lab activities. Open to all students.

Course Learning Outcomes

1. Describe the respiratory therapist's role in adult, neonatal, and pediatric respiratory care.
2. Describe the role and career opportunities of respiratory therapy in both inpatient and outpatient non critical health care settings.
3. Outline the educational requirements and process to become a registered respiratory therapist.
4. Explain the process and procedures for Respiratory Therapy program acceptance and the requirements for student status in affiliated clinical facilities.
5. Discuss the purpose and goals of Respiratory Therapy professional organizations.

RESP 2145

Fundamentals of Respiratory Care Lab

Credit hours: 3

Provides laboratory experiences to develop basic patient interaction and assessment skills required of an entry-level respiratory therapist. Emphasizes students' ability to carry out commonly ordered respiratory therapy procedures. Includes participation in respiratory care simulations. Course lab fee of \$298 applies.

Course Learning Outcomes

1. Demonstrate correct techniques for the prevention of infection while assessing vital signs and auscultating lung sounds.
2. Demonstrate correct techniques of applying humidity, bland aerosol, and medicated aerosol to patients.
3. Demonstrate correct techniques for setting up, administering, and monitoring the safe delivery and efficacy of bronchial hygiene therapies.
4. Demonstrate correct techniques for setting up, administering, and monitoring the safe delivery and efficacy of hyperinflation therapies.
5. Explain scientific principles and theory supporting therapeutic modalities required of an entry-level respiratory therapist.
6. Demonstrate correct airway management techniques.
7. Demonstrate correct arterial blood gas puncture and analysis.

RESP 2165

Mechanical Ventilation Lab

Credit hours: 2

Provides laboratory experience with mechanical ventilation techniques and equipment. Emphasizes patient observation and assessment skills, as well as techniques in initiating, troubleshooting, monitoring, managing, and weaning ventilator parameters. Course lab fee of \$102 applies.

Course Learning Outcomes

1. Identify and correctly assemble and calibrate various models of mechanical ventilators.
2. Implement the various modes of invasive mechanical ventilation.
3. Monitor ventilator parameters and patient parameters while on mechanical ventilation.
4. Adjust ventilator parameters and settings according to patient response to mechanical ventilation.
5. Initiate mechanical ventilation with patient specific parameters.
6. Identify the cause of ventilator alarms and dysfunction.
7. Analyze mechanical ventilation waveforms.

RESP 2210

Cardiopulmonary and Renal Anatomy and Physiology I

Credit hours: 3

Introduces anatomy and physiology of the pulmonary, cardiovascular, and renal systems. Includes principles of fluid dynamics governing oxygen and carbon dioxide transport throughout the body.

Course Learning Outcomes

1. Describe the anatomy and function of the pulmonary system.
2. Explain the transport of oxygen and carbon dioxide throughout the body.
3. Discuss the roles of the pulmonary and renal systems in acid/base regulation of the body.
4. Describe the anatomy and function of the cardiovascular system.
5. Recognize the various hemodynamic measurements related to ventilation.
6. Delineate the nervous system's control of breathing.
7. List the interactions of ventilation/perfusion relationships and their outcomes.
8. Identify the anatomy and function of the renal system as it relates to cardiopulmonary function.

RESP 2230

Cardiopulmonary Pathophysiology I

Credit hours: 2

Covers the underlying pathophysiology of medical and surgical cardiopulmonary diseases. Emphasizes abnormal physiological processes which result in the signs and symptoms of each cardiopulmonary disorder. Includes diagnosis, selection, and implementation of therapeutic modalities and the role of the respiratory therapist in treatment.

Course Learning Outcomes

1. Describe the etiologies, pathological processes, and clinical manifestations of airway diseases in adults and children.
2. Discuss causes, pathology, and clinical manifestations of chest wall malformations or disruptions.
3. Recognize the etiologies, pathology, and clinical manifestations caused by the disruption of neurological control of breathing.
4. Explain the pathologies and etiologies of respiratory dysfunction and diseases commonly encountered by neonates and infants.
5. Describe the etiology, pathophysiology, and clinical manifestations of diseases that disrupt alveolar function and pulmonary circulation.
6. Analyze the laboratory results which may result from each disease considered in selected respiratory diseases.
7. Identify clinical interventions which would be indicated in an appropriate treatment regimen for each disease considered.

RESP 2250

Basic Patient Assessment

Credit hours: 2

Introduces basic patient assessment techniques, including respiratory therapy application of obtaining patient history and physical examination. Emphasizes integration of laboratory and imaging studies.

Course Learning Outcomes

1. Demonstrate appropriate techniques for the patient interview and physical examination in the respiratory setting.
2. List normal values for pulmonary function studies, arterial blood gas, and other oxygenation assessments.
3. Demonstrate correct technique for basic interpretation of imaging studies.
4. List normal values for common hematologic and other body system tests.
5. Explain the relationships between the anatomic changes effected by various pulmonary pathophysiologies and the resulting physiologic consequences and clinical manifestations.
6. Describe the rationale for implementation of therapist driven protocols and appropriate recording of patient data in the medical record.

RESP 2270

Application of Cardiopulmonary Diagnostics

Credit hours: 3

Introduces theory and clinical application of basic cardiopulmonary diagnostic studies, including simple spirometry, arterial and mixed venous blood gases, and electrocardiograms. Emphasizes critical thinking skills in interpretation of diagnostic findings.

Course Learning Outcomes

1. Interpret clinical significance of arterial blood gas results.
2. Interpret clinical significance of mixed venous blood gas results.
3. Interpret clinical significance of simple spirometry results.
4. Interpret clinical significance of lung volume and DLCO studies.
5. Interpret clinical significance of basic ECG readings.
6. Interpret clinical significance of hemodynamic measurements.

RESP 2300

Fundamentals of Respiratory Care

Credit hours: 3

Examines principles and theory of clinical application of basic respiratory treatments and therapies, including indications, contraindications, hazards and complications, and equipment management. Includes principles and theory of clinical application of airway management and invasive and non-invasive ventilation. Emphasizes patient assessment and critical thinking skills. Course fee of \$135 for professional dues applies.

Course Learning Outcomes

1. Discuss proper techniques for the storage, transportation, and administration of medical gases.
2. Discuss proper techniques and theory regarding humidity and bland aerosol therapies.
3. Describe proper techniques and theory regarding lung expansion and airway clearance therapies.
4. Describe proper techniques and theory regarding airway pharmacology and aerosolized drug administration.
5. Discuss proper techniques and theory regarding principles of infection control.
6. Establish and maintain a wide spectrum of artificial airway devices.
7. Demonstrate appropriate and safe suctioning techniques to clear artificial and patient airways.
8. Apply appropriate non-invasive positive pressure ventilation to achieve desired individual patient outcomes.
9. Explain the skills and science of basic and advanced emergency life support techniques and demonstrate proficiency in Basic Life Support techniques as prescribed by the American Heart Association's Basic Life Support for Health Care Providers (BLS).

RESP 2320

Mechanical Ventilation I

Credit hours: 3

Introduces basic principles of mechanical ventilation, including determining the need for ventilation support, as well as initiation, maintaining, monitoring, and weaning from mechanical ventilation.

Course Learning Outcomes

1. Identify criteria used to determine the need for mechanical ventilator support.
2. Discuss the effects of mechanical ventilation on the various body systems.
3. Determine appropriate classes of mechanical ventilators for adult patients with specific types of respiratory needs.
4. Describe the modes of mechanical ventilation.
5. Demonstrate initiation and management of mechanical ventilation.
6. Interpret ventilatory wave-forms.
7. Manage non-invasive positive pressure ventilation according to protocols and patient needs.
8. Describe the process of weaning a patient from mechanical ventilation.
9. Explain mechanical ventilator settings.

RESP 2330

Entry Level Respiratory Therapy Review

Credit hours: 1

Provides a comprehensive review to integrate concepts and skills in Respiratory Therapy. Course fee of \$35 for testing services applies.

Course Learning Outcomes

1. Describe concepts and procedures of respiratory care regarding patient evaluation.
2. Explain the use of different respiratory care modalities used in patient support.
3. Interpret pulmonary diagnostic testing results.
4. Delineate procedures regarding implementation, maintenance, and weaning of mechanical ventilation.
5. Describe interventions and procedures used in emergency respiratory care.
6. Explain the application and risks of using medical gas therapies.
7. Explain the use of special procedures in respiratory care.
8. Demonstrate airway maintenance and care.

RESP 2420

Critical Thinking in Respiratory Care

Credit hours: 2

Provides learning experiences for students to develop a deep and broad understanding of respiratory care content based on sound clinical decision making. Requires students to solve practical problems in respiratory care.

Course Learning Outcomes

1. Use evidence-based-medicine to guide decision-making.
2. Explain how problem-solving and decision-making relate to critical thinking.
3. Discuss essential skills for critical thinking in respiratory care practice.
4. Describe the role of the respiratory therapist in the use of clinical practice guidelines, respiratory care protocols, and critical pathways.
5. Outline the key steps in development and implementation of the respiratory care plan.
6. Evaluate treatment and outcomes of interventions to modify care plans.

RESP 2520

Principles of Pharmacology

Credit hours: 2

Introduces pharmacology, including general principles, autonomic and central nervous system agents, cardiovascular agents, and immunotherapeutic agents. Includes the study of drugs used in managing renal, GI tract, endocrine, and infectious or neoplastic diseases and disorders.

Course Learning Outcomes

1. Identify the modes and phases of drug administration and delivery.
2. Identify mechanisms of action, adverse actions, and interactions of medications.
3. Demonstrate methods of monitoring pharmaceutical efficacy and side effect.
4. Explain the desired effects of pharmacologic interventions.
5. Recommend pharmacologic interventions for various disease processes.
6. Recommend changes to drug, dosage, administration, frequency, mode, or concentration based on efficacy of treatment.

RESP 2705

Clinical Practice I

Credit hours: 3

Provides clinical rotations in the hospital environment allowing for mentored practice of skills. Emphasizes application of assessment skills including medical chart reviews and patient observation and examination. Includes recommendation, performance, and modification of basic therapies.

Course Learning Outcomes

1. Collaborate effectively with the clinical health care team.
2. Conduct basic respiratory assessment including patient chart review, observation and examination.
3. Utilize assessment data and patient medical history to recommend and/or modify basic therapies.
4. Demonstrate correct techniques for assessing vital signs and respiratory function.
5. Safely administer basic respiratory care in the clinical environment.

RESP 2715

Specialty Clinical Experiences

Credit hours: 1

Provides opportunity to observe and participate in specialty areas of the respiratory care profession.

Course Learning Outcomes

1. Communicate and collaborate effectively with a clinical health care team.
2. Conduct pulmonary and cardiac testing.
3. Interpret results of pulmonary function tests, ECG, ABGs.
4. Participate in long term maintenance of artificial airways.
5. Draw arterial blood gases using correct technique.
6. Analyze arterial blood gases.

RESP 2725

Clinical Practice II

Credit hours: 3

Provides clinical rotations in selected medical settings, focusing on skills of initiation, management, and weaning of mechanical ventilation. Includes case studies as well as patient care.

Course Learning Outcomes

1. Collaborate effectively with a clinical health care team.
2. Assemble and calibrate various models of mechanical ventilators.
3. Implement the various modes of invasive and non-invasive mechanical ventilation.
4. Participate with a RRT mentor in correctly monitoring and changing the various ventilatory parameters according to patient response.
5. Participate with a RRT mentor in correctly weaning mechanical ventilatory parameters indicated by patient progress.

RESP 3210

Cardiopulmonary and Renal Anatomy and Physiology II

Credit hours: 2

Addresses cardiopulmonary anatomy and physiology specifically for the advanced-level respiratory care practitioner focusing on the advanced physiologic considerations of the cardiovascular, pulmonary, and renal systems.

Course Learning Outcomes

1. Interpret common cardiac dysrhythmias and the various ECG wave-forms generated as a result of the dysrhythmias.
2. Recommend interventions based on accurate advanced-level evaluation of ECG and hemodynamic measurements parameters.
3. Recommend management strategies based on signs and symptoms in patients experiencing difficulties in the processes of external respiration, internal respiration, and cellular respiration.
4. Explain the interrelationships of electrolyte levels, including the importance of anion-gap on ABG interpretation.

RESP 3220

Cardiopulmonary Pathophysiology II

Credit hours: 2

Examines pathophysiology and diagnosis of coronary artery disease, fungal lung diseases, neoplasms, HIV, adult respiratory distress syndrome (ARDS), chest trauma, shock, multiple organ dysfunction syndrome (MODS), and differentiation of extracellular and intracellular fluid compartments.

Course Learning Outcomes

1. Describe the pathology, incidence rate, prognosis, and morbidity of coronary artery disease.
2. Differentiate between normal ECGs and various forms of dysrhythmias.
3. Discuss pathologies associated with cardiac dysrhythmias.
4. Investigate the relationship between the endemic nature of fungal diseases and their etiologies and pathologies.
5. Interpret the clinical findings related to sarcoidosis and Pulmonary Interstitial Fibrosis (PIF).
6. Analyze the cellular pathology and the secondary effects on surrounding tissue found in pulmonary adenocarcinoma.
7. Describe the major fluid compartments and the effects of imbalances in the intra- and extracellular cations on fluid balance between compartments.

RESP 3260

Neonatal/Pediatric Critical Care

Credit hours: 3

Examines pediatric and neonatal respiratory care with an emphasis on intensive care activities, therapeutic procedures, life support modalities, and fetal, neonatal, and pediatric pathophysiology. Course lab fee of \$69 applies.

Course Learning Outcomes

1. Describe the sequence and time frame of fetal lung development.
2. Explain fetal physiology and how it contributes to fetal development.
3. Identify risks of interruptions in oxygenation in the birthing process.
4. Explain the normal process of transition and the physiology of the 'first breath'.
5. Analyze results of maternal and newborn assessments.
6. Describe the etiology, pathophysiology, and treatment of common neonatal pulmonary disorders.
7. Describe the etiology, pathophysiology, and treatment of congenital lung, heart, esophageal, and surgical disorders.

RESP 3265

Neonatal/Pediatric Critical Care Lab

Credit hours: 1

Provides laboratory experiences to develop advanced patient interaction and assessment skills in the areas of neonatal and pediatric critical care. Emphasizes students' ability to carry out commonly ordered respiratory therapy procedures. Includes participation in respiratory care simulations. Course lab fee of \$24 for materials applies. Software fee of \$135 applies.

Course Learning Outcomes

1. Manage mechanical ventilation in neonates and pediatric patients.
2. Demonstrate neonatal and pediatric assessment, oxygen therapy, administration of surfactant replacement therapy, and other common respiratory modalities in the neonatal and pediatric population.
3. Apply airway management and resuscitative techniques and protocols from the American Academy of Pediatrics Neonatal Resuscitation Program.
4. Evaluate respiratory treatment with the use of invasive and non-invasive monitoring.

RESP 3270

Adult Critical Care

Credit hours: 2

Explores advanced level adult respiratory care in the intensive care setting. Emphasizes ventilation/perfusion monitoring, hemodynamic monitoring airway, assessment and critical patient management.

Course Learning Outcomes

1. Develop formulation of pertinent clinical information in a wide variety of clinical scenarios and cases.
2. Describe clinical intervention decisions based on clinical information that will safely manage the patient situation presented.
3. Demonstrate appropriate clinical interventions according to patient status in selected diseases, trauma scenarios, and clinical circumstances.
4. Analyze hemodynamic values and waveforms.
5. Interpret chest radiographs.

RESP 3280

Extended Care Roles for Respiratory Therapists

Credit hours: 2

Analyzes theory and principles of extended care roles for the respiratory therapist. Examines the respiratory therapist's role in quality management, pulmonary rehabilitation, sleep medicine, homecare, and hyperbaric medicine. Includes legal, ethical, and moral considerations of chronic and extended care.

Course Learning Outcomes

1. Describe current expectations of respiratory care in non-traditional healthcare settings.
2. Describe techniques employed in the long-term rehabilitation of patients who experience chronic pulmonary compromise.
3. Evaluate the respiratory therapist's role in sleep diagnostics.
4. Discuss fundamental elements and concepts of hyperbaric medicine and the respiratory therapists role in this specialized setting.
5. Discuss the respiratory therapist's role in telemedicine and telehealth.
6. Examine the role of ethics in the delivery of respiratory care.

RESP 3320

Mechanical Ventilation II

Credit hours: 3

Focuses on the study of advanced mechanical ventilation. Emphasizes advanced modes of ventilation, patient management, and assessment. Includes invasive and non-invasive ventilation techniques.

Course Learning Outcomes

1. Formulate a mechanical ventilation treatment plan for selected disorders.
2. Interpret laboratory data associated with cardiopulmonary disorders and mechanical ventilation.
3. Discuss advanced modes of mechanical ventilation.
4. Analyze advanced ventilator graphics.
5. Describe thoracic diagnostic imaging techniques.

RESP 3325

Mechanical Ventilation II Lab

Credit hours: 1

Provides laboratory experience with mechanical ventilation techniques and equipment. Emphasizes advanced modes of ventilation, patient management, and assessment.

Course Learning Outcomes

1. Demonstrate application of mechanical ventilation and selection of advanced modes and settings based on patient data, status, and lung dynamics.
2. Adjust ventilator settings according to patient response.
3. Apply elements of clinical judgment and standards of respiratory therapy practice in planning and caring for mechanically ventilated patients.
4. Interpret laboratory study data associated with cardiopulmonary disorders and mechanical ventilation.

RESP 3430

Principles of Healthcare Education and Disease Management WE

Credit hours: 3

Introduces concepts and principles of respiratory chronic disease management. Examines health models, processes, staffing, training, patient advocacy/engagement, and reporting/reimbursement necessary to improve patient outcomes and reducing healthcare costs. Provides background in educational theory and practical application skills of educational delivery and evaluation within the construct of the health care environment.

Course Learning Outcomes

1. Assess needs, resources, and capacity for health education and disease management.
2. Develop projects and presentations in the areas of patient education, disease management, and/or student mentoring.
3. Conduct evaluation and research related to health education and disease management.
4. Implement programs to achieve educational outcomes based on learners needs.
5. Apply principles of patient education and disease management.
6. Compose a variety of disciplinarily-appropriate texts within multiple situations and for multiple audiences.

RESP 3765

Clinical Practice III Neonatal/Pediatric Respiratory Care

Credit hours: 3

Provides mentored participation in the clinical care of patients in the neonatal/pediatric critical care setting. Emphasizes cardiovascular and patient/ventilator monitoring and assessment and airway management.

Course Learning Outcomes

1. Demonstrate competency in specified neonatal critical care clinical procedures.
2. Collaborate effectively with a neonatal and pediatric intensive clinical care team.
3. Analyze pertinent clinical information for neonatal and pediatric patients to identify individualized treatment goals.
4. Make clinical decisions concerning therapy modes and modalities used for individual patients based on interpretation of clinical information.
5. Apply weaning protocols and procedures according to real patient parameters and laboratory data.
6. Assist in ventilator set-up, use, patient response monitoring, responding to common complications, and weaning for all forms of mechanical ventilation in neonates and pediatric patients.

RESP 3785

Extended Roles in Respiratory Therapy Clinical

Credit hours: 2

Provides clinical experiences related to RESP 3280, such as rehabilitation, extended care, home care, polysomnography, patient assessment for discharge planning and quality management.

Course Learning Outcomes

1. Apply testing techniques to distinguish different types of sleep apnea.
2. Apply appropriate modalities used to treat respiratory disturbances during sleep.
3. Implement modalities used to support patients with chronic pulmonary disease in extended care facilities and at home.
4. Participate in discharge planning of patients by providing pertinent input and recommending appropriate modalities as per patient information, clinical information, and patient needs.

RESP 4610

Advanced Patient Assessment WE

Credit hours: 3

Emphasizes the diagnostic processes involved in assessing, evaluating, and treating patients with cardiopulmonary disease, with an intensive, mentored clinical experience.

Course Learning Outcomes

1. Collaborate effectively with physicians and other multidisciplinary health team members.
2. Analyze how patient assessment data, evidence-based clinical guidelines, prognosis, and patient and family preferences are used to evaluate possible treatment approaches for cardiopulmonary and related disorders.
3. Explore how other health disorders affect assessment and clinical- decision making of patients with cardiopulmonary disorders.
4. Investigate legal, ethical, and sociocultural issues, and patient and family preferences, in assessment, diagnosis, and planning treatment for patients with cardiopulmonary disease.
5. Compose a variety of disciplinarily- appropriate texts within multiple situations and for multiple audiences.

RESP 4640

Respiratory Therapy Capstone

Credit hours: 2

Focuses on areas of advanced respiratory care, leadership and management, case management, research, education, or other special area of interest. Student will identify and complete a project applying knowledge and skills learned in the program.

Course Learning Outcomes

1. Use healthcare technology to deliver quality patient care.
2. Demonstrate communication skills to interact with patients, families, and the interdisciplinary healthcare team.
3. Participate on interdisciplinary teams to develop and implement patient care.
4. Apply current evidence for decision making to improve healthcare outcomes.
5. Design an evidence-based practice project related to the field of respiratory care.

RESP 4775

Clinical Practice IV Adult Critical Care

Credit hours: 4

Provides mentored participation in the clinical care of patients in the adult critical respiratory care setting, with emphasis on hemodynamic monitoring and assessment, ventilation/perfusion monitoring, patient/ventilator monitoring and assessment, and airway management.

Course Learning Outcomes

1. Demonstrate competency in specified critical care clinical procedures.
2. Collaborate effectively with an intensive clinical care team.
3. Analyze pertinent clinical information to make decisions concerning therapy modalities.
4. Evaluate clinical parameters and laboratory data pertaining to weaning protocols and procedures.
5. Implement advanced mechanical ventilation modes.

RESP 4800

Respiratory Therapy Seminar

Credit hours: 3

Explores problem-based clinical concepts. Includes a comprehensive program review and preparatory focus on the written and clinical simulation examinations or on an advanced credential (online RRT to BSRT students only) of the NBRC. Course fee of \$120 for materials applies.

Course Learning Outcomes

1. Evaluate clinical information in accordance with patient situation.
2. Propose recommendations regarding efficacious and safe patient care.
3. Demonstrate proficiency on the NBRC national credentialing examination(s).
4. Solve complex problems commonly encountered on the board exam.

RESP 4890

Principles of Respiratory Care Research and Management

Credit hours: 3

Examines research methods and the scientific approach to critical appraisal of research literature. Analyzes scientific data to support approaches to respiratory care. Introduces theories, principles, and skills needed to function in a leadership position. Addresses the key issues confronting respiratory care leaders today.

Course Learning Outcomes

1. Integrate research from scientific literature.
2. Apply related laboratory and clinical research techniques.
3. Describe the process and procedure of obtaining IRB approval for human based research.
4. Share research findings in presentation, publication, or other approved venues.
5. Distinguish between managing in a health care environment versus any other business setting.
6. Examine the role of the manager as an intentional change agent.
7. Analyze the financial and reimbursement mechanisms of the United States health care system and how this affects administrative and management decisions.
8. Apply administrative and management concepts in a health care environment.

RUS 1020

Beginning Russian II LH

Credit hours: 4

Offers a continuation of basic Russian. Uses various methods of instruction that focus on the development of functional competence in listening, speaking, reading, and writing. Provides comprehensive explanations of basic Russian grammar along with structural practice for building language accuracy. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken and written conversations at the "low novice" level.
2. Express preferences or feelings using practiced or memorized words, phrases, and simple sentences at least at the "novice mid."
3. Present information orally and in writing using practiced or memorized words, phrases, and simple sentences at least at the "novice mid."
4. Identify the main idea and some basic details in conversations and texts supported by gestures or visuals at least at the "novice mid."
5. Reproduce aspects of Russian grammar at least at the "novice mid."
6. Recognize aspects of Russia's cultural heritage, society and everyday life.

RUS 2010

Intermediate Russian I LH

Credit hours: 4

Offers a continuation of basic Russian. Reviews and builds additional skills from 1000-level language courses. Uses various methods of instruction that focus on the development of functional competence in listening, speaking, reading, and writing. Introduces authentic texts and provides discussions based on reading. Provides comprehensive explanations of basic Russian grammar along with structural practice for building language accuracy. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken and written conversations at the "novice high" level.
2. Express feelings or opinions on a given topic at least at "novice high."
3. Present information orally and in writing at least at "novice high."
4. Summarize the main idea in informational texts that are spoken and written at least at "novice high."
5. Describe main idea and key information in simple fictional texts at least at "novice high."
6. Develop a better conceptual understanding and partial control over basic Russian structures at least at "novice high."
7. Reproduce aspects of Russian grammar at least at "novice high."
8. Recognize aspects of Russia's cultural heritage, society and everyday life.

RUS 202G
Intermediate Russian II HH GI

Credit hours: 4

Studies fourth-semester conversational Russian that is used in daily settings. Includes culture study, speaking, listening, reading, and writing. Emphasizes conversation in real life situations. Uses the Natural and Total Physical Response teaching methods. Completers should be able to converse enough to visit or work in a Russian speaking country. Lab access fee of \$12 applies.

Course Learning Outcomes

Please see the department for information.

RUS 3050

Advanced Russian LH

Credit hours: 3

Designed for non-native Russian speakers, who, as a result of foreign residency or similar exposure to the language, have attained a fairly good mastery of basic Russian. Targets major grammatical concepts with a focus on oral proficiency development. Overviews Russian culture and gives an introduction to Russian literature. Lab access fee of \$12 applies.

Course Learning Outcomes

1. articulate a variety of grammatical concepts in Russian.
2. Comprehend a variety of literary and cultural texts.
3. articulate a variety of cultural topics orally and in writing.
4. Write expository essays with correct grammar and usage.

SCIE 2400

Measurement and Analysis for Science Teachers

Credit hours: 3

Engages students in how to measure cognitive variables in their classroom and use this data to draw conclusions via statistical analysis. Makes use of real data sets from educational settings to provide an applied lens to how we identify and assess student learning and other educational challenges. Covers psychometric measurement models and statistical calculations for both parametric (central tendency, correlation, means difference testing) and non-parametric (chi-squared) data sets to employ hypothesis testing. Requires students to visualize data in multiple formats (graphs and tables) and make use of confidence intervals to find evidence for trends and/or patterns in data. Asks students to apply course ideas to carry out a semester long research project applying statistics to solve educational problems.

Course Learning Outcomes

1. Perform mathematical calculations (e.g. means, rates, ratios, percentages).
2. Use confidence intervals and/or error bars (both determined using standard errors) to determine whether sample means are statistically different and thus refuting the null hypothesis.
3. Apply parametric and non-parametric statistical models.
4. Visualize data using graphs, plots, or charts to describe patterns in the data or relationships between variables.
5. Utilize educational data to investigate a problem involving student learning or another education related issue.
6. Draw evidence-based conclusions from quantitative data to inform actions in educational settings.

SCIE 4210

Science Teaching Methods I

Credit hours: 3

Explores foundational aspects of learning science and how this intersects with the nature of science in secondary schools. Includes introductions into state science standards, best methods of engaging learners, how to generate inclusive science learning environments, and promote discourse and collaboration in the service of greater student learning.

Course Learning Outcomes

1. Evaluate how the nature of science should be used to leverage greater student learning in secondary science classrooms.
2. Interpret current state standards and how they should manifest in secondary science classrooms.
3. Analyze different methods of promoting engagement in science to determine costs and benefit of each to student learning.
4. Create learning experiences that are inclusive to student diversity and promote equitable learning for all.
5. Design lesson plans which promote effective discourse and collaboration between students in the classroom.

SCIE 4220

Teaching Methods in Science II

Credit hours: 3

Examines instructional methods and curriculum for teaching science in the secondary school. Includes developing, adapting, evaluating, and using strategies and materials for teaching biological and physical sciences, appropriate both to the special needs of the learners and the special characteristics of science discipline.

Course Learning Outcomes

1. Implement research-based instructional methods that foster critical thinking.
2. Design a lesson segment based on state science standards.
3. Design performance-based science assessments and rubrics.
4. Analyze ways in which differentiating instruction occurs in the science classroom.

SLSS 1100

Stress Management

Credit hours: 3

Presents strategies to develop new attitudes for coping with stressful circumstances. Increases a broader perspective and deeper understanding of acute and chronic stress. Develops conflict resolution techniques through improved communication skills. Studies physiological signs of stress and strain. Emphasizes relaxation techniques to increase performance and reduce the effects of stressful situations. Presents how diet affects personal performance and stress reduction. Explores physical fitness and the effects a sound body can have on coping with stress. May be delivered online.

Course Learning Outcomes

1. Increase positive attitudes related self-worth, ability, and personal development.
2. Apply useful perspective and understanding, and enhanced coping strategies to stressful situations.
3. Develop effective conflict management and constructive communication skills.
4. Recognize physiological signs of strain and learn how to decrease physiological arousal and tension.
5. Identify and employ healthy nutritional and physical activity habits leading to improved personal performance.

SLSS 1200

The 7 Habits of Highly Effective People

Credit hours: 3

Provides the foundation for personal leadership by teaching fundamental principles of character and life-changing paradigms. Examines the personal and organizational components of effectiveness. Focuses on high leverage changes such as time management, communication skills, win/win negotiation, and principle-centered life choices. Prepares students for life-long success. Includes highly interactive class discussions, application exercises, videos, and group work. May be delivered hybrid and/or online. Course fee of \$40 applies.

Course Learning Outcomes

1. Apply principles of personal leadership and management through practice and self-reflection.
2. Engage in a process of changing one's own thinking and behaviors to transition from dependence, to independence, and ultimately, to interdependence.
3. Evaluate existing paradigms to achieve higher levels of metacognitive and critical thinking.
4. Develop a principle-centered approach to personal effectiveness and change.
5. Engage in an ongoing practice of intentional self-awareness and awareness of other points of view.
6. Explain key concepts and skills related to personal effectiveness.

SLSS 2500

Leader--Strengths-Based Leader/Coach

Credit hours: 3

Advances the study and practice of personal leadership by focusing on research-based character strengths. Uses strengths-based inquiry and assessment, identifies and examines character strengths as they relate to optimal functioning, well-being, and personal leadership (leadership of self and others). Draws upon the theories of positive leadership, positive paradigms and practices to develop a strengths-based core that they can transfer to diverse situations and a wide array of roles. Course fee of \$10 applies.

Course Learning Outcomes

1. Identify character strengths
2. Outline conditions when strengths are underutilized, overutilized, and used effectively
3. Develop a plan that intentionally leverages and maximizes personal strengths in multiple settings
4. Identify strengths of others and organize an activity that effectively leverages their strengths

SLSS 3200

Leader--Teacher and Mentor

Credit hours: 3

Provides concurrent theoretical and engaged learning experiences that invite students to explore the notion of leader as an effective facilitator of learning and as a coach for self and others. Engages a broad range of current academic literature exploring relevant intra- and interpersonal leadership principles and their interactions within micro and macro level settings. Develops adaptable philosophical and practical toolkit to more effectively navigate within and across multiple settings as a mentor, teacher, and coach to self and others.

Course Learning Outcomes

1. Demonstrate effective leadership and mentoring skills
2. Apply heightened levels of self- awareness
3. Model effective learning skills and strategies
4. Employ skills that facilitate learning (e.g. self-awareness, the acquisition of learning skills and strategies, etc.) in others
5. Demonstrate increased ability to utilize and connect other students to university and other resources and opportunities

SLSS 405G

Leader--Global Contributor GI

Credit hours: 3

Examines what the world will look like in 25 years due to the influence of seven global dimensions or the 7 Revolutions (population, resource management, technology, information/knowledge, economic integration conflict, and governance). Explores various global, political, economic, social, and behavioral systems; and examines underlying causes of those issues within students' lives. Introduces academic skills in research, communication, critical thinking, and personal leadership.

Course Learning Outcomes

1. Employ personal leadership traits in the context of global or intercultural issues;
2. Recognize stereotypical cultural conceptions and the complexity and variety of different cultural groups;
3. Demonstrate knowledge of the trends and issues facing global leaders;.
4. Interrelate respectfully with individuals representing cultures and perspectives other than one's own;
5. Explain how critical thinking, communication, and leadership will help you become knowledgeable, responsible, reflective, and respectful citizens within an increasingly multicultural society and global community.

SLSS 4800

Leader Capstone--Lifelong Change Agent

Credit hours: 4

Integrates three central components: experiential learning, service, and leadership. Provides the opportunity to demonstrate knowledge, application, and proficiency of the core Leadership Certificate content areas. Allows students to propose projects in areas related to their academic and/or professional interests or goals. Projects are subject to approval by department faculty.

Course Learning Outcomes

1. Design an experience that synthesizes the leadership certificate programmatic outcomes through a service-leadership experience;
2. Integrate the application of personal leadership theory into a service-leadership experience;
3. Develop personal strengths in a service- leadership experience;
4. Demonstrate effective oral and written communication across multiple organizational hierarchies.

SOC 1010

Introduction to Sociology SS

Credit hours: 3

Studies and compares social groups and institutions and their inter-relationships. Includes culture, socialization, deviance, stratification, race, ethnicity, social change, and collective behavior.

Course Learning Outcomes

Please contact the department for information.

SOC 1020

Modern Social Problems

Credit hours: 3

Studies and analyzes modern social problems such as crime, delinquency, family dysfunctions and inequality and exploitation of people in contemporary society. Class requires volunteer experience in community agencies.

Course Learning Outcomes

1. Apply critical thinking and reasoning skills in sociological study;
2. Identify and integrate the use of the sociological perspective;
3. Examine social issues with use of the scientific method and sociological theory;
4. Describe significant modern social issues.

SOC 3030

Social Research Methods WE

Credit hours: 3

Teaches how to conduct social science research. Introduces different research methods in social sciences, including experiments, surveys, field research, and unobtrusive research. Covers the following topics: steps in scientific research, the ethics of social research, research design, the logic of sampling, and strengths and limitations of each type of data collection method.

Course Learning Outcomes

1. Describe the process of doing scientific research.
2. Explain various types of data collection methods in social science research.
3. Compare the strengths and limitations of using experiments, surveys, field observations, and unobtrusive research when collecting data.
4. Comply with the ethical guidelines as codified in the American Sociological Association when conducting research.
5. Design a research proposal in social sciences.

SOC 4000

Classical Social Theory

Credit hours: 3

Examines the contributions of key theorists such as Durkheim, Weber, Marx, DuBois, and Addams to the development of contemporary sociology. Applies key theoretical concepts and frameworks created and used by classical sociologists to current and historical social issues.

Course Learning Outcomes

1. Apply selected classical sociological theories to current and historical social issues.
2. Define the development of key sociological concepts and processes.
3. Examine the contemporary influence of classical theories.
4. articulate the nature of sociological theories and their applicability to contemporary conditions.

SOC 4100

Contemporary Social Theory WE

Credit hours: 3

Examines major contemporary sociological theories that provide the basis for sociological research and the interpretation of social processes. Explores the nature of sociological theory and theory-building to understand the difference and connection between theoretical, methodological, and empirical works in sociology. Covers influential theoretical frameworks, such as structural functionalism, Frankfurt School, exchange and rational choice theories, symbolic interactionism, phenomenology, poststructuralism, postmodernism, feminism, and world systems theories.

Course Learning Outcomes

1. Explore original texts written by contemporary social theorists, considering their concerns, contexts, and methodologies.
2. Evaluate contemporary sociological frameworks.
3. Analyze the sociopolitical contexts in which contemporary social theories are produced.
4. Apply key theoretical concepts and frameworks to current and historical sociological issues and events.
5. Apply principles of academic writing to produce sociological analysis.

SPAN 1020

Beginning Spanish II LH

Credit hours: 4

Includes the continuation of study of grammar and language concepts, literature, and cultural readings. Uses an eclectic method of instruction, emphasizing conversational exchanges. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Participate in simple conversations in Spanish at a Novice High Proficiency level.
2. Express feelings or opinions on a given topic at a Novice High Proficiency level.
3. Present information orally and in writing at a Novice High Proficiency level.
4. Identify the main idea and some basic details in conversations and texts at a Novice High Proficiency level.
5. Recognize some of the complexities present in Spanish-speaking society at a Novice High Proficiency level.
6. Recognize aspects of the Spanish-speaking cultures at a Novice High Proficiency level.

SPAN 2010

Intermediate Spanish I LH

Credit hours: 4

Reviews and builds upon the grammar, reading, writing, and conversation skills learned in the first year courses. Introduces readings and discussions on the history, culture, and literature of the Spanish speaking world, maintaining a focus on oral proficiency. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Communicate in spoken and written conversations at the Intermediate Mid proficiency level.
2. Express feelings or opinions on a given topic at intermediate Mid proficiency level.
3. Present information orally and in writing at intermediate Mid proficiency level.
4. Summarize the main idea in informational and fictional texts that are spoken and written at intermediate Mid proficiency level.
5. Produce aspects of Spanish grammar at intermediate Mid proficiency level.
6. Recognize aspects of the Spanish cultural heritage, society and everyday life.

SPAN 202G

Intermediate Spanish II HH GI

Credit hours: 4

Emphasizes reading, writing, and conversation skills through studies in literature. Media reading labs are available to help reading comprehension. Requires oral and written response. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Discuss in Spanish the importance and content of a limited number of literary works at an Intermediate High proficiency level.
2. Interpret authentic literary texts at an Intermediate High proficiency level.
3. Implement correct grammar and a broad vocabulary in speaking and writing on a variety of topics at an Intermediate High proficiency level.
4. Show a general knowledge of the development of literature in Spanish at an Intermediate High proficiency level.
5. List complexities present in Spanish-speaking societies at an Intermediate High proficiency level.
6. Interrelate knowledgeably, reflectively, and respectfully within the context of Spanish-speaking cultures at an Intermediate High proficiency level.
7. Analyze global or intercultural issues.
8. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups.
9. Evaluate how one's own cultural values compare with those from different backgrounds.

SPAN 3050

Advanced Spanish LH WE

Credit hours: 3

Overviews the basic grammar of Spanish. Emphasizes major concepts including mastery of verb forms, object pronouns, preterite vs. imperfect, use of the subjunctive, etc., both orally and in writing. Intended for non-native Spanish speakers who have attained competency in basic Spanish as a result of foreign residency or similar exposure to the language. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Apply a variety of grammatical concepts in Spanish.
2. Analyze a variety of literary and cultural texts.
3. Describe a variety of cultural topics orally and in writing.
4. Write expository essays with correct grammar and usage.

SPAN 3310

Spanish for Healthcare Professionals

Credit hours: 3

Teaches language structures and terminology specific to Spanish language in the field of healthcare. Examines the cultural issues present in the interactions with Spanish-speaking patients. Prepare students to work with Spanish-speaking patients in future careers in medicine, nursing, or translation/interpretation.

Course Learning Outcomes

1. Use medical Spanish terminology in a variety of fields.
2. Produce oral and written texts in Spanish in the medical context.
3. Assess cultural issues that may affect the communication with Spanish-speaking patients.
4. Identify future job opportunities as a bilingual professional in the healthcare field.

SPAN 4050

Topics in Grammar Usage and Style WE

Credit hours: 3

Reviews Spanish grammar focusing on problem areas. Explores grammar as deployed in different genres. Emphasizes writing in different styles.

Course Learning Outcomes

1. Apply intensive grammar and vocabulary with emphasis on problematic areas.
2. Evaluate advanced grammar rules in formal and informal writing through paragraphs and academic essays.
3. Incorporate the use of new vocabulary both orally and in writing in any situation.
4. Analyze grammatical and lexical styles to be applied in writing.
5. Compose according to certain grammatical styles.

SPAN 4100
Teaching Spanish Grammar

Credit hours: 3

Enables prospective Spanish educators to acquire the strategies, methodology and techniques of how to present deductive and inductive principles of Spanish grammar. Discusses basic theory, principles and tools of Spanish linguistic issues. Includes extensive principle development and microteaching used as an assessment tool.

Course Learning Outcomes

Please contact the department for information.

SPAN 4110

Introduction to Translation and Interpreting English-Spanish

Credit hours: 3

Teaches basic concepts from Translation Studies. Provides practice on translation and interpreting for the English-Spanish language pair and describes professional opportunities in the language services industry. Includes class discussion, oral presentations, translation and interpreting practice, analysis of translations, reflections on recorded interpretations, and collaborative translation projects. Examines technologies used in translation workflows. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Translate non-specialized texts for a specific purpose in the English-Spanish language pair
2. Consecutively interpret a simulated encounter between two people
3. Simultaneously interpret a simple speech in the English-Spanish language pair
4. Design a personal interpreting practice regimen
5. Analyze how communicative context, text function, culture, linguistic restrictions, and anticipated audience influence the translation process
6. Identify the requirements of potential career opportunities in the language services industry
7. Navigate the basic functions of computer-assisted translation tools

SPAN 4120

Advanced Translation English-Spanish

Credit hours: 3

Provides opportunities for Spanish/English translation of texts in different fields (for example, health, law, business, science and technology, agribusiness, etc.). Examines the characteristics and terminology used in specialized texts. Analyzes conventional differences between writing norms in different English- and Spanish-speaking countries. Identifies career opportunities in the language services industry and examines the technological competencies necessary to be competitive in the industry. Includes class discussion, textual analysis, translation practice, analysis of translations, presentations, collaborative translation projects, a service-learning project, and a portfolio. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Translate specialized texts for a specific purpose from Spanish into English and from English into Spanish
2. Apply instrumental knowledge (documentation, terminology, technology, etc.) in order to carry out effective research to translate specialized texts
3. Analyze problems related to the translation of specialized texts
4. Recognize the conceptual and formal level of source texts: purpose, key concepts, genre, terminology, style, and register
5. Identify the requirements of potential career opportunities in the language services industry
6. Navigate more advanced functions of computer-assisted translation (CAT) tools

SPAN 4130

English-Spanish Interpreting

Credit hours: 3

Teaches skills for interpreting (oral translation) in Spanish and English with an emphasis on the mode of dialogue or bilateral interpreting, while also teaching skills for simultaneous interpreting. Deepens understanding of key concepts related to interpreting and the profession of interpreter. Teaches more advanced skills for interpreting like discourse analysis and oratory skills, general interpreting strategies like synthesis and anticipation, and specific strategies for dialogue or bilateral interpreting. Emphasizes professional standards and self-monitoring. Includes class discussion, readings, interpreting practice, observation and analysis of practice, oral presentations, a research project, and engaged learning projects. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Demonstrate improvement in capacity to actively listen for, understand, analyze, and summarize the messages of speakers
2. Demonstrate improvement in capacity for memorization, focus, anticipation, and improvisation
3. Apply strategies for dialogue interpreting, including facilitating a communicative event between participants of different cultures and expectations
4. Produce a correct interpretation in the consecutive mode on general and specialized topics, at a medium-high level of complexity in the Spanish-English language pair
5. Prove awareness of the ethical dimension of interpreting
6. Understand and develop the competencies needed to simultaneously interpret speeches of higher complexity
7. Create individual study/practice plans to continuously improve interpreting skills in specific domains
8. Identify the requirements of different interpreting-related careers in the language-services industry

SPAN 4310

Healthcare Interpreting English-Spanish

Credit hours: 3

Teaches Spanish language structures and terminology specific to healthcare. Explores an inclusive range of essential knowledge and skills for a healthcare interpreter: interpreter ethics, standards of practice, and protocols; modes of interpreting; cultural competence with Spanish-speaking patients and the role of the healthcare interpreter; and government regulations relating to the US healthcare system. Fulfills requirements to work as a qualified medical interpreter in the state of Utah. Fulfills a pre-requisite for either of the two national certification exams for medical interpreters. Lab access fee of \$12 applies.

Course Learning Outcomes

1. Use advanced medical Spanish terminology in a variety of fields.
2. Interpret dialogues between Spanish-speaking patients and English-speaking healthcare providers in an accurate and effective way.
3. Assess cultural issues that may affect the communication with Spanish-speaking patients.
4. Analyze how codes of ethics, standards of practice, and protocols influence an interpreter's response to concrete situations in healthcare.
5. Assess how government regulations impact limited-English proficient persons' interactions with the healthcare system.
6. Identify future job opportunities as a bilingual professional in the healthcare field.

SPAN 4900

Capstone Seminar

Credit hours: 3

Engages students in independent, directed research and writing. Encourages further exploration of topics covered during courses in the major program through advanced research methods and peer review of others' work. Requires public exposition of research findings in Spanish.

Course Learning Outcomes

1. Perform research in Spanish, using a number of primary and secondary sources from libraries and archives.
2. Develop a sophisticated research-based argument on an approved topic.
3. Apply current research methodologies regarding the Spanish language and its associated cultures and literatures.
4. Express themselves in academic Spanish, both orally and in writing.

STAT 2040

Principles of Statistics QL

Credit hours: 4

Includes summarizing data, measures of central location, measures of variation, probability, mathematical expectation, probability distributions, sampling and sampling distributions, estimation, hypothesis testing, analysis of variance, regression analysis, and correlation. Canvas Course Mats of \$73/Wiley applies. Lab access fee of \$10 applies.

Course Learning Outcomes

1. Differentiate between controlled experiments and observational experiments
2. Summarize data numerically and graphically
3. Use the sampling distributions of statistic to find the p-value for a test statistic
4. Compute confidence intervals for different parameters of interest
5. Conduct significance tests for one, two, and more than two sample cases
6. Use statistical methods - linear regression, chi-square tests, and ANOVAs
7. Use statistical power in estimating sample size for the experiment
8. Use current programming language and software to perform data analyses

STAT 2050

Introduction to Statistical Methods

Credit hours: 4

Is an introductory statistics course for statistics majors. Applies discrete and continuous probability distributions to real data sets. Teaches confidence intervals and hypothesis testing for both one and two sample problems. Covers introductory topics in experimental design, linear regression, bootstrapping, and categorical data analysis. Canvas Course Mats of \$73/Wiley applies. Lab access fee of \$10 applies.

Course Learning Outcomes

1. Summarize statistical data both graphically and numerically.
2. Apply basic probability rules to compute probability.
3. Use common discrete and continuous distributions to find probability.
4. Perform basic statistical inference techniques on real life data.
5. Perform regression analysis.
6. Perform categorical data analysis.
7. Apply bootstrap statistical inference to real data sets.
8. Use statistical software to analyze real data sets.

STAT 2060

Introduction to Statistical Computing

Credit hours: 1

Familiarizes students with the SAS statistical software package. Teaches how to organize, input data, and be able to use reference books to figure out the appropriate way to run the analysis needed using SAS.

Course Learning Outcomes

1. Input raw data file into SAS from a variety of sources;
2. Use PROC statements to sort, print, and summarize data;
3. Use one-to-one and one-to-many merges to modify and combine data sets;
4. Perform basic statistical procedures using SAS.

STAT 3040

Probability and Statistics for Engineering and the Sciences

Credit hours: 3

Introduces mathematical statistics for scientists and engineers. Includes counting techniques, random variables, expected values, joint and marginal distributions, point estimation, hypothesis testing, analysis of variance, and regression.

Course Learning Outcomes

1. Find probabilities using counting techniques;

STAT 4000

Applied Regression and Time Series WE

Credit hours: 3

Provides students in non-mathematical disciplines the ability to answer typical research questions for their senior projects or graduate-level research. Includes linear regression, transformations, variable selection techniques, logistic regression, indicator variables, multicollinearity, and ARIMA time series. Satisfies the VEE statistics requirement for the Society of Actuaries. Introduces standard software as a tool for statistical analysis.

Course Learning Outcomes

1. Explain the basic theory, assumptions, and equations of multiple regression and time series.
2. Use statistical software to analyze data sets, including use of categorical variables for comparisons, and to perform time series analysis tests.
3. Calculate regression and correlation coefficients.
4. Use statistical software to decide which variables should be included in a regression equation.
5. Determine whether assumptions of regression models have been met including nonlinearity, multicollinearity, autocorrelation, and error variance.
6. Use logistic regression to analyze categorical data.
7. Use weighted least squares to adjust for heteroscedasticity.
8. Write effective mathematical content following the current best practices of the mathematical community for proofs and articles.

STAT 4100

Design of Experiment

Credit hours: 3

Introduces the design and analysis of randomized comparative experiments. Includes single factor ANOVAs, randomized block designs, latin squares, factorial designs, and nested and split plot designs. Covers mixed models including random effects and computation of expected mean squares to form appropriate F-ratios. Uses SAS statistical program software to perform statistical analysis.

Course Learning Outcomes

1. Design and analyze a simple comparative experiment between two populations;
2. Design and analyze a single factor ANOVA, compute expected mean squares, and run appropriate post hoc tests;
3. Design and analyze randomized block and latin square designs and compute expected mean squares;
4. Design and analyze a two factor ANOVA, compute expected mean squares, and analyze interaction effect;
5. Design and analyze experiments with random effects and compute expected mean squares;
6. Design and analyze split plot designs and other experiments with nested factors;
7. Design and analyze a linear regression model in an experimental design context;
8. Design and analyze 2^k and 3^k factorial designs including blocking and confounding and fractional designs.

STAT 4400

Multivariate Analysis WE

Credit hours: 3

Introduces multivariate data analysis. Covers inference on data arising from the multivariate normal distribution using MANOVA, principal component analysis, factor analysis, canonical correlation analysis, discriminant analysis, and cluster analysis. Uses statistical software throughout.

Course Learning Outcomes

1. Perform inference using the multivariate normal distribution.
2. Analyze multivariate data using MANOVA, principal components, factor analysis, classification analysis, canonical correlation, and cluster analysis.
3. Choose an appropriate statistical technique for performing multivariate data analysis.
4. Analyze multivariate data using appropriate statistical software.
5. Write effective mathematical content following the current best practices of the mathematical community for proofs and articles.

STAT 4710

Mathematical Statistics-Probability and Statistics

Credit hours: 3

Introduces mathematical statistics including random variables, set theory, transformations, expectation, joint and marginal distributions, moment generating functions, and order statistics.

Course Learning Outcomes

1. Manipulate random variables including transformations, joint, marginal, and conditional distributions.
2. Identify distributions including normal, binomial, Poisson, gamma, and Chi- squared.
3. Compute expectation, variance, and moment generating functions for distributions including normal, binomial, Poisson, gamma, and Chi-squared.
4. Find probabilities and joint distributions using order statistics.
5. Compute probabilities using set theory and counting techniques.
6. Show convergence in probability and distribution.
7. Use the Central Limit Theorem as appropriate to approximate probabilities.

STAT 4720

Mathematical Statistics-Statistical Inference

Credit hours: 3

Is a continuation of STAT 4710. Includes estimation, sufficiency, completeness, hypothesis testing, statistical inference with the normal distribution, and Bayesian statistics.

Course Learning Outcomes

1. Compute maximum likelihood estimators.
2. Derive complete and sufficient statistics.
3. Derive uniformly most powerful and generalized likelihood ratio tests.
4. Use the normal distribution in statistical inference.
5. Use Bayesian estimation.
6. Perform hypothesis tests without parametric assumptions.
7. Compute confidence intervals for different parameters.

STAT 6010

Theory of Statistics I

Credit hours: 3

Covers probability theory, random variables, functions of random variables, probability distributions and their characteristics, transformations of random variables, Pearson's correlation coefficient, and bivariate normal distribution and regression.

Course Learning Outcomes

1. Solve problems using the laws of probability.
2. Explain the concept of univariate and multivariate random variables.
3. Calculate probability using probability distributions.
4. Derive distributions of functions of random variables.
5. Prove convergence of random variables in probability and distribution.

SUDC 3430

Psychopharmacology for the Substance Use Disorder Counseling Field

Credit hours: 3

Addresses basic principles of nervous system function with emphasis on communication between nerve cells. Focuses on therapeutic drugs as well as drugs of abuse to include mechanisms of action and behavioral effects. Includes content on dynamics of addiction.

Course Learning Outcomes

1. Describe the anatomy of the brain.
2. Explain basic principles of neuronal functioning.
3. Discuss the various ways of altering synaptic processes.
4. Summarize the main categories of psychotherapeutic drugs.
5. Summarize the main categories of drugs of abuse.
6. Explain the basic approaches to research in psychopharmacology.
7. Describe the processes underlying addiction.

SUDC 3470

Dynamics of Addiction

Credit hours: 3

Explores processes contributing to development and maintenance of addiction. Addresses internal (genetics, motivation) and external (family dynamics, peer pressure) contributors. Includes issues related to drug policy, costs of addiction, and prevention/treatment of drug addiction.

Course Learning Outcomes

1. Define the general principles contributing to drug addiction.
2. Describe the genetic and biological factors influencing drug addiction.
3. Identify addictive processes related to prescription medications.
4. Identify addictive processes related to illegal drugs.
5. Analyze issues related to drug policy.
6. Evaluate the various costs of drug addiction.
7. Examine the fundamentals of addiction prevention and treatment.

SUDC 4300

Introduction to Substance Use Disorder Counseling

Credit hours: 3

Surveys concepts and practices of major therapeutic systems, with a focus on substance use disorder counseling. Introduces students to the major psychotherapeutic models of both individual and group counseling. Addresses basic counseling issues including ethics and professionalism. Develops skills in relationship development, interviewing, initial assessment and intake procedures.

Course Learning Outcomes

1. Identify ethical and legal issues in counseling practice.
2. Describe theoretical approaches to individual and group counseling.
3. Demonstrate the principles of group formation.
4. Discuss therapist tasks and techniques.
5. Examine counseling theories from a multi-cultural perspective.
6. Explain issues related to research and training.

SUDC 4400

Advanced Substance Use Disorder Counseling

Credit hours: 3

Expands concepts and practices of major therapeutic systems, with a focus on advanced substance use disorder counseling. Continues coverage of major psychotherapeutic models of both individual and group therapy. Elaborates on basic counseling issues including ethics and professionalism. Continues to develop skills in relationship development, interviewing, initial assessment, and intake procedures.

Course Learning Outcomes

1. Discuss ethical and legal issues in counseling practice.
2. Describe theoretical approaches to individual and group therapy.
3. Discuss substance use disorder counseling from a multi-cultural perspective.
4. Outline counselor tasks and techniques.
5. Describe various examples of pharmacotherapy in substance use disorder counseling.
6. Explain issues related to research and training.

SUDC 4710

Introduction to Professional Development

Credit hours: 2

Defines the scope of practice and legal and ethical obligations of substance abuse counselors. Examines the knowledge, skills, attitudes, legal obligations, and limitations of practice of professional substance abuse counselors. Introduces the 12 core functions.

Course Learning Outcomes

1. Describe the role of the substance abuse counselor in agency practice.
2. Describe the limitations on clinical practice for substance abuse counselors.
3. Explain the laws that govern the confidentiality of substance abuse client information and your obligation to protect such information.
4. Outline the requirements for licensure and certification for substance abuse counselors in Utah and other states.
5. Explain the vulnerabilities of substance abuse clients and the ethical obligation of substance abuse professionals to their clients, employers, their professional peers, and themselves.
6. Traits Upon successful completion, students should have the following attitude(s)/traits: 1 - Appreciation of the ethical standards for substance abuse counselors. 2 - Awareness of legal issues governing substance abuse counselors.

SUDC 4720

Advanced Professional Development

Credit hours: 3

Expands on professional issues in Substance Use Disorder Counseling. Focuses on the 12 core functions of substance abuse, ethics, theories of substance abuse, and theory and practice of individual and group counseling.

Course Learning Outcomes

1. Perform the 12 core functions of substance use disorder counseling.
2. Apply the ethical principles of substance use disorder counseling.
3. Describe the basic principles of psychopharmacology, to include the medical model of substance use disorder.
4. Summarize patterns of comorbidity associated with substance use disorder.
5. Discuss the principles of individual counseling in the context of substance use disorder.
6. Explain the principles of group counseling in the context of substance use disorder.

SUDC 481R

Internship

Credit hours: 1 to 8

Provides practical and research experience in the substance use disorder counseling field with a focus on the 12 core functions of substance use disorder counseling. Supervised by agency representative. Internships must be approved by the UVU SUDC program and written contracts must be signed. Requires students pursuing the SUDC license to complete a minimum of 200 hours of field experience. Requires students pursuing the ASUDC license to complete a minimum of 350 hours of field experience. May be repeated for a maximum of 8 hours toward graduation.

Course Learning Outcomes

1. Collaborate and network with community organizations and agencies
2. Develop, implement, and evaluate internship experience
3. Apply theory to practice
4. Allocate time, money, materials, space and staff

SURV 1020

Introduction to Surveying and Mapping WE

Credit hours: 1

Provides an orientation to the field of Surveying and Mapping including Boundary Surveying, Geodesy, Forensic Surveying, Construction Surveying, Geographic Information Systems (GIS), and other types of surveys. Involves presentations by community/industry professionals encompassing the surveying and mapping occupations. Covers college success principles and practices for the Surveying and Mapping program. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the duties and responsibilities of practicing professional surveyors
2. Differentiate between the various disciplines of Surveying and Mapping
3. Describe the key principles of college success in the Surveying and Mapping program
4. Define equipment, instrumentation, and technology used in the Surveying and Mapping profession
5. Describe the requirements for licensure as a Professional Land Surveyor
6. Develop research and writing skills in determining career path resources

SURV 1030

Fundamentals of Geodesy and Control Surveys

Credit hours: 3

Explores the science of geodesy or the size and shape of the earth. Involves Global Positioning Systems theory for computing a position on the earth using three-dimensional coordinate systems, reference coordinate systems, state plane coordinates, transformations, geoid datums, orthometric heights and leveling. Introduces basic properties and characteristics of the most common map projections. Explains principles and theories used to establish control surveys and survey networks based on geodesy. Introduces traverse, triangulation, and elevation adjustment computations along with random and systemic errors in measurement. Offers field application assignments of typical survey control networks using GPS and Total Stations to collect GPS data. Includes post processing coordinate transformation, creation, and report generation using the NGS OPUS system. Requires verifiable demonstration of field skills and techniques. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Define Geodesy and Control Surveys
2. Describe history and disciplines of Geodesy
3. Define coordinate systems
4. Explain GNSS (GPS) surveying and its principles
5. Perform geodetic control surveys and network adjustments
6. Describe the importance of height determination

SURV 1220

Remote Sensing and Photogrammetry

Credit hours: 3

Introduces and describes digital imagery, aerial triangulation, Remote Sensing and their history. Covers principles of Remote Sensing and the integration of Remote Sensing with Geographic Information Systems (GIS). Teaches a fundamental knowledge of aerial photography, photogrammetry, multispectral, Hyperspectral, Thermal, RADAR, LiDAR image analysis. Identifies various equipment and instrumentation used in producing Remote Sensing products. Describes image preprocessing and image enhancements as well as differentiating and classifying various accuracy assessment techniques. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explain history, introduction, and principles of Remote Sensing
2. Develop a fundamental knowledge of aerial photography, photogrammetry, multispectral, hyperspectral, thermal, RADAR, and LiDAR image analysis
3. Identify various equipment and instrumentation used in producing Remote Sensing products
4. Describe image preprocessing and image enhancements
5. Classify various accuracy assessment techniques
6. Describe the integration of Remote sensing and GIS

SURV 1340

Fundamentals of Boundary Law

Credit hours: 3

Explains the fundamental responsibilities of a land surveyor in recognizing, locating and creating land boundaries, including sequential and simultaneous conveyances, easements and reversions, riparian and littoral rights. Presents basic rules of evidence. Provides exposure to principles and procedures used to establish new boundaries and locate existing boundaries. Lab access fee of \$45 for equipment applies.

Course Learning Outcomes

1. Describe the surveyors duty to protect the rights, title, and interest of the land owner
2. Define the meaning of a boundaries, easements, and rights-of-way
3. Differentiate among various land owner rights and interests
4. Explain the principles and procedures for locating and monumenting boundaries
5. Describe basic rules of evidence

SURV 2010

Land History of America WE

Credit hours: 3

Discusses how, what, and why certain countries, events, and individuals have significantly impacted the history of the lands of America. Describes how the contributions of the various inventions, instruments, individuals, conditions, and events impacted the lands of America. Identifies how current land conditions, policies, and laws in the State of Utah have been impacted by Utah land history. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Explore the impact of various events in the history of American lands
2. Identify how current land conditions, policies, and laws in the State of Utah have been impacted by Utah land history
3. Describe evidences of land surveying prior to the American Colonial Era
4. Explore the impacts of various instruments on American lands
5. Describe the contributions of various individuals in the history of American lands
6. Develop research and writing skills in an historical context
7. Compose surveying and mapping specific technically oriented informational data, principles, and/or concepts

SURV 2100

Mapping From Field to Finish

Credit hours: 3

Teaches how to identify, operate, and maintain common instrumentation used to collect field data including GPS and Total Stations. Integrates survey field data with Computer Aided Drafting (CAD) data to develop typical surveying maps and plans often used by public and private entities. Demonstrates best practices and workflows for field and office procedures and techniques commonly used by governments and professional civil engineering and surveying firms. Explains potential field safety considerations, problems, and issues. Lab access fee of \$45 applies. Course fee of \$50 for materials applies.

Course Learning Outcomes

1. Identify instrumentation required for each type of project undertaken
2. Enumerate the procedures undertaken for each type of project undertaken
3. Demonstrate proficient operational ability for all instrumentation required in each type of project undertaken
4. Explain potential field safety considerations, problems, and issues
5. Develop a safety plan

SURV 2240

Fundamentals of Adjustments and Computations

Credit hours: 2

Examines the measurement science and basic mathematical analysis required for surveyors. Discusses the metrology. Studies the law of sines and cosines, horizontal and vertical curve computations, distance equation, area of triangles, principles of spherical trigonometry, angular to radian calculations, linear to angular convergence calculations, and matrix analysis. Involves problem solving strategies using standard measurement and mathematical techniques for surveying and mapping.

Course Learning Outcomes

1. Explain fundamental principles of metrology for surveyors and mappers.
2. Define various problem-solving strategies for measurement and mathematical techniques.
3. Calculate horizontal and vertical curves.
4. Manipulate various trigonometric functions needed by surveyors and mappers.
5. Solve various angular and radian, and linear and angular convergence problems and matrix analyses.

SURV 2310

Surveying US Public Lands

Credit hours: 3

Studies U.S. Public Land Survey System (PLSS) as described in the current official Department of the Interior-Bureau of Land Management (BLM) Manual of Instructions for Surveying Public Lands with emphasis on federal, state, and other applicable laws, evidence, resurveys, and subdivision of sections. Covers a detailed study of general and special instructions, irregularities in subdivisions, lost and obliterated corners, single and double proportion methods, monumentation, riparian boundary laws and rights, hiatuses, mineral surveys, and official survey documents. Introduces Spanish and Mexican land grants, as well as state and national boundaries. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Summarize the purpose of the "Manual of Instructions"
2. Describe the various components of the system of Rectangular Surveys
3. Identify public land monuments and their characteristics, purpose, markings, and accessories
4. Calculate subdivision of sections and townships, fractional lots, and meander and witness corners
5. Generate calculations and records for resurveys and plats
6. Illustrate the use and interpretation of detailed field notes as evidence of monumentation
7. Delineate the details of mineral surveys

SURV 2320

Property Descriptions and Public Land Records

Credit hours: 3

Involves analysis, interpretation, and writing of legal descriptions with proper form, controlling elements, metes-and-bounds, sectionalized land descriptions, easements, and rights-of-way. Discusses different types of descriptions, junior-senior rights in descriptions, latent & patent ambiguities, basis of bearing and interpretation, easements, and reversions. Applies practical exercises and case studies. Studies the responsibilities of the professional land surveyor regarding due diligence in searching public land records and performing applicable legal research. Examines public records and recording laws. Emphasizes title search to patent and includes zoning laws relating to land. Involves tour(s) of local record systems and/or public offices.

Course Learning Outcomes

1. Describe the role and responsibilities of the professional land surveyor regarding records research.
2. Explain the background, framework, and support information required to develop a proper description.
3. Determine what elements of information control the description and other pertinent information.
4. Differentiate between the various types of boundaries, easements, rights-of-way, occupation lines, etc.
5. Discuss existing public and private land records and other land documents and records.
6. Develop descriptions of various properties.
7. Identify conflicting documentation.
8. Identify the laws regarding public records systems and recordation.

SURV 2350

Ethics and Liabilities for Surveyors

Credit hours: 2

Teaches the code of ethics adopted by the Utah Council of Land Surveyors (UCLS). Explains meaning and attributes of professionalism along with the ethical, moral, and social responsibilities of professional surveyors. Includes model law standards, professional liability cases, and professional client relationships. Involves lecture, readings, case studies, and other media.

Course Learning Outcomes

1. Describe the code of ethics and model laws adopted by professional surveying associations
2. Classify the licensing laws and determine the attributes of professionalism
3. Differentiate between unprofessional and unlawful conduct for professional land surveyors
4. Explain the ethical, moral, and social responsibilities of professional land surveyors
5. Summarize professional ethics and liabilities

SURV 3010

Measurement Analysis and Adjustments

Credit hours: 4

Examines observation theory, and observational error analysis. Discusses the theory of measurement errors, principles of error propagation, variance and covariance, and the theory of the least squares method. Studies variances and co-variances of observed, derived, and adjusted quantities; regression analysis, and polynomial curve fitting. Involves systems of linear equations, linearization, and iteration of nonlinear equations; adjustment validation using hypothesis testing; modeling of surveying problems using different techniques of least squares and also presents several methods used to fit survey data to mathematical and survey models. Software fee of \$18 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Classify errors in measurement: systemic and random
2. Explain observation theory, and observational error analysis
3. Investigate the theories of measurement errors and least squares methods
4. Model surveying problems using different techniques of least squares
5. Construct the variance and co-variances of observed, derived, and adjusted quantities
6. Calculate needed regression analysis, and polynomial curve fitting, linear equations, linearization and iteration of nonlinear equations
7. Fit survey data to various mathematical and survey models

SURV 3030

Land Development Planning-Platting-Mapping

Credit hours: 3

Discusses land use planning techniques for residential and commercial developments. Studies subdivisions, industrial parks, and commercial complexes along with the associated governmental regulations, codes, rules, and approval processes and procedures. Requires a mock public presentation on course projects. Uses current surveying/engineering software to develop and plot drawings including; subdivision plats, records of survey, ALTA surveys, topographic site surveys, and other maps. Software fee of \$58 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Classify and differentiate between various types of land development projects
2. Describe key considerations used in performing feasibility, site analysis, and environmental impact studies
3. Explain the land development planning process from the view of the government agency and public generally
4. Describe the cost estimating, plans preparation, submission, review, and permitting process
5. Describe the State of Utah statutes regarding surveying recordation and drawing content
6. Develop complete ALTA, ROS, PLATS, SITE/TOPO drawings per national, state, and local standards

SURV 3210

Advanced Photogrammetry

Credit hours: 3

Examines principals of photogrammetry as applied to surveying and mapping. Analyzes geometry of vertical and aerial photographs, stereoscopic parallax, geometry of tilted photographs, and stereoplotter mapping. Discusses close-range photographic analysis, planimetric and topographic maps, flight planning, digital photogrammetry, aerial cameras and camera calibration. Involves the theory and techniques of photo orientation, digital imagery, and aerial triangulation. Software fee of \$60 applies. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Evaluate the theories, principles, and practices associated with photogrammetry
2. Review various instrumentation used in producing photogrammetric deliverables
3. Develop workflows needed for aerial photographic deliverables
4. Explain various equipment used in photogrammetry
5. Analyze planimetric and topographic maps developed from photogrammetry

SURV 3220

Control Surveys

Credit hours: 3

Applies principles and theories presented in prerequisite courses and moves the student to an advanced applications level. Studies the establishment of control surveys and survey networks. Reviews compass rule adjustment computation, matrix methods and least squares adjustment methods, random and systemic errors in measuring, and error propagation. Offers field applications of Radial and GPS surveying systems: static, kinematic and RTK procedures, data collection, post processing coordinate transformation, creation, and report generation. Teaches practical applications of network adjustment, control surveys, triangulation, and precision traverses with precise elevation control. Requires demonstration of field skills and techniques. Lab access fee of \$45 for computers applies. Course fee of \$35 for materials applies.

Course Learning Outcomes

1. Explain the principles and practices used to establishment control surveys and control networks
2. Summarize compass rule adjustment computation, matrix and least squares adjustment methods
3. Summarize random and systemic errors in measuring, and error propagation
4. Describe calibration field process for the total station, automatic level, and electronic distance meter
5. Demonstrate field applications using radial and global positioning systems: static, kinematic and real time kinetic procedures, data collection, post processing coordinate transformation, creation, and report generation
6. Produce practical applications of control networks, network adjustment, control surveys, triangulation, and precision traverses with precise elevation control

SURV 3230

Construction and Route Surveys

Credit hours: 3

Applies principles and theories presented in prerequisite courses. Develops computations, standard practices and practical applications for common construction and route surveys. Includes survey staking of pipes, curbs, streets, parking lots, buildings, and other typical land development and infrastructure project elements. Develops volume and area calculations. Requires computer derived solutions and applications from plans and specifications using modern data collection and coordinate geometry (COGO) computer software. Lab access fee of \$45 for computers applies. Course fee of \$35 for materials applies.

Course Learning Outcomes

1. Develop computations and practical applications using modern data collection, analysis, adjustment, and coordinate geometry (COGO) computer software
2. Describe construction staking standards and procedures
3. Demonstrate field applications in Construction Surveys: curb, slope staking, and intersections
4. Demonstrate field applications in Construction Surveys: earthwork analysis, area/volume computations
5. Demonstrate field applications in Route Surveys: water, sewer, and pipeline alignment projects
6. Demonstrate field applications in Route Surveys: road, street, and other infrastructure alignment projects
7. Calculate horizontal and vertical curves for roadways
8. Describe other modern field applications

SURV 3250

Geodesy

Credit hours: 3

Examines the science of geodesy. Includes in-depth understanding of the size and shape of the earth, spherical and ellipsoidal geometry, the celestial sphere, and astronomical trigonometry. Involves Global Positioning Systems theory for calculating positions on the earth using three-dimensional coordinate systems, reference coordinate systems, state plane coordinates, transformations, spheroid, ellipsoid, geoid datums, celestial sphere, orthometric heights and leveling. Reviews properties and characteristics of the map projections with emphasis on the projections used in State Plane Coordinates. Analyzes survey applications of practical astronomy including time systems, astronomical azimuth, and Solar/Polaris observations and calculations. Lab access fee of \$45 applies.

Course Learning Outcomes

1. Investigate the science of Geodesy and Geodetics including size and shape of the earth relative to spherical and ellipsoidal geometry, and the celestial sphere
2. Differentiate between three- dimensional coordinate systems: reference coordinate systems and state plane coordinates
3. Compute various positions on the earth considering the fundamental elements of Geodesy previously learned
4. Transform to and from the various geodetic coordinate systems
5. Analyze the properties and characteristics of map projections
6. Evaluate astronomical observations and calculations using practical astronomy, time systems, astronomical azimuth

SURV 3340

Boundary Law

Credit hours: 3

Studies the responsibilities of the land boundary surveyor in protecting rights, title, and interest of the land; riparian and littoral rights, bona-fide rights, boundary easements and reversions, conveyances; sequential and simultaneous. Presents principles and rules of evidence. Includes monuments and monumentation, boundary locations, and procedures used to establish new boundaries and locate existing boundaries. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Describe the surveyors duty to protect the rights, title, and interest of the land owner.
2. Differentiate between the laws associated with riparian, littoral, and bona-fide rights.
3. Differentiate between sequential, simultaneous, and other conveyances.
4. Describe boundary easements and reversions.
5. Define the meaning of a boundary.
6. Describe monuments and monumentation, types, processes and procedures.
7. Explain the process of locating and monumenting new boundaries.
8. Explain the process of locating existing boundaries.

SURV 3400

Emerging Surveying and Mapping Technologies

Credit hours: 3

Focuses on state of the art surveying applications and field survey techniques often employed by surveyors for various field and office tasks some of which may include horizontal and vertical networks and traverses, route surveys, and topographic/site surveys, and machine control methods. Teaches the construction, care, maintenance, calibration, effective setup and observation methods used for the latest in surveying instrumentation often including; global positioning systems (GPS), total robotic stations, 3D laser scanners, automatic levels, modern data collection systems, computer-aided drafting (CAD) software, drone surveying, and other geospatial surveying systems and instruments emerging in the profession. Lab access fee of \$45 applies. Software fee of \$75 applies.

Course Learning Outcomes

1. Differentiate between various surveying systems and instruments.
2. Perform specific types of field surveys: networks, traverses, routes, topographic/site, machine control.
3. Demonstrate operation, care, maintenance, and calibration of surveying instruments.
4. Demonstrate use of data collectors, coordinate geometry (COGO), and computer-aided drafting (CAD) software to produce typical professional deliverables.
5. Produce various post processed geospatial data, mapping, drawings, models, and reports.
6. Demonstrate observation and error compensation methods.

SURV 451R

Surveying and Mapping Lecture Series

Credit hours: .5 to 2

Consists of lectures presented by guest speakers or faculty on various topics in Surveying and Mapping including but not limited to: land surveying, mapping, remote sensing, geodesy, legal issues, photogrammetry, and various new and emerging technologies. May be repeated for a maximum of 2 credits toward graduation.

Course Learning Outcomes

1. Identify new and emerging technologies
2. Explain various surveying and mapping "best practices"
3. Identify current surveying and mapping trends in the community, nation, and international settings
4. Describe the variety of jobs available in surveying and mapping and the requirements for each job
5. Describe changing legal issues pertaining to the practice of surveying and mapping

SURV 455G

Global Professional Ethics and Liabilities GI

Credit hours: 3

Teaches the code of ethics adopted by the various professional services state and national organizations and/or associations. Explains meaning and attributes of professionalism along with the ethical, moral, and social responsibilities of professional engineers, architects, and surveyors. Integrates laws for practicing as a professional service with professional ethics as well as the roles of multi-culturalism and globalization. Includes model standards (international, national, and state), professional liability cases, safety, risks, professional client relationships, bribery, global engagement, contracts, and intellectual property. Involves lecture, readings, case studies, and other media.

Course Learning Outcomes

1. Describe the Code of Ethics and Model Laws adopted by various professional services firm organizations and associations
2. Classify the Licensing laws and determine the attributes of professionalism along with the ethical, moral, and social responsibilities of individuals providing professional services
3. Summarize professional liability, contract, and intellectual property legal cases
4. Explain risk management as it relates to safety, professional-client relations, and bribery situations
5. Analyze and evaluate global or intercultural issues
6. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups
7. Evaluate how one's own cultural rules and biases compare and contrast with those from different cultures

SURV 4700

Fundamentals of Surveying Exam Prep

Credit hours: 3

Explains Fundamentals of Surveying (FS) exam parameters, conditions, and knowledge base designed and maintained by the National Council of Examiners for Engineering and Surveying (NCEES). Focuses on exam preparations in surveying and mapping principles, processes, and methods. Includes special emphasis on survey computations, computer applications, and applied mathematics and statistics. Uses the Fundamentals of Survey Reference Guide.

Course Learning Outcomes

1. Demonstrate use of the various equations and charts provided in the Fundamentals of Survey Reference Guide
2. Generate calculations and solutions using the various computational tools allowed in the Fundamentals of Surveying Exam
3. Execute basic mathematical and statistical computations related to the surveying discipline
4. Apply mathematical and scientific principles to the various computations used in surveying best practices
5. Differentiate between various surveying problems and issues
6. Formulate solutions to various surveying problems and issues based on knowledge of standard practices and procedures

SURV 4930

Senior Surveying and Mapping Capstone WE

Credit hours: 4

Provides an opportunity for a senior Surveying and Mapping student to participate in a significant and current research project which may advance the field of Surveying and/or Mapping. Includes independent study and laboratory/field work as necessary and must be approved and supervised by assigned faculty and technical mentors. Culminates in the preparation and presentation of a written paper describing the results of the research and/or completed project to project stakeholders, interested students, faculty, administration, the professional community, or the broader general audience. Lab access fee of \$45 applies. Software fee of \$25 applies.

Course Learning Outcomes

1. Organize a significant and current research project which will advance the profession
2. Analyze applicable academic theories, principles, and knowledge to a project
3. Formulate a project design including methods to solve the problems or answer the questions about a project
4. Select evidences as applicable to a project
5. Produce a final written report/paper for faculty, administration, stakeholders, or a broader applicable audience
6. Analyze evidence as applicable to a project
7. Justify appropriate conclusions from evidence analysis as applicable to a project
8. Appraise unique questions or problems and possible solutions associated with a project
9. Demonstrate research and writing skills applicable to a project

SW 1010

Introduction to Social Work

Credit hours: 3

Introduces social work history, theory, and practice. Examines the relationship between policy and practice in the context of nine major fields of social work. Considers challenges faced by today's practitioners including concerns with policy, social justice, and oppression. Explores current career opportunities in the field. Canvas Course Mats \$44/Cengage applies.

Course Learning Outcomes

1. Utilize rights-based, anti-racist, and anti-oppressive lenses to understand and critique the profession's history, mission, roles, and responsibilities and how oppression has shaped social work as an institution.
2. Identify changes in social policy, health care, welfare reform, social security, at risk populations and the relationship to the social work profession.
3. Analyze case studies and evaluate the interaction of social work practice and social policy in ameliorating human suffering.
4. Evaluate the social work profession including career facts, code of ethics, certification and licensure, and employment projections and future trends.
5. Define social work professional practice settings and how they impact social concern such as poverty, mental health, crime and the changing demographics of the elderly.
6. Recognize that social work is a lifelong learning and values based profession.

SW 2100

Human Behavior and the Social Environment I

Credit hours: 3

Presents major theoretical concepts about human development and environmental factors influencing development from the social and behavioral sciences and their applications to micro, mezzo, and macro social work practice. Explores intersectionality and how diversity shapes human experience and identity development. Focuses on the first half of the life cycle, the prenatal period through adolescence.

Course Learning Outcomes

1. articulate the basic concepts of theories of human behavior and development.
2. Apply theories of human behavior and development to explain human behavior from infancy through adolescence.
3. Apply social systems theories to explain human behavior from infancy through adolescence.
4. Describe important bio-psycho-social-cultural-spiritual influences in the United States.
5. Identify common stereotypes of diverse groups and the impact of these stereotypes.
6. articulate the major components of culturally-sensitive/competent social work practice.
7. Explain how social class, race, ethnicity, age, gender, religion/spirituality, sexual orientation, and disabilities impact human behavior and development, equity, and inclusion.
8. Describe the impact of leading social problems in the United States on individuals and families.
9. Identify core social work ethical issues related to work with individuals in the first half of the life cycle.

SW 3000

Social Work Practice I

Credit hours: 3

Teaches students to apply the generalist social work Planned Change Model with individuals: engagement, assessment, goal setting/contracting, implementation, evaluation, and transition/ending. Prepares students to utilize core social work interpersonal communication skills to engage clients in a professional partnership with intervention and planning. Emphasizes the importance of cultural humility, principles of strengths-based and anti-oppressive social work practice, empirical research, and theories of human behavior and person-in-environment. Discusses ethical and professional demeanor and practice.

Course Learning Outcomes

1. Describe primary roles employed in generalist social-work practice.
2. Examine how the values, principles, and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations impact social work practice with individual clients.
3. Differentiate between personal and professional values to manage the impact of personal experiences, values, beliefs, and biases and engage in anti-oppressive professional social work practice.
4. Explain the cyclical nature of the stages in social work Planned Change Model (engagement, assessment, goal setting*/contracting, implementation, evaluation, transition/ending).
5. Determine and demonstrate appropriate core social work interpersonal communication skills at each stage of the social work Planned Change Model with individuals.
6. Develop and implement a generalist level intervention strategy based on empirical research, theories of human behavior and person- in-environment, assessment data, and the values, ethos, and preferences of individual clients.
7. Apply best practices in transitions/endings with an individual client.
8. Evaluate practice with an individual by reviewing and assessing effectiveness in each stage of the social work Planned Change Model.
9. articulate connection between self-care and competent, ethical social work practice, and take appropriate measures for self-care.

SW 3100

Social Work Practice II

Credit hours: 3

Teaches students to apply the generalist social work Planned Change Process with families and groups: engagement, assessment, goal setting/contracting, implementation, evaluation, and transition/ending. Introduces group and family development and the theory and models of social work practice with groups and families. Prepares students to utilize group leadership and family communication skills necessary for research-informed practice. Emphasizes ethical and anti-oppressive practice.

Course Learning Outcomes

1. Examine how the values, principles, and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations impact social work practice with groups and families.
2. Differentiate between personal and professional values to manage the impact of personal experiences, values, beliefs, and biases and engage in anti-oppressive professional social work practice with families and groups.
3. Apply the social work Planned Change Model (engagement, assessment, goal setting/contracting, implementation, evaluation, transition/ending) with groups and families.
4. Demonstrate leadership and communication skills necessary for work with groups and families.
5. Utilize understanding of social group work models, stages of group formation, and group dynamics and processes to plan a group intervention.
6. Utilize understanding of family development, boundaries, subsystems, strengths, and resilience to engage, assess, intervene, and evaluate social work practice with families.
7. Synthesize research to inform group interventions and evaluate group effectiveness.
8. Utilize principles of anti-oppressive practice to respect and affirm families and group members from diverse backgrounds, distinguished by characteristics including (but not limited to) race, ethnicity, culture, class, gender and gender identity, sexual orientation, religion, physical or mental ability, age, and national origin.

SW 3200

Social Work Practice III

Credit hours: 3

Applies the social work Planned Change Model (engagement, assessment, goal setting/contracting, implementation, evaluation, and transitions/ending) to community and organizational macro systems. Utilizes systems theory to examine macro social problems. Explores the values, principles, standards, laws, policies, and regulations that direct ethical social work practice on the macro level, including within communities and organizations.

Course Learning Outcomes

1. Examine how the values, principles, and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations impact macro social work practice.
2. Utilize rights- based, anti-racist, and anti-oppressive lenses to understand and critique the social work profession's history, mission, roles, and responsibilities.
3. Utilize systems, organizational, and community theory to identify the causes and impact of a systemic social problem.
4. Discuss how to engage community members, stakeholders, and organizations impacted by a systemic social problem.
5. Propose opportunities for systemic changes and inform interventions that reduce or eliminate structural barriers and increase equitable distribution of resources.
6. Assess individual professional skills needed for practice with organizations and communities, including self evaluation, critical thinking, communication skills, and identify opportunity for continuous professional development.
7. Evaluate social work practice with macro systems by reviewing and assessing effectiveness in each of the stages of the social work planned change process.

SW 3400

Human Behavior and the Social Environment II

Credit hours: 3

Presents major theoretical concepts about human development and environmental factors influencing development from the social and behavioral sciences and their applications to micro, mezzo, and macro social work practice. Explores intersectionality and how diversity shapes human experience and identity development. Focuses on the second half of the lifecycle, young adulthood through older adulthood.

Course Learning Outcomes

1. articulate the basic concepts of theories of human behavior and development.
2. Apply theories of human behavior and development to explain human behavior from young adulthood through older adulthood.
3. Apply social systems theories to explain human behavior from young adulthood through older adulthood.
4. Describe important bio-psycho-social-cultural- spiritual influences in the United States.
5. Identify common stereotypes of diverse groups and the impact of these stereotypes.
6. Demonstrate an understanding of culturally- sensitive/competent social work.
7. Explain how social class, race, ethnicity, age, gender, religion/spirituality, sexual orientation and disabilities impact human behavior and development, equity, and inclusion.
8. Describe the impact of leading social problems in the United States on individuals and families.
9. Identify core social work ethical issues related to work with individuals in the second half of the life cycle.

SW 3500

Social Welfare Policies and Services

Credit hours: 3

Analyzes current social policy within the context of historical and contemporary factors that shape policy. Examines major social forces and institutions as they relate to and determine social policy emphasizing social welfare services in an industrialized society. Evaluates social welfare frameworks in light of the principles of social and economic justice. Identifies effect of social policy on generalist social work practice.

Course Learning Outcomes

1. Analyze the impact of local, state, federal, and global social policies on client wellbeing, human rights, and access to social services.
2. Apply principles of anti-racist and anti-oppressive policy practice to impact change.
3. Explore the social, racial, cultural, economic, organizational, environmental, and global influences (including White supremacy) that have led to social injustice and structural oppression.
4. Explore the history of social injustice, forms, and mechanisms of oppression and discrimination including social work's role and response.
5. Influence policy formulation, analysis, implementation, and evaluation within practice settings.
6. Critically evaluate and critique research to inform decisions in policy.
7. Analyze the structures of current social policies and services through a rights-based, anti-oppressive lens.
8. Utilize knowledge of policy formation, analysis, implementation, and evaluation to develop strategies to advocate for policies that eliminate oppressive structural barriers and ensure that social resources, rights, and responsibilities are distributed equitably, and human rights protected.

SW 3600

Ethics and Values in Social Work Practice

Credit hours: 3

Acquaints students with the values of the field of social work and the Code of Ethics of the National Association of Social Workers to help them begin to develop the ability to effectively deal with the ethical issues they will be confronted with in professional practice. Increases students awareness of new and emerging ethical issues and provide tools and methodologies for ethical decision-making. Addresses ethical dilemmas involving conflict between personal values, agency guidelines, professional standards, and cultural differences. Includes discussion of models for ethical decision-making, the NASW Code of Ethics, as well as the codes of ethics of other human services professional organizations.

Course Learning Outcomes

1. Explain the policies, laws, regulations, values, and core ethical standards of the social work profession.
2. Analyze ethical dilemmas in all levels of social work practice through the application of an ethical decision-making framework.
3. articulate ethical theory and its culturally appropriate application to ethical conflicts in social work practice.
4. Outline the fundamental human rights of social work clients.
5. Examine how personal values and biases influence practice and manage the distinction between personal and professional values in relation to social work practice.
6. Apply the NASW Code of Ethics and relevant policies, laws, and regulations to the competent and ethical use of technology in social work practice.

SW 371G

Diversity Issues in Social Work Practice GI

Credit hours: 3

Increases understanding and appreciation of diverse client populations, the nature of cultural identity, group membership and differential access to resources, and strategies to combat discrimination, oppression and economic deprivation and to promote social and economic justice. Examines socio-identities including: race, ethnicity, religion, gender, social class, sexual orientation, abilities, and age. Includes discussion of oppressive and discriminatory experiences as well as resilience and strengths encountered by different groups. Explores similarities, differences, and controversies between diverse populations in the context of their personal values and professional policy and practice.

Course Learning Outcomes

1. Describe cultural differences, expectations, and personal philosophies and assumptions underlying personal biases.
2. Identify empowerment, advocacy, and social action strategies in cross-cultural settings.
3. articulate the complex historical, political, social, economic, and cultural factors that impact the diversity spectrum.
4. Analyze the implications of discrimination on diverse groups.
5. Describe the historical development of white racial identity with its associated challenges and benefits.
6. Identify the significance of diversity issues in Social Work practice.
7. Demonstrate knowledge and recognition of complexities inherent in global and/or intercultural issues.
8. Demonstrate the ability to interrelate knowledgably, reflectively, responsibly, and respectfully with a society of increasing intercultural connections.

SW 3860

Interviewing Skills

Credit hours: 3

Develops knowledge of and skill in clinical interviewing across cultures. Familiarizes students with a broad range of clinical interviewing skills. Uses class discussions, video clips of master clinicians, instructor modeling, in-class practice, videotaped role plays, and class and instructor evaluations of role plays.

Course Learning Outcomes

1. Explain the interviewing micro-skills hierarchy.
2. Demonstrate one's interviewing skills.
3. Evaluate one's strengths and weakness as an interviewer in order to develop a plan to improve.
4. Analyze the role of cultural bias and cultural differences in the interview process.

SW 4800

Integrated Seminar I

Credit hours: 1

Provides a generalist base for social work practice that involves an on-site, supervised field agency practicum and a weekly seminar. Assists the student to integrate classroom learning with learning that takes place in the on-site field practicum. First of two courses in field practicum sequence. Graded Credit/No Credit.

Course Learning Outcomes

1. Work effectively with diverse client systems.
2. Demonstrate critical thinking and problem-solving skills.
3. Apply an appreciation of human diversity by providing culturally-competent services consistent with the values and ethics of the field of social work.
4. Employ the professional use of self in generalist social work practice.
5. Deal effectively with the difficulties and frustrations of social work practice.
6. Identify gaps in service delivery systems and the ability to advocate for programs and policies to meet unmet needs.
7. articulate and analyze social, agency, and organization policy as related to service delivery.
8. Apply research findings in intervention efforts.

SW 481R

Field Placement

Credit hours: 1 to 8

Provides a generalist base for social work practice that involves an on-site, supervised field agency practicum. Assists the student to integrate classroom learning with learning that takes place in the on-site field practicum. Performs a minimum of 225 hours of supervised social work in a local agency setting. May be repeated for a maximum of 10 credits toward graduation. May be graded credit/no credit. Course fee of \$60 applies for practical experience applies.

Course Learning Outcomes

1. Engage effectively with diverse client systems.
2. Provide culturally-competent services consistent with the values and ethics of the field of social work.
3. Apply the professional use of self in generalist social work practice.
4. Identify gaps in service delivery systems in order to advocate for programs and policies.
5. Analyze social, agency, and organization policy as related to service delivery.
6. Use research findings to guide intervention.

SW 4850

Integrated Seminar II

Credit hours: 1

Provides a generalist base for social work practice that involves an on-site, supervised field agency practicum and a weekly seminar. Assists the student to integrate classroom learning with learning that takes place in the on-site field practicum. Provides an integrative classroom experience for students with a clinical interest currently working in related jobs or volunteer experiences in human service agencies or work sites. Second of two courses in the field practicum sequence.

Course Learning Outcomes

1. Work effectively with diverse client systems.
2. Demonstrate critical thinking and problem- solving skills.
3. Appreciate human diversity by providing culturally-competent services consistent with the values and ethics of the field of social work.
4. Apply the professional use of self in generalist social work practice.
5. Deal effectively with the difficulties and frustrations of social work practice.
6. Identify gaps in service delivery systems and the ability to advocate for programs and policies to meet unmet needs.
7. articulate and analyze social, agency, and organization policy as related to service delivery.
8. Apply research findings in intervention efforts.
9. Conduct a basic program evaluation.

SW 6000

Social Work Practice I--Generalist Practice with Individuals

Credit hours: 3

Teaches students to apply the generalist social work Planned Change Model with individuals: engagement, assessment, goal setting/contracting, implementation, evaluation, and transition/ending. Prepares students to utilize core social work interpersonal communication skills to engage clients in a professional partnership and complete a comprehensive assessment. Emphasizes the importance of cultural humility, principles of strengths-based and anti-oppressive social work practice, empirical research, and theories of human behavior and person-in-environment. Overviews intervention modalities, including case management. Discusses ethical and professional demeanor and practice.

Course Learning Outcomes

1. Examine how the values, principles, and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations impact social work practice with individual clients.
2. Differentiate between personal and professional values to manage the impact of personal experiences, values, beliefs, and biases and engage in anti-oppressive professional social work practice.
3. Explain the cyclical nature of the stages in the social work Planned Change Model (engagement, assessment, goal setting/contracting, implementation, evaluation, transition/ending).
4. Determine and demonstrate appropriate core social work interpersonal communication skills at each stage of the social work Planned Change Model with individuals.
5. Utilize principles of anti-oppressive social work practice to complete a strengths-based bio-psycho-social-spiritual assessment with an individual client.
6. Develop and implement an intervention strategy based on empirical research, theories of human behavior and person-in-environment, assessment data, and the values, ethos, and preferences of individual clients.
7. Demonstrate effective transitions/endings with an individual client.
8. Evaluate practice with an individual by reviewing and assessing effectiveness in each stage of the social work Planned Change Model.

SW 6020

Social Work Practice II--Generalist Practice with Families and Groups

Credit hours: 3

Teaches students to apply the generalist social work Planned Change Process with families and groups: engagement, assessment, goal setting/contracting, implementation, evaluation, and transition/ending. Introduces group and family development and the theory and models of social work practice with groups and families. Prepares students to utilize group leadership and family communication skills necessary for research-informed practice. Emphasizes ethical and anti-oppressive practice and discusses how working with families and groups can advance human rights and social justice.

Course Learning Outcomes

1. Examine how the values, principles, and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations impact social work practice with groups and families.
2. Differentiate between personal and professional values to manage the impact of personal experiences, values, beliefs, and biases to engage in anti-oppressive professional social work practice with families and groups.
3. Apply the social work Planned Change Model (engagement, assessment, goal setting/contracting, implementation, evaluation, transition/ending) with groups and families.
4. Demonstrate leadership and communication skills necessary for work with groups and families.
5. Utilize an understanding of social group work models, stages of group formation, and group dynamics and processes to plan a group intervention.
6. Utilize understanding of family development, boundaries, subsystems, strengths, and resilience to engage, assess, intervene, and evaluate social work practice with families.
7. Synthesize research to inform group interventions and evaluate group effectiveness.
8. Utilize principles of anti-oppressive practice to respect and affirm families and group members from diverse backgrounds, distinguished by characteristics including (but not limited to) race, ethnicity, culture, class, gender and gender identity, sexual orientation, religion, physical or mental ability, age, and national origin.
9. Describe how social work practice with groups and families can advance human rights and social, racial, economic, and environmental justice.

SW 6030

Social Work Practice III--Advanced Practice with Individuals

Credit hours: 3

Examines clinical approaches most often used with clients. Emphasizes the theoretical basis of treatment modalities and how to apply them in practice.

Course Learning Outcomes

1. Critique ten clinical social work practice theories and their rationale.
2. Evaluate application of theories to case studies in writing.
3. Apply theoretical knowledge to practicum cases through role play and rehearsal.
4. Analyze one theoretical approach to counseling theory in depth in a paper.

SW 6040

Social Work Practice IV--Advanced Practice with Families and Groups

Credit hours: 3

Builds on the skills and knowledge for generalist social work practice with an emphasis on advanced practice with small groups and complex family cases. Implements the planned change process to target workable intervention strategies. Identifies family and group problems such as scapegoating, manipulation, resistance, and how to solve those problems.

Course Learning Outcomes

1. Construct planned change processes for complex family cases and treatment groups.
2. Evaluate the effectiveness of family and group composition.
3. Design family and group problem resolutions that target specific problem areas, like scapegoating, manipulation, and resistance.
4. Apply family and group processes, such as goal setting, conflict resolution, family and group trust, and stress management.

SW 6050

Social Work Practice V--Advanced Practice with Organizations and Communities

Credit hours: 3

Analyzes multiple approaches social workers use to influence groups, organizations, communities, and systems. Examines concepts, theories, and models of macro level practice and skills for addressing complex practice and organizational situations.

Course Learning Outcomes

1. Analyze the interaction between human systems and societal functions at a cultural, structural, and behavioral level.
2. Analyze competencies in macro social work in the area of working effectively within, advocating for, and helping to develop and change human service organizations.
3. Create opportunities to manage programs in the social work field.
4. Analyze organizational and social systems to identify and empower marginalized individuals and groups to self-advocate and promote inclusion.

SW 6200

Human Behavior and the Social Environment

Credit hours: 3

Teaches students critical perspectives, theories, and frameworks that describe the behavior of individuals, families, interpersonal and group relationships, communities, and social and political systems. Focuses on theories and knowledge related to biological, sociological, psychological, spiritual, and cultural processes as they affect development across the lifespan as well as well-being, challenge, and coping. Emphasizes the person-in-environment framework for understanding the reciprocal nature of interactions between micro, mezzo, and macro systems. Investigates varying social environment factors, including historical, social, racial, cultural, economic privilege and power, oppression, and marginalization that impact individuals, families, organizations and communities.

Course Learning Outcomes

1. Describe the foundational concepts and principles of social work practice centered on anti-racism, anti-oppression, diversity, equity, and inclusion.
2. Differentiate between personal and professional values to manage the impact of personal experiences, values, beliefs, and biases and engage in anti-oppressive professional social work practice.
3. Apply the person-in-environment framework to describe the reciprocal nature of interactions of individuals, families, and social and political systems in society.
4. Identify theories of human behavior, development, the social environment, and interdisciplinary conceptual frameworks that contribute understanding of clients and social workers at each stage of the social work Planned Change Model: engagement, assessment, goal setting/contracting, implementation, evaluation, transition/ending.
5. Examine the biological, psychological, ecological, spiritual, relational, and socio-cultural factors that impact human development, well-being, challenge, and coping.
6. Critique how historical, socio-cultural, racial, and economic privilege and power, oppression, and marginalization impact individuals, families, and communities.
7. Evaluate theories and perspectives of human development and behavior, sociological frameworks, and interprofessional conceptual models for alignment with the values and principles of anti-oppressive social work practice.

SW 6250

Macro Systems and Social Impact

Credit hours: 3

Applies the social work Planned Change Model (engagement, assessment, goal setting/contracting, implementation, evaluation, and transitions/ending to community and organizational macro systems. Utilizes systems theory and thinking to examine social problems within actionable parameters: identifying stakeholders and their relationships to power and influence; examining historical precedence and current policy; identifying causes, consequences, and reinforcing feedback loops; investigating existing interventions; and determining the gaps and opportunities for intervention within a system. Examines the social work profession utilizing an anti-oppressive lens and explores the values, principles, standards, laws, policies, and regulations that direct ethical social work practice on the macro level.

Course Learning Outcomes

1. Examine how the values, principles, and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations impact macro social work practice.
2. Utilize rights- based, anti-racist, and anti-oppressive lenses to understand and critique the social work profession's history, mission, roles, and responsibilities.
3. Utilize systems theory research and community demographic and location data to identify the causes and impact of a systemic social problem.
4. Discuss how to engage community members, stakeholders, and organizations impacted by a systemic social problem.
5. Assess how historical, sociocultural, racial, and economic privilege and power, oppression, and marginalization impact the distribution of resources and services thereby replicating and reinforcing social problems.
6. Create maps and infographics that illustrate a system's stakeholder relationships, inputs and outputs, and reinforce causal loops.
7. Propose opportunities for systemic changes and inform interventions that reduce or eliminate structural barriers and increase equitable distribution of resources.
8. Evaluate social work practice with macro systems by reviewing and assessing effectiveness in each of the stages of the social work helping process.

SW 6300

Social Welfare Policy and Analysis

Credit hours: 3

Teaches students to identify the impacts of historical and current social policies on individual, family, and community well-being, human rights, social and economic justice, and structural oppression. Analyzes the role of governments, and the private and non-profit approaches to social policy and service formulation, implementation, and evaluation. Examines major social forces and institutions as they relate to and determine social welfare policy and welfare services in the United States. Teaches students how to advocate for policy that ensures that resources, rights, and responsibilities are distributed equitably.

Course Learning Outcomes

1. Examine how the values, principles, and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations impact social work policy practice.
2. Differentiate between personal and professional values to manage the impact of personal experiences, values, beliefs, and biases and engage in anti-oppressive professional social work policy practice.
3. Analyze the impact of local, state, federal, and global social policies on client well-being, human rights, and access to social services.
4. Evaluate the historical, social, racial, cultural, economic, organizational, environmental, and global influences and policies that have led to social injustice and structural oppression.
5. Summarize the role of government in social service policy formulation and implementation for Individuals, Families, Groups, Organizations, and Communities.
6. Analyze the structures of current social policies and public, private, and non-profit social services delivery through a rights-based, anti-oppressive lens.
7. Utilize knowledge of policy formulation, analysis, implementation, and evaluation to advocate for policies that eliminate oppressive structural barriers and ensure that social resources, rights, and responsibilities are distributed equitably, and human rights protected.

SW 6320

Social Work Practice with Diverse Populations

Credit hours: 3

Emphasizes the social work profession's commitment to cultural humility, anti-oppression, diversity, equity, and inclusion, and advancing social, economic, and environmental justice. Explores how intersectionality (including, but not limited to age, social class, culture, disability and ability, ethnicity, gender, gender identity and expression, immigration status, nationality, religion, race, religion, sex, sexual orientation, and tribal sovereign status) determines experiences of power, privilege, and marginalization and shapes people's life experiences. Prepares students to practice social work reflexively in congruence with principles of anti-oppressive practice and to challenge dominant norms and world views that work to marginalize persons. Requires significant self-reflection to understand one's unique positionality as a social work practitioner.

Course Learning Outcomes

1. Evaluate how historical, sociocultural, racial, and economic privilege and power, oppression, and marginalization impact individuals, families, groups, organizations, and communities.
2. Apply principles of anti-oppressive social work practice and cultural humility to engage diverse individuals, families, groups, and communities.
3. Utilize research-informed practices to assess cultural structures, support systems, values, beliefs, and strengths from the perspective of the client.
4. Create intervention strategies in partnership with diverse individuals, families, groups, and communities based on assessment, empirical knowledge, and the values, culture, and preferences of clients.
5. Evaluate practice with diverse client systems according to principles of anti-racism/oppression, diversity, equity, and inclusion.
6. Identify multidimensional challenges to effective anti-racist communication and social work practice.
7. Analyze one's intersecting identities, experiences of privilege, power, marginalization, values, beliefs, and biases to increase the ability to utilize an anti-oppressive framework in social work practice.
8. Utilize rights-based, anti-racist, and anti-oppressive lenses to identify forms and mechanisms of discrimination and oppression in the social work profession.

SW 6400

Social Work Research Methods

Credit hours: 3

Overviews social work research including the empirical research process and quantitative and qualitative methodologies. Prepares students to conduct ethical, responsible, and diverse social work research and/or evaluation on the macro, mezzo, and micro levels. Teaches critical analysis of scholarly literature and application of research in social work practice. Includes the importance of practice and program evaluation as social work research. Educates on effective oral and written presentation of research.

Course Learning Outcomes

1. Identify the ethical principles and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations that guide research-informed practice and practice-informed research.
2. Identify quantitative and qualitative research methods and describe validity and reliability in peer-reviewed research studies.
3. Describe how research can promote human rights and the equitable distribution of resources.
4. Explain how personal and societal biases and values influence research.
5. Utilize principles of anti-oppression, diversity, equity, and inclusion to evaluate research questions, hypotheses, methods, sample and data collection, and findings.
6. Synthesize current research literature to answer a practice-based question.
7. Develop a research proposal that complies with IRB and NASW ethical guidelines.
8. Explain research findings for diverse constituencies.
9. Apply research methodologies and knowledge to evaluating social work practice.

SW 6490

MSW Advanced Standing Bridge Course

Credit hours: 4

Supplements the knowledge, skills, and values foundation developed in participants' BSW programs. Reviews content learned at the baccalaureate level and material that will be helpful in preparing students for the concentration year of the MSW program. Prepares MSW students to transition from the foundation year to the advanced concentration courses. Addresses topics necessary for advanced MSW-level practice and to support effective and ethical micro- and macro-level interventions. Covers key content addressed in SW foundation courses within the BSW program. This course is open to Advanced Standing students only.

Course Learning Outcomes

1. Engage diversity and difference in practice.
2. Engage in practice-informed research and research-informed practice.
3. Assess individuals, families, groups, organizations, and communities.
4. Intervene with individuals, families, groups, organizations, and communities.
5. Evaluate practice with individuals, families, groups, organizations, and communities.

SW 6491

MSW Advanced Standing Skills Course

Credit hours: 4

Develops students' applied skills in Social Work practice. Integrates foundational social work approaches to practice, such as empowerment, strengths-based, and collaborative/person-centered skills. Assures that incoming Advanced Standing students have mastered foundational competencies in social-work practice skills with various types of human systems. Prepares MSW students to transition from the foundation year to the advanced concentration courses. Open to Advanced Standing students only.

Course Learning Outcomes

1. Demonstrate ethical and professional behavior.
2. Engage diversity and difference in practice within multiple systems.
3. Engage in practice-informed research and research-informed practice.
4. Engage with individuals, families, groups, organizations, and communities.
5. Assess individuals, families, groups, organizations, and communities.
6. Intervene with individuals, families, groups, organizations, and communities.
7. Evaluate practice with individuals, families, groups, organizations, and communities.

SW 6500

Social Work Practice with Substance Related and Addictive Disorders

Credit hours: 3

Teaches how to reduce or eliminate the detrimental impact of substance use disorders at multiple levels, such as families, groups, organizations, and communities. Teaches the knowledge and skills that assist in reducing and eliminating addiction. Enables students to identify, assess, and evaluate those struggling with substance abuse and dependency throughout the life span and how to intervene when necessary.

Course Learning Outcomes

1. Evaluate the unique role of social work among the many professions involved in addressing substance use and addictive disorders.
2. Employ interventions to engage the client in setting goals.
3. Apply an understanding of the needs of diverse populations in the assessment, diagnosis, and intervention of substance use and addictive disorders.
4. Apply the current laws, federal, state, and local public policies that impact substance use and addictive disorders in the social environment.

SW 6630

Mental Health Assessment in Social Work Practice

Credit hours: 3

Introduces the theories, frameworks, research, and skills related to the assessment and diagnosis of mental health disorders. Provides an overview of the major disorders in the current edition of the DSM. Examines a range of mental disorders, including etiology, developmental course, diagnosis and diagnostic tools, and treatment planning. Addresses diversity and equity issues and ethical, socially responsible practice. Overviews biological, psychological, environmental, cultural, and relational risk and protective factors and summarizes the critiques and limitations of the DSM.

Course Learning Outcomes

1. Examine how the values, principles, and standards contained in the NASW Code of Ethics and relevant policies, laws, and regulations impact social work practice in behavioral health and what ethical dilemmas may arise in mental health diagnosis.
2. Evaluate how historical, sociocultural, racial, and economic privilege and power, oppression, and marginalization impact the behavioral health of clients as well as the behavioral healthcare system.
3. Utilize social work interpersonal communication skills in assessing clients for behavioral health diagnoses.
4. Recall pertinent criteria for each diagnosis covered.
5. Diagnose clients in case studies accurately as a part of a holistic social work assessment.
6. Relate diagnoses to research-informed approaches for treatment.
7. Critique the limitations of the DSM in social work practice.

SW 6810

Integrative Seminar I

Credit hours: 1

Integrates and applies the knowledge and skills obtained from course work to social work practice in the field practicum agency. Examines and evaluates practice experiences to increase the ability to apply theory, research, models, and skills with clients. Emphasizes ethical social work practice. Provides an opportunity to practice social work skills under the supervision of an experienced professional social worker.

Course Learning Outcomes

1. Analyze ethical dilemmas in social work practice through the application of an ethical decision-making model.
2. Examine how personal values and biases, and experiences of power, privilege, discrimination, marginalization, and oppression may impact social work practice.
3. articulate the connection between self-care and competent, ethical social work practice.
4. Integrate the knowledge, theories, frameworks, models, skills, and research taught across the curriculum into social work practice in the field practicum agency.
5. Apply the social work Planned Change Model to social work practice in the field practicum agency.
6. Apply fundamental social work interpersonal communication skills.
7. Evaluate strengths and opportunities for growth in social work knowledge, values, and skills.
8. Identify tasks within the field practicum agency that will increase social work competency.

SW 6820

Integrative Seminar II

Credit hours: 1

Builds on Integrative Seminar I. Integrates and applies the knowledge and skills obtained from coursework to social work practice in the field practicum agency. Examines and evaluates practice experiences to increase the ability to apply theory, research, models, and skills with clients. Emphasizes ethical social work practice. Provides an opportunity to practice social work skills under the supervision of an experienced professional social worker.

Course Learning Outcomes

1. Analyze ethical dilemmas in social work practice through the application of an ethical decision-making model.
2. Examine how personal values and biases, and experiences of power, privilege, discrimination, marginalization, and oppression may impact social work practice.
3. articulate the connection between self-care and competent, ethical social work practice.
4. Integrate the knowledge, theories, frameworks, models, skills, and research taught across the curriculum into social work practice in the field practicum agency.
5. Apply the social work Planned Change Model to social work practice in the field practicum agency.
6. Apply fundamental social work interpersonal communication skills.
7. Evaluate strengths and opportunities for growth in social work knowledge, values, and skills.
8. Identify tasks within the field practicum agency that will increase social work competency.

SW 6830

Integrative Seminar III

Credit hours: 1

Provides opportunities for integration of social work course work and field practicum experiences. Features in-depth analysis of specific social work competencies within the students' domains of practice. Teaches the domains of social work practice that include: assessment, interventions, program policies, and service delivery and leadership in the chosen practice area. Provides guidance in practicum and seminar.

Course Learning Outcomes

1. Apply critical thinking skills within professional contexts, including synthesizing and applying to practice situations theories and knowledge studied in social work practice courses.
2. Evaluate congruence and discrepancies between field experiences and content of the courses taken to date.
3. Exhibit expertise at cultivating effective teamwork, collaboration, and community-building in context of human diversity and inclusiveness.
4. Analyze both the organization and community context of their practice.
5. Develop capacity for effective supervision and consultation.

SW 6840

Integrative Seminar IV

Credit hours: 1

Provides opportunities for integration of social work course work and field practicum experiences. Features in-depth analysis of specific social work competencies within the students' domains of practice. Teaches the domains of social work practice that include: assessment, interventions, program policies, and service delivery and leadership in the chosen practice area. Provides guidance in practicum and seminar.

Course Learning Outcomes

1. Apply critical thinking skills within professional contexts, including synthesizing to practice situations theories and knowledge studied in social work practice courses.
2. Evaluate congruence and discrepancies between field experiences and course content.
3. Display increased competence in professional writing and recording.
4. Evaluate practicum learning contract and to what extent individualized learning goals have been realized, and how success has been measured.
5. Make informed career decisions regarding employment after graduation, taking the advanced clinical exam, and applying for licensure.

SW 6910

Foundation Field Practicum I

Credit hours: 2

Offers engaged field education as the central form of instruction and learning to socialize students to become practitioners. Integrates social work theory with practice. Reinforces the purposes, values, and ethics of the social work profession. Fosters the integration of empirical and practice-based knowledge to promote the development of professional competence.

Course Learning Outcomes

1. Develop a Learning Agreement that includes clear and realistic goals and objectives.
2. Perform macro-level social work and social policy in a field agency.
3. Apply principles of diversity and cultural competence in a field setting.
4. Apply evidence-based practice and practice-informed research in social work.

SW 6920

Foundation Field Practicum II

Credit hours: 2

Provides the opportunity to apply classroom learning and to integrate theory with practice. Aligns with Council on Social Work Education standards for field education. Reinforces the purposes, values, and ethics of the social work profession. Promotes the development of professional competence.

Course Learning Outcomes

1. Analyze learning agreement from previous semester and make adjustments as necessary to the stated goals and objectives.
2. Perform macro-level social work and social policy in a field agency.
3. Apply principles of diversity and cultural competence in a field setting.
4. Apply evidence-based practice and practice-informed research in social work.
5. Evaluate effectiveness of the services provided by student within the context of their practicum agency.

SW 6930

Advanced Field Practicum I

Credit hours: 2

Provides agency-based field instruction for advanced learning and practice opportunities relevant to social work. Provides opportunity to integrate and apply advanced generalist practice theory within field experiences. Advances knowledge and skills in practice, research, and evaluation across multi-level systems. Combines field experience, traditional classroom, field supervision, online activities and assignments, and self-directed learning per the field practicum manual.

Course Learning Outcomes

1. Achieve the goals and objectives developed in the learning plan.
2. Perform as an Advanced Generalist in the practicum.
3. Develop a proactive supervision agenda for use in an employment setting.
4. Analyze the varied roles of the Advanced Generalist.

SW 6940

Advanced Field Practicum II

Credit hours: 2

Continues agency-based field instruction and classroom seminar for advanced learning and practice opportunities relevant to social work. Provides opportunity to integrate and apply advanced generalist practice theory within field experiences. Increases knowledge and skills in practice, research, and evaluation across multi-level systems. Combines field experience, traditional classroom, field supervision, online activities, assignments, and self-directed learning per the field practicum manual.

Course Learning Outcomes

1. Analyze learning agreement from previous semester and make adjustments needed to achieve goals and objectives.
2. Perform as an Advanced Generalist in the practicum.
3. Evaluate the supervision plan with the Field Instructor and on-site supervisor.
4. Analyze the roles of the Advanced Generalist.
5. Evaluate quality of services provided within the context of the practicum agency.

SW 6950

Advanced Applied Research--MSW Capstone

Credit hours: 3

Teaches the knowledge and skills required to engage in practice-informed research across systems levels and stages of the social work helping process. Teaches the format of an empirical research poster presentation for a peer-reviewed conference. Synthesizes coursework throughout the MSW curriculum in alignment with the advanced competencies of the MSW program.

Course Learning Outcomes

1. Utilize scientific literature, theory, and practice experience to identify gaps in practice-informed research.
2. Develop an empirical research study to answer a question relevant to social work practice.
3. Complete an ethical research project.
4. Design a scientific research poster and paper presentation.
5. Demonstrate competency across the advanced MSW curriculum.

TECH 1050

Manufacturing Processes and Systems

Credit hours: 3

Covers a wide variety of manufacturing processes, including: casting, welding, sheet metal forming, machining, composites fabrication, injection molding, extrusion, thermoforming, rotational molding, and electronics fabrication. Covers understanding of manufacturing systems and all the components required to work together, including: the production system, ERP software system, quality system, business structure, supply chain, and delivery.

Course Learning Outcomes

1. Analyze a product and know how it is made.
2. Summarize the advantages, disadvantages, abilities, and limitations of metals' manufacturing processes.
3. Summarize the advantages, disadvantages, abilities, and limitations of plastics' manufacturing processes.
4. Summarize the advantages, disadvantages, abilities, and limitations of composites' manufacturing processes.
5. Apply the required tooling and relative costs for each type of manufacturing process.
6. Use basic principles of good manufacturing to solve system problems.
7. Identify the common challenges facing contemporary manufacturing and good principles to surmount those challenges.
8. Demonstrate modern technological tools to understand manufacturing systems and solve current challenges.

TECH 200G

Technology and Human Life SS GI

Credit hours: 3

Acquaints students with the major technologies affecting our culture and the global community, such as biotechnology, nanotechnology, information technology, and military technology. Places special emphasis on the moral, social, economic, legal, and political consequences of these technologies. Covers summary descriptions of various technologies, some of the major issues associated with them, and the underlying philosophical foundations of our encounters with them. May be delivered online.

Course Learning Outcomes

1. Define the major concepts constituting technological literacy
2. Identify major technologies that impact society
3. Explain the legal issues and moral implications surrounding contemporary technologies
4. Examine the social and cultural impact of modern technology
5. Analyze and evaluate global or intercultural issues of contemporary technologies
6. Discuss conventional cultural conceptions and recognize the complexity and variety of different cultural groups on their use of technologies
7. Define possible future consequences of emerging technologies
8. Evaluate how one's own cultural expectations and biases compare and contrast with those from different cultures

TECH 2010

Supervision in Technology

Credit hours: 3

Addresses employee motivation and the impact of the workplace environment (both physical and intangible). Presents various techniques of leadership and management (addressing different motivational theories and contemporary research on worker motivation). Teaches how to build and work in effective teams to inspire good performance and use conflict and negotiation effectively. Practices good communication skills both written and oral. Teaches how to understand the organizational structure, how to manage and assess performance, and how to be aware of opportunities and challenges when managing employees in a technological environment, including strategies for training and evaluation. May include hybrid or online delivery.

Course Learning Outcomes

1. Use contemporary management processes to build teams to implement and manage technological functions according to predetermine standards of quality.
2. Assess employee motivation levels and needs to evaluate change strategies within an organizational culture for improved technical performance.
3. Apply leadership tools to supervise employees in a technical field to shape development and behavior.
4. Utilize effective written and oral communication strategies to improve efforts such as performance, negotiation, and conflict resolution.
5. Use analysis and problem solving tools to lead change and resolve ethical questions.

TECH 2050

Introduction to Quality Management

Credit hours: 3

Introduces quality management. Includes ISO 9000, application of Lean Six Sigma, continuous process/product improvement, basic statistical methods, performance measurements, cost of poor quality, employee empowerment, and global quality initiatives. Covers requirements for relevant professional certifications for career enhancement.

Course Learning Outcomes

1. Identify the most common quality problems being experienced by technical companies.
2. Apply Lean Six Sigma tools to solve quality problems.
3. Identify requirements for ISO compliance and certification.
4. Apply basic statistical methods.
5. Distinguish principles of quality management that lead to employee empowerment.
6. Recognize modern challenges that companies experience in global environment.

TECH 3000

Introduction to Technology Management

Credit hours: 3

Addresses the special characteristics of managing and leading technology dependent organizations. Covers the leading influential technologies, technology's impact on organizational structure and the policy process, strategic technological planning, futures studies, leadership, global aspects of technology management, performance assessment, technology life cycles and financing, and some of the major ethical implications of managing technology dependent organizations. Canvas Course Mats \$85/McGraw applies

Course Learning Outcomes

1. Identify characteristics of managing technology-dependent organizations.
2. Distinguish leadership characteristics most useful in technology-dependent organizations.
3. Specify the major global implications of managing technology-dependent organizations.
4. Identify major legal issues that technology-dependent organizations often encounter.
5. Evaluate current technology processes used in business settings.

TECH 3010

Creative Problem Solving

Credit hours: 3

Focuses on thinking creatively and developing innovative solutions to complex problems. Covers creative problem-solving techniques, including brainstorming, lateral and design thinking. Prepares learners to identify and define problems, generate and evaluate ideas, and implement effective solutions. Explores various tools and frameworks for creative problem-solving, such as mind mapping, storyboarding, and prototyping. Open for all majors.

Course Learning Outcomes

1. Identify root causes by analyzing problems through multiple perspectives.
2. Generate a wide range of potential solutions using various creative problem-solving techniques.
3. Synthesize multiple ideas and perspectives to develop an innovative and effective solution.
4. Communicate problems and solutions to a diverse audience.
5. Collaborate with a team to solve complex problems.

TECH 301R

Technology Lecture Series

Credit hours: 1

Presents lectures from external speakers in various technology related subjects. Requires a written reaction paper for most of the lectures. May be repeated for a maximum of 2 credits toward graduation.

Course Learning Outcomes

1. Describe how technology is being used and managed within business and industry.
2. Assess technical topics to identify opportunities for innovation.
3. Interpret technical themes for application in career development.
4. Evaluate career opportunities within an area of study

TECH 3400

Project Management WE

Credit hours: 3

Covers the fundamental principles, processes, and techniques of project management. Includes a systems approach to planning, scheduling, and controlling projects. Focuses on effective processes for managing projects across multiple disciplines/industries and varying management structures. Introduces project management tools that can be used to guide and manage individual and multiple projects. Includes writing intensive instruction.

Course Learning Outcomes

1. Discuss the importance of project, portfolio, program, and change management to the success of projects in various professions and enterprises.
2. Explain project management methods such as project phase-gate, agile, lean, and hybrid methods.
3. Describe project management profession's key elements such as the Project Management Institute CAPM body of knowledge and the role and content of relevant industry certificates.
4. Apply project management concepts by composing disciplinary texts through a collaborative, multi-step group project.
5. Use software tools for project management.

TECH 3850

Quality Management in Technology

Credit hours: 3

Involves a comprehensive approach to Quality Management related to technical professions. Covers Lean and Six Sigma approaches, continuous improvement/Kaizen, Voice of the Customer (VOC), Statistical Process Control (SPC), cost of poor quality, leadership, employee empowerment, teamwork, change management, and quality standards. Assists in preparing students for the relevant professional certifications for career enhancement.

Course Learning Outcomes

1. Analyze a process to uncover improvement opportunities
2. articulate a business case for investment in quality
3. Apply structured problem-solving methods and tools to improve quality
4. Demonstrate the ability to work in a team environment

TECH 4000

Reliability Management

Credit hours: 3

Introduces reliability as a component of successful business strategies. Covers processes for design for reliability in the context of quality management and product development. Presents the most common tools and techniques used to test and interpret reliability data. Examines the role of managers and reliability engineers to ensure product reliability and safety. Uses a mix of case studies, student research, and current events to examine the business impact of reliability in technical enterprises. Software fee of \$15 applies.

Course Learning Outcomes

1. Analyze product reliability using software-based modeling and analysis techniques.
2. Examine the implementation of Design for Reliability within a product development process.
3. Evaluate management practices that contribute to product and process reliability.
4. Assess economic and business impact of poor reliability.

TECH 405G

Global Ethical and Professional Issues in Technology GI

Credit hours: 3

Examines professional, ethical, and cultural issues related to the leadership of technological organizations. Studies the impact of emerging technologies, conflicting values, multiculturalism, and globalization on management practices in the workplace. Reviews current ethical theory and professional codes of conduct with special emphasis on global and intercultural issues. Includes lectures, readings, case studies and other media. May be delivered online.

Course Learning Outcomes

1. Analyze global or intercultural issues
2. Discuss stereotypical cultural conceptions and recognize the complexity and variety of different cultural groups
3. Evaluate how one's own cultural values compare with those from different backgrounds
4. Interrelate respectfully with individuals representing cultures and perspectives other than one's own
5. Analyze ethical issues that arise in global technological organizations
6. Explain principles of leadership and professionalism required in global technological organizations
7. Document examples of emerging technologies and the ethical issues they raise

TECH 4400

Advanced Project Management

Credit hours: 3

Covers advanced tools and techniques used in project portfolio management and program management, including the activities of strategic project leadership and management. Covers methods to effectively plan, organize, and execute complex projects, and demonstrate approaches to align projects and portfolios with organizational strategy and business goals. Provides an evaluation of software tools used in project portfolio management.

Course Learning Outcomes

1. Apply advanced project portfolio management techniques to manage complex technical projects
2. Evaluate and select appropriate project management methods such as project phase- gate, agile, lean, and hybrid methods to effectively plan, organize, and execute complex projects
3. Analyze and align projects and portfolios with organizational strategy and business goals
4. Apply software tools for project portfolio management
5. Lead people within a technical environment to achieve project and portfolio success

TECH 4420

Organization Information Technologies

Credit hours: 3

Introduces how information, and the management of that information, can affect the structure and operations of organizations. Covers technical and organizational foundations of information systems along with contemporary approaches to building, managing, and protecting information systems including hands-on work with a modern Enterprise Resource Planning (ERP) system. Emphasizes how information technology affects decision-making in cross-functional teams. Examines Excel and Access as decision support tools. Examines the ethical and legal issues raised by the capabilities of information technology. Lab access fee of \$45 for computers applies.

Course Learning Outcomes

1. Compare major categories of information technologies, describe their functions and purpose, and apply them to management situations.
2. Illustrate the ways in which information technologies (IT) and Management Information Systems (MIS) support organizational processes and decision making.
3. Utilize databases and spreadsheets to produce information for decision making.
4. Demonstrate a working knowledge of enterprise resource planning (ERP) and its use as an MIS in cross-functional teams.
5. List the major considerations associated with evaluation and implementation of IT.
6. List the basic concepts of information security and privacy.
7. Examine emerging trends and possible future consequences of MIS and IT.

TECH 4910

Senior Capstone Project WE

Credit hours: 3

Provides a capstone experience that integrates the knowledge and skills acquired throughout the technology management program. Requires students to apply their understanding of technology management principles and practices to a real-world project addressing a relevant challenge or problem. Evaluates student performance through written reports, oral presentations, and evaluations by industry professionals and academic coordinators. Fosters critical thinking, problem-solving, and team collaboration skills. Offers opportunities to network with industry professionals and gain valuable insights into the field. Includes writing intensive instruction.

Course Learning Outcomes

1. Synthesize technology management principles and practices.
2. Apply the knowledge and skills acquired throughout the technology management program to propose and manage a real- world project.
3. Communicate project results, findings, conclusions, and recommendations effectively through written reports and oral presentations.
4. Collaborate with industry professionals, academic coordinators, and classmates to accomplish project goals and objectives.

TECH 6010

Intellectual Property Fundamentals

Credit hours: 3

Focuses on the legal protection and monetization of ideas, creations, and inventions. Covers the various forms of intellectual property, including patents, trademarks, copyrights, and trade secrets. Explores the laws and regulations governing these intellectual property forms, including international treaties and agreements. Examines the process of obtaining, licensing, and enforcing intellectual property rights and the ethical and social implications of these rights.

Course Learning Outcomes

1. Explain the different forms of intellectual property, including patents, trademarks, copyrights, and trade secrets.
2. Evaluate the process of obtaining, licensing, and enforcing intellectual property rights.
3. Analyze case studies and real-world examples of intellectual property disputes and resolutions.
4. Explain the role of intellectual property in business and technology, including the protection of innovations and branding.
5. Discuss the ethical and social implications of intellectual property rights.

TECH 6400

Six Sigma Project Management

Credit hours: 3

Presents a range of advanced topics on how to define, plan, and execute a project whether your goal is simple or complex. Emphasizes the necessary skills to lead process improvement, and learn systematic methods used to improve performance efficiencies and to reduce variations in business operations to achieve productivity and profitability gains.

Course Learning Outcomes

1. Conduct project planning activities that accurately forecast project costs, timelines, and quality
2. Develop project scope while considering factors such as customer requirements and internal/external goals
3. Implement processes for successful resource, communication, and risk and change management
4. Create project control mechanisms such as Gantt charts and network diagrams
5. Employ measurement-based process improvement techniques which reduce variation
6. Implement six sigma DMAIC processes (Define, Measure, Analyze, Improve, Control)
7. Communicate using Six Sigma concepts and terminology

TECH 6420

Finance for Technical Systems

Credit hours: 3

Presents financial management and information systems concepts relevant to managing business firms. Develops ability to analyze and produce financial management information using information systems. Explores future trends at the intersection of financial management and technology.

Course Learning Outcomes

1. Analyze data and information requirements for effective financial information systems
2. Assess the technological basis of financial information systems
3. Analyze financial information for financial management of technology-based business firms
4. Develop new business processes for technology-based business firms
5. Implement contemporary business concepts in teams and organizations
6. Evaluate future trends at the intersection of financial management and technology

TECH 6430

Product Management Processes

Credit hours: 3

Presents contemporary approaches for managing product design and development. Examines both traditional development methods and new approaches for Agile and Hybrid product development. Explores future trends in managing technological product design and development.

Course Learning Outcomes

1. Evaluate current processes for product development.
2. Contrast development methods for hardware and software systems.
3. Apply product design and development frameworks to product development processes.
4. Communicate product development status professionally and effectively in product design and development settings.

TECH 6450

Engineering Economics and Project Evaluation

Credit hours: 3

Presents concepts, methods, and tools of economic analysis and managerial decision-making from a cash flow perspective. Emphasizes the time value of money, present worth analysis, annual equivalent worth, rate of return, depreciation, and inflation analyses. Covers the evaluation of projects, and comparison and selection among alternatives addressed. Interprets general accounting principles and basic financial analysis.

Course Learning Outcomes

1. Prepare economic analysis and managerial decision-making from a cash flow perspective
2. Contrast time value of money, present worth analysis, annual equivalent worth, rate of return, depreciation, and inflation analyses
3. Evaluate projects from a variety of alternative economic options
4. Interpret general accounting principles and basic financial analysis

TECH 6700

Data Driven Decision Making

Credit hours: 3

Critiques management practices for decision making within business. Defines appropriate uses of quantitative and visual data to influence the decision process. Presents engaging case studies drawn from publications, local business managers, and the experiences of faculty. Develops data analysis and presentation skills using appropriate software.

Course Learning Outcomes

1. Summarize management decision making strategies used in business functions including engineering, product development, and business operations.
2. Interpret common analytical and visual data presentations.
3. Critique errors in the interpretation of quantitative and visual data.
4. Defend the timely and effective use of data in decision making processes.
5. Create persuasive arguments using appropriate communication methods and software based visual and quantitative data analysis.

TECH 6950

Engineering and Technology Projects I

Credit hours: 3

Interprets the nature of strategic thinking and the challenges of strategic alignment. Includes the development of a strategic planning process and methods for assessing strategic success. Describes organizing a proposal to summarize scope of work, work plan, team charter, and identified project outcomes based on ideas supported by a literature review.

Course Learning Outcomes

1. Interpret knowledge to prioritize and make decisions
2. Create a theoretical framework for evaluating and making strategic decisions at a range of levels
3. Define an advanced project to integrate technology into product lines and operations for planned strategic success
4. Defend an advanced project proposal through evaluation of cost, risk, and process analysis

TECH 6960

Engineering and Technology Projects II

Credit hours: 3

Describes how to apply advanced processes to move a project from start to finish utilizing the project proposal created in Project I. Covers risk analysis, effective communication, and response to problems. Emphasizes financial and project management concepts to compliment a technical background. Describes how to implement optimized project standards of innovation promotion and leadership in product and/or project launch.

Course Learning Outcomes

1. Interpret a project proposal to move a project from start to finish
2. Define topics of risk analysis, effective communication, and response to problems
3. Apply solid financial and project management concepts to a project
4. Critique project outcomes with data for valid quantitative or qualitative results to perform due diligence for potential innovative solutions

THEA 1013

Introduction to Theatre FF WE

Credit hours: 3

Examines theatre analysis, history, dramatic structure, outstanding dramatic literature, and the various roles in theatre production including the playwright, producer, director, the design team, production staff, house staff, run crew, and publicity. Utilizes lecture, film review, play reading, and live theatre attendance.

Course Learning Outcomes

1. Write a one-act play
2. Take part in the process of in-class scene creation
3. Write critically about theatre
4. Identify periods of theatre history

THEA 1033

Acting I FF

Credit hours: 3

For theatre arts majors and anyone interested in developing acting skills. Covers basic acting terminologies and definitions, techniques of movement, voice, and script analysis with a strong emphasis on performance ethics.

Course Learning Outcomes

1. Distinguish styles of performance through analyzing and enacting works of modern and classical playwrights.
2. Incorporate and apply tools and approaches from various acting methodologies in performance.
3. Effectively use intuition, vulnerability, and imagination while suggesting a moment-to-moment freedom during performance.
4. Analyze and articulate effective performance choices in the work of others.
5. Demonstrate the highest standards of performance and work ethic.

THEA 1113

Voice and Speech I

Credit hours: 3

Provides student actors with tools for increasing vocal ease and expressivity, with an emphasis on cultivating free and spontaneous breath impulse. Introduces the range of human speech sounds experientially, as a prelude to detailed phonetics and accent work. Provides a framework for developing a personal practice of voice and speech outside the classroom and applying learning through in-class performance. Please note, this is a course in acting, not public speaking.

Course Learning Outcomes

1. Speak audibly, intelligibly, and engagingly onstage.
2. Allow breath and voice to respond freely and spontaneously to acting impulses.
3. Describe and execute the sounds of human speech.
4. Vary the level of linguistic detail in their speech according to varying performative contexts.

THEA 1223

Makeup I

Credit hours: 3

Introduction to character makeup application for stage and screen with emphasis on corrective, age, and period with some stylized applications. Studies include the development of physical characterization for scripted characters. Course fee of \$23 for materials applies.

Course Learning Outcomes

1. Describe a variety of makeup techniques used for stage makeup
2. Identify different types of stage makeup and supplies
3. Execute basic makeup application skills for stage, including corrective, glamour, age, stylized, putty, crepe hair, and wig application
4. Design makeup for a diverse range of characters on various size stages

THEA 1513

Stagecraft I

Credit hours: 2

Surveys all elements of theatre and film production including sets, lighting, sound, properties, and costumes. Offers experience in the construction, painting, dressing, and striking of sets and props; the hanging, focusing and gelling of lighting instruments; the preparation of sound effects; and the operation of sound and lighting control equipment. Utilizes lecture, demonstration, films, and observation of working production facilities and personnel. Course fee of \$30 for equipment applies.

Course Learning Outcomes

1. Use basic terminology of theatre architecture, set construction and production.
2. Identify back stage skills required to plan and produce scenery, props, lighting and sound for theatrical productions.
3. Employ safety procedures of theatrical production.
4. Use construction and production techniques.
5. Explain the history of stagecraft and how it can be adapted to contemporary use.
6. Work with technical crews on UVU productions.

THEA 1514

Stagecraft I Lab

Credit hours: 1

Laboratory component to THEA 1513. Provides experience in the construction, painting, and dressing of sets for current academic productions. Includes work with School of arts Staff in the Scene Shop to develop basic set construction skills.

Course Learning Outcomes

1. Utilize basic terminology of theatre architecture, set construction and production.
2. Produce scenery and props for theatrical productions.
3. Follow safety procedures of theatrical production.
4. Demonstrate fundamental construction and production techniques.
5. Identify how to safely use industry standard power tools for theatrical production.

THEA 159R

Production Practicum for Stage and Screen I

Credit hours: 1

Provides the opportunity for students to earn college credit for supervised backstage crew positions on departmental productions. Includes assignments to wardrobe, deck crews, board operations, props and any additional positions a specific production might require. Requires participation for the entire technical rehearsal and production run to receive credit. May be repeated for a maximum of 2 credits toward graduation.

Course Learning Outcomes

1. Define the responsibilities of all backstage positions.
2. Set schedules and deadlines for production work.
3. Operate shops and running crews for assigned productions.
4. Maintain a safe operating work place.

THEA 1713

Script and Text Analysis I

Credit hours: 3

Introduces students to the analysis of story-based texts across a range of media. Focuses on the application of narrative and semiotic theory to dramatic literature from various periods in theatre history. Involves lecture, discussion, script and text analysis, film viewing, and live production attendance.

Course Learning Outcomes

1. articulate the evolution of dramatic structure in play texts of various time periods
2. Analyze a play from both directorial and analytical viewpoints
3. Explicate a play's structure and theme
4. Apply these foundational skills into the practice of theatre as actors, directors, designers, or dramaturgs

THEA 2033

Acting II

Credit hours: 3

Designed to build upon the techniques learned in THEA 1033. Emphasizes character development and application in creating a role through intense scene study of scripts in both stage and screen.

Course Learning Outcomes

1. Distinguish styles of performance through analyzing and enacting works of contemporary playwrights
2. Apply tools and approaches from various acting methodologies in performance
3. articulate effective performance choices in the work of others
4. Use intuition, vulnerability, and imagination while suggesting a moment-to-moment freedom during performance
5. Demonstrate high standards of performance and work ethic

THEA 2127

Voiceover Acting

Credit hours: 3

Introduces students to voiceover techniques and the voiceover industry. Focuses on different types of voiceover work, including commercial/industrial copy, book narration and animation/video game work. Includes development of resume and demo reel.

Course Learning Outcomes

1. Perform voice acting with moment-to-moment awareness and authenticity.
2. Identify the steps in building a voice over resume.
3. Explain the processes of demo-creating and sound editing.
4. Critique the voice-acting work of others.
5. Apply correct terminology and knowledge of studio protocol.

THEA 2131

Movement for the Actor I

Credit hours: 3

Helps actors for both stage and screen develop the physical awareness and self discipline critical to effective performance of period style, staged combat, and the musical. Emphasizes balance, strength, postural correction, energy drives, motivation, and basic movement vocabulary.

Course Learning Outcomes

1. Use "Listening Techniques" in creation of a five minute acting piece.
2. Identify physical elements (time, wight, space, and intention) in a critique of a classmate's performance.
3. Explain examples of both "Laban Efforts" and Chechov techniques in an in-class presentation.
4. Use impulsive movement in a scripted performance exercise.
5. Prepare and deliver a three minute monologue incorporating improvisation.

THEA 2156

Group Voice for Theatre

Credit hours: 3

Provides group instruction for actors to develop technical skill and understanding of the singing voice. Requires a minimum of 2 hours of practice each week.

Course Learning Outcomes

1. Identify basic techniques involved in vocal production
2. Apply vocal technique in creating a balanced and spoken voice
3. Apply the technical instructions provided by instructors
4. Prepare contrasting pieces for an audition, showing the ability to memorize and perform with an accompanist

THEA 2203

Costume Construction I

Credit hours: 3

Provides a beginning overview of the vocabulary and basic sewing methods of theatrical costuming. Familiarizes students with sewing machine and serger operation, basic sewing techniques, fabrics, simple patterning, and skills of costume construction. Course fee of \$24 for equipment applies.

Course Learning Outcomes

1. Define the basic sewing techniques used to create costumes.
2. Employ costume construction technologies using a commercial pattern.
3. Demonstrate measuring and fitting techniques.
4. Differentiate between fabric types, characteristics, and how to care for them.
5. Define techniques of aging and distressing fabrics.
6. Perform basic alterations.
7. Summarize the duties of a costume dresser and costume crew member.

THEA 2204

Costume Construction I Lab

Credit hours: 1

Laboratory component to THEA 2203. Provides hands-on application of techniques taught in THEA 2203, including sewing of theatrical costumes, simple patterning, and other costume construction tasks.

Course Learning Outcomes

1. Use basic sewing techniques used to create costumes.
2. Incorporate costume construction technologies in a variety of pattern techniques.
3. Adhere to measuring and fitting techniques.
4. Work with a variety of fabric types and construction materials.
5. Use techniques of aging and distressing fabrics.
6. Perform basic alterations.
7. Work directly with costume shop staff to alter, embellish, care for, and create costumes for Theater Department productions.

THEA 2211

Theatre for Children and Youth

Credit hours: 3

Introduces the philosophy and practices of theatre for children and youth, including its range of uses in the classroom, on the stage, in the community, corporate world and beyond. Focuses on storytelling, puppetry, and dramatic texts for children and youth. Requires play attendance.

Course Learning Outcomes

1. Outline the scope, purposes, and history of Theatre for Young Audiences;
2. Explain the uses of TYA professionally in the community, school, classroom, and beyond;
3. Explain current patterns, trends, and practices in TYA;
4. Clearly distinguish between the purposes and techniques of scripted versus participatory drama;
5. Discuss the uses of storytelling and puppetry for children and youth.

THEA 2513

Introduction to Design for Stage and Screen

Credit hours: 3

Studies the design process associated with costumes, scenery, and lighting. Uses research, conceptual renderings, models, and drafting. Introduces perspective drawing, figure drawing, three dimensional model building, and standard drafting practices. Lab access fee of \$25 applies. Software fee of \$25 applies.

Course Learning Outcomes

1. Differentiate between elements of design and principles of design.
2. Apply elements and principles to create design solutions.
3. Develop skills in basic drawing, design, and painting.
4. Define basic terminology of theatrical and television design, construction, and production.

THEA 2514

Introduction to Design for Stage and Screen Lab

Credit hours: 1

Laboratory course to accompany THEA 2513. Offers experience in the construction, dyeing, and organizing of costumes. Involves collaboration with the School of arts Staff on current UVU productions.

Course Learning Outcomes

1. Utilize basic terminology for production, laundering, and care of costumes.
2. Create costumes and accessories for theatrical productions.
3. Follow safety procedures of theatrical production.
4. Incorporate fundamental construction and production techniques in the design process.
5. Demonstrate basic uses of domestic sewing machines and hand sewing techniques for theatrical costume construction.

THEA 2515

Rendering for Theatre

Credit hours: 3

Trains theatrical design students in the advanced drawing and painting skills necessary to create detailed renderings of costumes and scenery that effectively communicate visual ideas for stage design concepts.

Course Learning Outcomes

1. Develop skills in basic drawing, design, and painting
2. Draw in one, two, and three point perspective
3. Translate ideas into line renderings that exhibit a clear concept
4. Integrate color theory in design renderings
5. Define basic terminology of theatrical design and construction

THEA 2517

Visual Concepts in Theatre

Credit hours: 3

Introduces students to the translation of scripts into visual imagery for the stage. Focuses on the processes of conception, development, and implementation of design components to the point of actual presentation. Lab access fee of \$25 applies. Software fee of \$25 applies.

Course Learning Outcomes

1. Conceive, develop, and implement a metaphorical visual design for stage presentation
2. Distill a script into individual scenes as part of an overall design concept for a dramatic production
3. Incorporate varied mediums of projection, puppetry, technology and sound into visual concepts
4. Utilize kinesthetic narrative in terms of spatial relationships and other aspects of physical staging

THEA 2531

Introduction to Lighting and Sound

Credit hours: 3

Exposes students to foundational technologies and system designs in lighting and sound for live performance. Provides opportunities for hands-on experience working on realized productions within the theatre department, rounding out their educational experience. Lab access fee of \$25 applies. Software fee of \$25 applies.

Course Learning Outcomes

1. Develop a basic theatrical lighting system for live performance.
2. Install a basic theatrical lighting system for live performance.
3. Develop a basic sound system for reinforcement and playback in live performance.
4. Install a basic sound system for reinforcement and playback in live performance including appropriate microphones.
5. Troubleshoot and maintain basic theatrical lighting and sound equipment.

THEA 2574

Drafting for Theatre Design

Credit hours: 3

Introduces and trains technical theatre students in the processes of drafting for theatrical design. Focuses on attaining a basic proficiency in using the most recent computer-aided drafting software. Lab access fee of \$25 applies. Software fee of \$25 applies.

Course Learning Outcomes

1. Utilize the terminology and concepts of CAD drafting;
2. Use industry-standard design software;
3. Apply Digital Pipeline in theatrical design;
4. Draft modular and movable design plans for traveling theatrical productions;
5. Translate 2D designs into 3D plans and draft original designs in 3D.

THEA 257R

Assistant Practical Design

Credit hours: 1

Involves working closely with a designer on main stage productions in scenic, lighting, costume, makeup, sound, projections, technical direction, or dramaturgy to develop, research, design, and implement designs. Requires application and approval by appropriate theater faculty. May be repeated for a maximum of 2 credits toward graduation.

Course Learning Outcomes

1. Demonstrate the processes involved in creating a design from conception to performance
2. Utilize design vocabulary, paperwork, and industry processes
3. Communicate with directors, other designers and shops to produce desired designs
4. Apply design principles within a specific design area (i.e. costume, scenic, lighting, etc)
5. Discuss textual and character analysis of an assigned script
6. Practice the practical application of design and technology courses within an actualized production in a controlled, safe environment

THEA 2741

Scriptwriting for Stage

Credit hours: 3

Introduces students to storytelling for the stage. Focuses on writing short scripts using classic play structure. Emphasizes the structuring of stories, creating engaging characters, and communicating ideas in the process of developing an individual voice. Extensive writing required.

Course Learning Outcomes

1. Incorporate dramatic structure in the scriptwriting process.
2. Use correct formatting in the creation of stage scripts.
3. Integrate cohesive themes into creative writing.
4. Create a plot outline for, write, and polish a 10-minute play script.
5. Employ dialogue and personality characteristics to create intriguing, interesting characters.

THEA 3033

Acting III

Credit hours: 3

Trains advanced students in the use of contemporary methods, theories, and practices in creation of roles. Focuses on material written and produced in late 20th and early 21st century theatre.

Course Learning Outcomes

1. Create a character as an actor.
2. Incorporate current theories and methodologies into performance.
3. Implement knowledge of contemporary writers and works.
4. Apply current training to scene study and stage performance.

THEA 3113

Acting for Film

Credit hours: 3

Introduces the specialized techniques of performance, audition, and agent/actor relationships as they apply to the film and television industries.

Course Learning Outcomes

1. Use acting techniques in creation of a performance for film;
2. Communicate using film terminology in performance;
3. Demonstrate discipline in performing and taking direction for the camera;
4. Distinguish between two and three camera film techniques;
5. Audition effectively for both stage and film roles.

THEA 3115

Improvisation I - BFA

Credit hours: 3

Introduces acting students to the use of improvisational techniques. Includes advanced training in the application of objectives, tactics, relationships, and movement in the creation of improvised scenes.

Course Learning Outcomes

1. articulate the techniques of improvisation.
2. Improvise a dialogue according to a set of objectives.
3. Use movement to achieve an objective in an improvised scene.
4. Identify the tactics used to achieve an objective in an improvised scene.
5. Critique another student's improvised performance according to specified criteria.

THEA 311R

Improvisation II-Performance Team-BFA

Credit hours: 2

Develops acting skills through improvisational performance. Involves training in short and long form improv incorporating skills of story and song structure. Emphasizes application of objectives, tactics, relationships, honest response and communication, and sensory work. May be repeated for a maximum of 4 credits toward graduation.

Course Learning Outcomes

1. Communicate honestly, and to be present in the moment.
2. Participate in performances outside one's comfort zone.
3. Apply improvisation to both dramatic and comedic material.
4. Identify the process of constructing and writing stories.

THEA 3122

Voice and Speech II-BFA

Credit hours: 3

Continues the work of first-semester Voice and Speech. Strengthens the actor's use of voice, including resonance, range, and vocal variety. Introduces detailed phonetics using the International Phonetic Alphabet and identifies markers of formal versus informal speech. Emphasizes text work, including imaging and operative language. Please note, this is a course in acting, not public speaking.

Course Learning Outcomes

1. Use advanced techniques for vocal strength, resonance, range, and flexibility
2. Utilize formal and informal speech markers in performance
3. Use the International Phonetic Alphabet to describe the speech sounds of self and others
4. Employ vocal variety to increase interest and tactical effectiveness in performance

THEA 3123

Acting in Accent - BFA

Credit hours: 3

Introduces methods for the actor to research, prepare, and perform any accent with authenticity. Includes exploration of the articulatory setting, pronunciation, and prosody of an accent, using primary research sources.

Course Learning Outcomes

1. Incorporate accents as a component of dramatic performance
2. Research appropriate samples for accent work
3. Utilize changes in oral posture as a component of accent work
4. Use phonetics to accurately describe the target sounds of an accent
5. Execute the prosodic elements of accents
6. Utilize cultural context in accent work

THEA 3131

Movement for the Actor II-BFA

Credit hours: 3

Trains advanced movement students in somatic techniques such as Yoga, Tai Chi, Feldenkrais, Alexander Technique, and Laban.

Course Learning Outcomes

1. Demonstrate methods to warm up the body and mind
2. Relax holding patterns through the Alexander Technique
3. Perform a movement piece incorporating Laban Movement and Neutral Masks
4. Perform a movement piece incorporating Somatic Movement
5. Achieve a balanced performance readiness through enhanced alignment, breath, and impulse

THEA 3133

Stage Combat

Credit hours: 3

Teaches basic principles of stage combat/choreography and safety practices. Course fee of \$25 applies.

Course Learning Outcomes

1. Implement stage combat safety rules.
2. Make a stage fall without risk of injury.
3. Safely perform unarmed combat moves such as slaps, punches, and kicks.
4. Use correct armed combat techniques with swords, foils, daggers, and staffs.
5. Execute a series of armed and unarmed combat moves in the context of a theatrical scene.

THEA 3151

Acting for Musical Theatre I

Credit hours: 3

Introduces techniques of acting, singing, and dancing for the musical, as well as looking at the history and trends of the musical. Incorporates the art of transitioning between dialogue and song.

Course Learning Outcomes

1. Identify the structure of a musical theatre text as it relates to musical theatre performance.
2. Apply acting methods to performing a musical theatre song.
3. Research a musical theatre role to enhance performance.
4. Critically observe musical theatre performances to avoid errors and emulate successful approaches.
5. Perform scenes from musicals according to established performance standards.

THEA 3152

Acting for Musical Theatre II - BFA

Credit hours: 3

Further develops and refines the performer's abilities as a singer, dancer, and actor. Links trends in musical theatre with past and present artistic choices. Explores design aspects of musical theatre and thematic integration of acting, singing, and dancing. Includes lecture, discussion, film, rehearsal, and performance.

Course Learning Outcomes

1. Create an effective stage character.
2. Apply the associative formulas and traditions of musical theatre.
3. Integrate choices in regards to story development, design, and thematic integration into a performance.
4. Incorporate feedback from a musical theatre director in portraying a role through song.

THEA 3154

Dance for Musical Theatre I

Credit hours: 3

Focuses on the academic and practical study of the history and development of Musical Theatre Dance as an art form from the late 19th century to present. Melds tap, ballet, jazz, ballroom, and ethnic dance into practical character and story based movement while exploring historic context, landmark choreographers and productions.

Course Learning Outcomes

1. Employ effective characterization of a musical theatre role in the medium of dance.
2. Identify the major historic dance forms that contributed to the development of Musical Theatre dance.
3. Identify the major musical theatre choreographers from history and their significant contributions to the art form.
4. Demonstrate through practicum the dynamics of movement as story-telling, and as character.
5. Demonstrate through practicum improved skills in learning and executing musical theatre style dance.

THEA 3155

Dance for Musical Theatre II - BFA

Credit hours: 3

Continues the study of musical theatre choreography. Emphasizes practical application involving a blending of various styles of dance into the creation of practical character and story-based movement.

Course Learning Outcomes

1. Identify current musical theatre choreography.
2. Explain the characteristic style of historically renowned choreographers.
3. Choreograph original musical theatre performance pieces.
4. Perform contemporary musical theatre choreography.

THEA 319R

Performance Practicum for Stage and Screen

Credit hours: 1

Provides opportunity for earning college credit for supervised performance and production assignments in UVU theatre productions from dress rehearsal through closing performance (excluding strike). Allows students to apply learned skills to productions that are currently in performance. Requires project approval from instructor or Department Chair. May be repeated for a maximum of 4 credits toward graduation.

Course Learning Outcomes

1. Take a proactive approach to the audition and casting process
 2. Create roles in productions
3. Perform as part of an ensemble
4. Assimilate directions into performances
5. Perform for an audience as part of the main stage season

THEA 3531

Lighting Design I

Credit hours: 3

Focuses on the designing and practical application of theatrical lighting and sound. Includes laboratory work on UVU theatre productions. Lab access fee of \$25 applies. Software fee of \$25 applies.

Course Learning Outcomes

1. Control light and sound for a theatrical production
2. Define standard USITT drafting practices and terminology
3. Describe the use of electricity as it applies to production
4. Identify lighting instruments and their application
5. Use sound creation, reinforcement, and applications
6. articulate design concepts and ideas with members of production team

THEA 3535

Lighting Design I Lab

Credit hours: 1

Laboratory component to THEA 3531. Allows students to implement theatrical lighting and sound design plans. Includes laboratory work on UVU theatre productions.

Course Learning Outcomes

1. Control light and sound for a theatrical production.
2. Identify standard USITT drafting practices and terminology.
3. Describe the use of electricity as it applies to production.
4. Explain lighting instruments and their application.
5. Incorporate sound creation, reinforcement, and applications.
6. Articulate design concepts and ideas with members of production team.

THEA 3541

Costume Design I

Credit hours: 3

Introduces theories and fundamentals of costume design with practical application through research and rendering. Provides an overview of costume history and period research. Emphasizes conceptual ideas based in script and director's concept. Course lab fee of \$19 applies.

Course Learning Outcomes

1. Identify the characteristics and functions of an effectively designed costume.
2. Use the elements of design to enhance characterization through costuming.
3. Employ the collaborative process to communicate and develop the concept and mood of a production with the director.
4. Portray a design idea by drawing and rendering effectively.
5. Meet the costume needs of the production's budget and time frame by using the designer's tools and planning methods.
6. Identify effective uses of fabrics and textures in design.
7. Identify key periods of costume history and apply this knowledge in context to the style of a show.

THEA 3545

Costume Design I Lab

Credit hours: 1

Laboratory course to accompany THEA 3541. Provides opportunities for practical application of design fundamentals in creation of costumes for various genres and historical periods.

Course Learning Outcomes

1. Identify the characteristics and functions of an effectively designed costume.
2. Use of the elements of design to enhance characterization through costuming.
3. Collaborate with the director to develop the concept and mood of a production.
4. Demonstrate drawing and rendering skills effectively portray a design idea.
5. Incorporate the designer's tools and planning methods to meet the costume needs of the production's budget and time frame.
6. Identify key periods of costume history to the style of a show.

THEA 3561

Stage Management I

Credit hours: 3

Introduces students to the basic processes of creating and managing a theatre production organization. Includes introductory structural organization, collaboration, strategic planning, accounting, and marketing concepts, procedures, and simulation exercises. Prepares students for upper division courses in theatre management.

Course Learning Outcomes

1. Explain legal business structures for theatre organizations and the appropriate organization, staffing, lines of authorities, and reporting of each.
2. Identify stage management functions and procedures and their role in the collaborative production process.
3. Describe the role of house management functions and procedures in the collaborative production process.
4. Relate the basic concepts of the strategic planning process to financial and marketing decisions in the producing organization.
5. Incorporate basic accounting principles to the day-to-day financial operations of the producing organization.
6. Apply marketing concepts to the producing theatre organization.
7. Utilize basic box office procedures.

THEA 3571

Scenic Design I

Credit hours: 3

Focuses on the application of advanced principles of scenic design for sets and properties. Involves completion of project designs featuring elevation drawing and drafting, rendering, and model building. Emphasizes development of conceptual ideas based on script and director's concept. Student designers for UVU productions may be selected from this class. Lab access fee of \$25 applies. Software fee of \$25 applies.

Course Learning Outcomes

1. Apply analysis and research to synthesize the creative concept of a scene design
2. Complete a major design project
3. Communicate ideas through drawings, plans and models using USITT standards
4. Use materials, hardware, and staging as it applies to production
5. Contribute to the design of UVU productions
6. Prepare portfolio quality presentations

THEA 3575

Scenic Design I Lab

Credit hours: 1

Provides the laboratory component to THEA 3571 in which students may acquire skills in creation and presentation of scale models used in the development of scenic design for theatrical productions. Includes layout, model making techniques, model finishes, and presentation.

Course Learning Outcomes

1. Manipulate elements of scenic and properties design
2. Apply analysis and research to synthesize the creative concept of a scene design
3. Complete a major design project
4. Communicate ideas through drawings, plans and models using USITT standards
5. Use materials, hardware, and staging as it applies to production
6. Contribute to the design of UVU productions
7. Prepare portfolio quality presentations

THEA 3611

Directing Actors for Stage and Screen

Credit hours: 3

Introduces basic directing techniques utilized in rehearsing and presenting acting scenes for stage and screen performance. Places emphasis on text analysis and effective communication with actors to achieve honest and believable performances in the intimate style of camera acting, as well as the highly physical acting style of the stage. Includes studies in script structure, visualization, movement, pace and rhythm, gesture and rehearsal techniques.

Course Learning Outcomes

1. Create a director's book that defines the processes and goals formulated for the production.
2. articulate the strengths and weaknesses of the varied approaches to directing.
3. Critique the work of self and others in a constructive and concrete manner.
4. Identify dramatic structure with specific examples from Student's chosen directing project.
5. Utilize the collaborative production process when working with each member of the production company.

THEA 3612

Directing Actors for the Stage

Credit hours: 3

Builds upon concepts covered in Directing Actors for Stage and Screen. Includes class workshops and demonstrations followed by class/instructor critique. Requires completion and presentation of a director's book. Culminates in public presentation of a one-act play.

Course Learning Outcomes

1. Critically analyze student's own directing and that of others.
2. State clearly and concisely conceptual positions as they relate to the student's production.
3. Reveal and elucidate the intentions of a script's author.
4. Conduct an audition leading to the casting of student's production.
5. Oversee all aspects of a production from conception to final adjudication.

THEA 3625

Development and Fundraising for the Arts

Credit hours: 3

Introduces the development process, cultivating donors, and raising money through donations, sponsorships, and grants to support nonprofit arts organizations.

Course Learning Outcomes

1. Identify skills necessary for effective fundraising and the role of fundraising in a nonprofit organization.
2. Develop a fundraising plan and strategy and develop effective communication tools.
3. Utilize different ways to attract individual donors and create donor profiles for midscale and major donors.
4. Create annual campaigns, capital campaigns, and plans for legacy gifts.
5. Describe the role of grants in the fundraising plan.

THEA 3721

Theatre History and Literature I WE

Credit hours: 3

Examines the history of the theatre from its earliest origins through the Renaissance. Emphasizes theatre practice in its social, political and economic contexts. Introduces the theory and skills necessary for writing analytically about the theatre.

Course Learning Outcomes

1. Explain theatrical practice in its social, political, and economic contexts.
2. Identify historical periods in theatre using the elements of playing space, audience, performers, visual elements, text, and coordination of these elements.
3. Connect representative works and theatrical artists with each historical period or genre.
4. Write analytical and argumentative essays about theatrical texts and/or performances.

THEA 3722

Theatre History and Literature II

Credit hours: 3

Examines the history of the theatre and its associated literature and artists from the Restoration to the present time. Focuses on historical theatre practice in its social, political and economic contexts. Introduces the theory and skills necessary for writing performance reviews and extended research papers in theatre.

Course Learning Outcomes

1. articulate a historical theatrical practice in its social, political, and economic contexts.
2. Classify historical theatrical practice using the elements of playing space, audience, performers, visual elements, text, and coordination of these elements.
3. Identify representative works and theatrical artists within each historical period or genre.
4. Discuss connections between theatre of the past and theatre of the present.
5. Write an analytical and argumentative essay about theatrical text or performance.

THEA 3725

Musical Theatre History

Credit hours: 3

Explores the evolution of musical theatre from the 1700s through present day, focusing on how politics, cultural trends, and technology have changed the art form.

Course Learning Outcomes

1. Outline musical theater techniques and their evolution to the present day
2. Compare and contrast the effectiveness of various musical modalities
3. Present a lecture on the contribution of an assigned musical innovator
4. Critique and offer feedback on musical theater performances
5. Explain the effectiveness of changing technology on the form and content of musicals

THEA 4114

Film Acting II

Credit hours: 2

Focuses on development of the tools and skills necessary to compete as a professional actor. Involves creation of acting reels, head shots, and resumes. Emphasizes development of networking, professional etiquette and self-promotion skills needed to demonstrate a level of professionalism in the industry. Includes meetings with industry professionals.

Course Learning Outcomes

1. Maintain industry-ready resumes and headshots.
2. Develop industry-ready acting and voiceover demo reels.
3. articulate a clear plan of action for entrance into the professional world.
4. Exhibit use of professional etiquette and self-promotion needed to demonstrate a level of professionalism in the industry.

THEA 4115

Acting Styles-BFA

Credit hours: 3

Includes advanced preparation for performance of classical texts. Emphasizes voice, speech, movement, and character development. Covers Greek and Roman acting styles, Commedia dell arte and 17th Century French Neoclassic styles, Shakespearean Tragedy and Comedy, Comedy of Manners, and 19th Century Romanticism and Melodrama. Includes a brief introduction to Modern and Post-modern acting styles.

Course Learning Outcomes

1. Distinguish between acting styles of various historical periods.
2. Describe the characteristics of historical acting styles prior to the advent of Realism.
3. Present the subject matter through performance which includes classical verse.
4. Interpret classical dialogue.
5. Incorporate classical speech/ terminology into everyday discourse.

THEA 4117

Auditioning and the Business - BFA

Credit hours: 3

Teaches advanced skills and methods involved in the audition process for stage and screen roles. Focuses on developing resumes, interview skills, and preparing a wide range of audition pieces.

Course Learning Outcomes

1. Present themselves confidently in an audition setting.
2. Choose appropriate monologues in six different styles.
3. Apply actable choices to their monologues.
4. Use prepared pieces as well as cold reads in audition settings.
5. Market themselves effectively as an actor.

THEA 4119

Senior Showcase and Career Management - BFA

Credit hours: 3

Allows students to collaborate with a director to create a showcase of each student actor's performance for promotional purposes. Teaches key skills in career and personal financial management related to the acting profession.

Course Learning Outcomes

1. Create a performance piece showcasing each individual
2. Select material that showcases the students' strengths and castability
3. Utilize performance for personal advancement in to the professional world
4. Identify the necessary skills and tools of a working actor, including: headshot, resume design, networking, personal financial management, differences between film and stage, etc.

THEA 4122

Speaking Shakespeare-BFA

Credit hours: 3

Increases the actor's command of operative language, complex syntax, imagery, figures of sound, and rhythm to fulfill the demands of classical acting. Involves rigorous textual analysis of the verse and prose of Shakespearean texts followed by practice in vocal/physical interpretation and performance.

Course Learning Outcomes

1. Analyze the rhythm, poetry, rhetoric, and imagery of Shakespeare's language;
2. Perform Shakespearean texts intelligibly and engagingly;
3. Integrate use of body and voice in fulfilling the interpretation of classical texts;
4. Integrate criticism into Shakespearean performance.

THEA 415R

Musical Theatre Workshop - BFA

Credit hours: 2

Prepares Juniors and Seniors for the rigor of a professional career in Musical Theater in terms of performance in acting, dance, music, and the relationship between the craft and the story. May be repeated for a maximum of eight credits toward graduation.

Course Learning Outcomes

1. Prepare a character sketch and description of arc
2. Incorporate dance into the creation of a role
3. Apply elements of vocal style to specific characters, songs, and shows
4. Explain research practices in musical theater
5. Direct and perform musical theater projects

THEA 4200

Theatre and Drama in the Secondary School

Credit hours: 3

For theatre majors interested in teaching theatre arts at the secondary and college levels. Introduces methodologies, strategies, and philosophies of theatre pedagogy based upon current research and practices. Emphasizes lesson plan writing using the Utah State Secondary Theatre Core Curriculum and the National Committee for Standards in the arts. Integrates theory and practice through lecture, discussion, writing, activities, and classroom teaching experiences in the college and public school settings.

Course Learning Outcomes

1. Define the historical, creative, technical, cultural, and aesthetic components in the teaching of theatrical arts.
2. Summarize the Utah State Secondary Theatre Core Curriculum and the National Committee for Standards in the arts Education - Theatre standards.
3. Employ a variety of pedagogical methods to enhance pupil learning in the theatrical arts.
4. articulate the curricular and extracurricular duties of a theatrical arts instructor.
5. Write detailed lesson plans for the areas of theatre arts taught in the educational setting.
6. Compose a personal teaching philosophy.
7. Design a plan for the total development of a theatre arts program in a public school or college setting.
8. Assess self and peers during a teaching session in order to elicit quality work and performance.

THEA 457R

Practical Design

Credit hours: 1

Involves work on approved projects requiring sophisticated skills in scenic, lighting, costume, or makeup design. Includes designs for UVU productions or for community and regional performing groups. Requires approval by appropriate theatre faculty. May be repeated for a maximum of 5 credits toward graduation.

Course Learning Outcomes

1. Apply advanced design elements and principles of composition to theatrical design challenges
2. Work in a collaborative environment
3. Incorporate script analysis and visual statement into design concepts
4. Produce completed works in a broad spectrum of design styles with appropriate paperwork.

THEA 481R
Theatre Internship

Credit hours: 1 to 8

Provides a transition from school to professional life where learned theory is applied to actual practice through meaningful on-the-job experience. Repeatable for a maximum of 4 credits toward graduation. May be graded credit/no credit.

Course Learning Outcomes

Please see the department for information.

THEA 484R

Singing Techniques for Actors II-BFA

Credit hours: 1

Offers private vocal instruction for upper-division theatre majors to continue developing skills and techniques for performance in musical theatre. Requires bimonthly master class participation and substantial individual practice. May be repeated for a maximum of 4 credits toward graduation. Course Lab fee of \$420 for private voice lessons applies.

Course Learning Outcomes

1. Show initiative and discipline with consistent personal practice
2. Apply the suggestions and technical instructions provided by the director
3. Progress in technical studies such as scales and etudes
4. articulate the musical, technical, and stylistic components that are characteristic of the performance pieces
5. Prepare pieces for a jury, showing the ability to memorize and perform with an accompanist

THEA 4981

Portfolio

Credit hours: 1

Features development of student portfolio for the areas of performance, design, management, directing, script writing, and performance. Includes interview skills and website development. Emphasizes placement in the theatrical job market or graduate school placement.

Course Learning Outcomes

1. Develop a variety of effective techniques for presentation and portfolio design.
2. Develop a website for portfolio presentation.
3. Perform satisfactorily in interview situations.
4. Success approach employment opportunities.

THEA 4995

Senior Project in Design

Credit hours: 3

Provides credit for independent projects and research of advanced nature in the area of Theatre arts under faculty supervision. Requires an area of study to be designated.

Course Learning Outcomes

1. Describe how a theatrical theme or trend has been applied in the design of earlier productions of the same script or a comparable script.
2. Demonstrate the essential design or technical skills of an area of theatrical design or technology for a specific theatrical production.
3. Complete a design or technical production project in alignment with principles and processes taught in foundational courses in that specialty.
4. Depict a production design process through the use of visual images, writing, and speech.

TT 3260

Energy Storage and Advanced Electrical

Credit hours: 3

Explores advances in electronics and energy storage systems found on Battery Electric Vehicles (BEV), Hybrid Electric Vehicles (HEV), and Plug-in Hybrid Electric Vehicles (PHEV). Topics include advanced operation, repair, diagnosis and troubleshooting of BEVs, HEVs and PHEVs using manufacturer-specific diagnostic tools and equipment.

Course Learning Outcomes

1. Analyze energy storage systems.
2. Analyze hybrid vehicles systems.
3. Evaluate the future of plug in hybrid electric vehicles.
4. Assess diagnostic and trouble shooting of hybrid vehicles.

TT 3450

Failure Analysis Materials Science and Treatments

Credit hours: 3

Analyzes the physical properties and applications of metals, ceramics, composites, surface treatments and polymers. Studies Material Science Technology, including the study of organic and Inorganic matter and solid matter. Researches and describes the means and data to determine root causes of failure. Introduces FMEA (Failure Mode Effects Analysis) and PFMEA (Process Failure Mode Effects Analysis). Conducts both NDT (Non Destructive Testing) and DT (Destructive Testing) methods. Utilizes testing equipment for compliance with ASTM (American Standard Testing Methods).

Course Learning Outcomes

1. Analyze Physical properties of metals, ceramics and composites.
2. Test organic, inorganic, and solid matter.
3. Test surface treatments and polymers.
4. Create failure mode effects and destructive testing methods.

TT 3460

Can Bus Ladder Logic and PLC Systems

Credit hours: 3

Explores in vehicle network communication systems including: Network system protocols, body control modules and other LAN controllers, and smart sensors. Covers development and current trends in use of CAN BUS and network systems and sensors in modern automobiles. Introduces the use of scan tools and other diagnostic tools and diagnostic strategies. Covers updating of CAN BUS systems through factory tools and software and theory, programming, and industrial control system applications of small and medium sized programmable logic controllers (PLCs). Studies basic maintenance, operation, troubleshooting, and programming.

Course Learning Outcomes

1. Analyze vehicle network communication systems.
2. Assess electronic control modules.
3. Test electronic control systems.
4. Evaluate basic maintenance, operations and troubleshooting.

TT 4000

Capstone

Credit hours: 3

Provides a leadership transition from academic to applied/real-life work experience. Includes students, company liaison, and coordinator evaluation, on-site work visits, written assignments and oral presentations, creation of transportation related business improvements. Offers experience in establishing and accomplishing team objectives that improve their ability and add real value in their future employment.

Course Learning Outcomes

1. Create an engaged learning project that incorporates transportation technology
2. Evaluate new technology in the automotive industry
3. Analyze your experience in accomplishing industry objectives
4. Adapt your experience to evaluating new technology

TT 4260

Electric Drive Systems

Credit hours: 3

Introduces power electronics and electric drive systems electronic devices and their switching performance and thermal design including: power converters, AC-AC converters, DC-DC converters, inverters. Analyzes energy-efficient AC and DC motor drives.

Course Learning Outcomes

1. Classify Hybrid Electric Vehicle (HEV), Plug-in Hybrid Electric Vehicle (PHEV) and Battery Electric Vehicle (BEV) systems currently in use in transportation vehicles.
2. Examine safety systems of BEV, PHEV and HEV systems.
3. Differentiate the characteristics of ac Induction Electric Machines and Permanent Magnet Machines.
4. Analyze Power Inverter Systems found on HEV, PHEV and BEV systems.
5. Analyze dc-dc Converter Systems found on HEV, PHEV and BEV systems.
6. Distinguish Electric Propulsion Sensing Systems.

TT 4270

Compliance EPA OSHA Others WE

Credit hours: 3

Analyzes the Environmental Protection Agency (EPA) purpose, powers, and the regulations as it relates to Transportation Technologies. Covers the national program for greenhouse gas emissions (GHG) and fuel economy standards for light-duty vehicles. Includes the study of the National Highway Traffic Safety Administration (NHTSA) guides. Explores Occupational Safety and Health Administration (OSHA) case studies, lawsuits, and depositions as it pertains to transportation. Covers passenger cars, over-the-road heavy trucks, equipment, and off-road vehicle regulations and laws.

Course Learning Outcomes

1. Assess rules and regulation developed by the EPA.
2. Test for gas emissions and fuel economy.
3. Evaluate and prepare written submissions regarding safety and regulations of transportation vehicles.
4. Collaborate and communicate with industry partners, EPA and OSHA on current and future requirements.
5. Prepare written reports for emissions of volatile organic compounds, hazardous air particulates.

TT 4510

Operations Management Fleet and Personnel WE

Credit hours: 3

Studies common shop managerial skills and techniques. Explores strategies in streamlining efficiency through inventory control, targeted scheduling, shop-based software implementation. Offers exposure to the hierarchy of positions in a fleet or shop setting. Studies manufacturer warranty process and approvals, personnel management skills, inventory control, fleet maintenance procedures and deployment. Instructs on the production of written improvement policy plans.

Course Learning Outcomes

1. Write, communicate and disseminate business improvement designs and process plans.
2. Identify business process improvement opportunities and/or problems.
3. Write personnel evaluation and improvement plans.
4. Evaluate workflow and business process improvements.
5. Develop personnel management skills.
6. Write and communicate transportation related warranty information to manufacturers, dealers, and consumers.

ZOOL 1090

Introduction to Human Anatomy and Physiology BB

Credit hours: 3

Presents a basic introduction to the sciences of anatomy and physiology. Covers the basic structure and function of the human body at the cellular, tissue, organ, and system levels. Provides a foundation of particular value for pre-nursing students who wish to have a preview of their required life science courses.

Course Learning Outcomes

1. Demonstrate use of proper anatomic nomenclature.
2. Identify anatomic landmarks on various imaging modalities, including their own bodies.
3. Compare various processes and mechanisms to maintain homeostasis.
4. Explain how various molecular, cellular, tissue and organ systems work independently and together to accomplish complex functions.
5. Relate the structure to the function of organs and organ systems in the human body.

ZOOL 2320

Human Anatomy

Credit hours: 3

Studies, in-depth, the anatomy of the human body. Covers the structure and some functions at the cellular, tissue, organ, and system levels. Emphasizes the names, locations, and functions of body components. Involves problem solving and analytical thinking. Includes weekly laboratory study of human cadavers, models, and specimens. Canvas Course Mats \$85/McGraw applies.

Course Learning Outcomes

1. Define anatomic terms.
2. Explain anatomic principles.
3. Use proper anatomic nomenclature.
4. Classify tissues, organs, bones, joints, muscles, etc.
5. Point out anatomic landmarks on a cadaver, model, specimen and/or yourself.
6. Describe body system characteristics.
7. Compare systemic similarities and differences related to anatomy.
8. Demonstrate positional relationships of various landmarks and organs.
9. List relationships of cells, tissues, and organs within a system and between systems.

ZOOL 2325

Human Anatomy Laboratory

Credit hours: 1

Studies, in-depth, the anatomy of the human body. Covers the structure and some functions at the cellular, tissue, organ, and system levels. Emphasizes the names, locations, and functions of body components. Involves problem solving and analytical thinking. Includes weekly laboratory study of human cadavers, models, and specimens. Course Lab fee of \$30 applies.

Course Learning Outcomes

1. Define anatomic terms;
2. Explain anatomic principles;
3. Demonstrate use of proper anatomic nomenclature;
4. Classify (tissues, organs, bones, joints, muscles, etc.);
5. Point out anatomic landmarks on a cadaver, model, specimen and/or yourself;
6. Describe system characteristics;
7. Compare systemic similarities and differences;
8. Demonstrate positional relationships of various landmarks and organs;
9. List relationships of cells, tissues, and organs within a system and between systems.

ZOOL 2420

Human Physiology

Credit hours: 3

Studies the functions of the human body at the chemical, cellular, organ, and system levels. Explains control mechanisms involved in homeostasis and stimulus/response pathways. Involves problem solving and analytical thinking.

Course Learning Outcomes

1. Describe how major biological macromolecules can be inter-converted within the body to meet changing metabolic and structural demands.
2. Compare various processes and mechanisms involved in maintaining homeostasis.
3. Explain how various molecular, cellular, tissue and organ systems work independently and together to accomplish complex functions.
4. Formulate reasoned predictions of basic mechanisms underlying pathological conditions based on clinical data.
5. Relate the structure to the function of organs and organ systems in the human body.

ZOOL 2425

Human Physiology Laboratory

Credit hours: 1

Accompanies ZOOL 2420. Covers topics that include the scientific method, scientific data presentation, diffusion and osmosis, enzymatic function, buffers, neurotransmission, skeletal and cardiac muscle physiology, hematology, respiratory physiology and renal physiology. Course Lab fee of \$24 applies.

Course Learning Outcomes

1. Demonstrate safe and effective use of basic laboratory equipment and reagents.
2. Conduct labs involving the study of physiological processes including diffusion and osmosis, enzymatic function, buffers, neurotransmission, skeletal and cardiac muscle physiology, hematology, respiratory physiology and renal physiology.
3. Explain the mechanisms governing the functions and/or processes regulating various human organ systems based on data collected in the lab.
4. Effectively communicate scientific findings and data interpretations with peers.

ZOOL 4400

Pathophysiology

Credit hours: 4

Emphasizes the effects of human diseases on human physiology. Studies pathophysiological etiologies and mechanisms that cause disease and examines physiological adaptations and dysfunction of organs and organ systems in a disease state.

Course Learning Outcomes

1. Describe general cellular adaptations to alterations in homeostasis and mechanisms leading to the stages of reversible and irreversible cell injury.
2. Assess the possible roles of genetics, epigenetics and environment in the etiology and process of a particular disease.
3. Examine the role of the immune system and the inflammatory process in etiology of a particular disease.
4. Explain the effects of a particular disease on the function of an organ or a system directly affected by the disease.
5. Evaluate the treatment options for a particular disease, including benefits, risks and limitations of the treatment.
6. Differentiate among diagnoses that might have similar symptoms and/or etiologies if given a simulated patient history and symptoms.
7. Predict how dysfunction or failure of one organ or system will affect other organs or systems.