

Course Descriptions

and pedagogy of teaching physics for teachers in public or private schools. Emphasis will be placed on correlation with the Utah Core Curriculum, the National Science Education Standards, and the Benchmarks of Project 2061. Topics will vary.

PHYS 4300
Computational Physics
3:3:0 Sp

• Prerequisite(s): PHYS 3300
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.

PHYS 4410
Electrostatics and Magnetism
3:3:0 F

• Prerequisite(s): PHYS 3740, PHYS 3300
Explores the theory of electrostatic phenomena in a mathematically rigorous manner. Covers Gauss' Law, the Laplace and Poisson equations, boundary-value problems, and dielectrics.

PHYS 4420
Electrodynamics
3:3:0 Sp

• Prerequisite(s): PHYS 4410
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.

PHYS 4510
Quantum Mechanics I
3:3:0 F

• Prerequisite(s): PHYS 3740, PHYS 3300
Covers postulates of quantum mechanics, state functions of quantum systems, Hermitian Operators, the Schrodinger Equation, eigenfunctions of harmonic oscillators, and particles in potential wells.

PHYS 4520
Quantum Mechanics II
3:3:0 Sp

• Prerequisite(s): PHYS 4510
Covers general principles and applications of quantum mechanics. Addresses topics of three-dimensional problems, angular momentum operators, spin wavefunctions, perturbation theory, applications to atomic, molecular, solid-state, and nuclear physics.

PHYS 4600
Optics
3:3:0 Sp

• Prerequisite(s): PHYS 3740, PHYS 4410
Covers the phenomena of reflection, refraction, diffraction, interference, optical behavior in materials and lasers. Presents a mathematically rigorous description of optical phenomena. Includes lab experience.

PHYS 4700
Acoustics
3:3:0 F

• Prerequisite(s): PHYS 2220, MATH 2210
Covers phenomena of sound, resonance, acoustics, and human hearing. Treats associated topics of waves, frequency, vibration and interference using appropriate mathematical tools.

PHYS 4800
Solid State Physics
3:3:0 Sp

• Prerequisite(s): PHYS 3740, PHYS 4510
Explores topics relevant to the structure, behavior, and properties of crystalline materials. Includes a study of lattice vibrations, free electrons, semiconductors, superconductivity, dielectric and ferroelectric materials and magnetism.

PHYS 481R
Physics Internship
1 to 4:0:5 to 20

• Prerequisite(s): PHYS 2220 and Departmental Approval
Provides supervised, practical, and research experience for students preparing for careers in physics. May be repeated for a maximum of six credit hours.

PHYS 489R
Undergraduate Research in Physics
1 to 3:0:3 to 9

• Prerequisite(s): PHYS 2220, Departmental Approval
Allows research on a project determined jointly with a faculty member and approved by the department chair. Emphasizes experimental technique, data collection, modeling, and analysis techniques. May be used as part of a senior thesis. May be repeated for a maximum of 9 credits toward graduation.

PHYS 490R
Seminar
0.5:0:5:0 F, Sp

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.

PHYS 492R
Topics in Physics
3:3:0 On Sufficient Demand

• Prerequisite(s): Departmental approval
Studies a chosen topic in physics. Topics vary depending upon student demand. Possible topic may be the mathematics for quantum mechanics. May be taken for a maximum of 6 credits toward graduation, but is limited to 3 credits for the BS in Physics.

PHYS 495R
Independent Readings
1 to 3:0:3 to 9 Su, F, Sp

• Prerequisite(s): PHYS 2220, Departmental Approval
Working under faculty supervision, allows research on a project determined jointly with a faculty member and approved by the department chair. Emphasizes experimental technique, data collection, modeling, and analysis techniques. May be used as part of a senior thesis. May be repeated for a maximum of 9 credits toward graduation.

PHYS 499A
Senior Project
2:0:6 Su, F, Sp

• Prerequisite(s): Instructor and Departmental approval
Provides an opportunity for senior physics majors to participate in a current research project supervised by a department faculty member.

Includes independent study and/or laboratory work as necessary. Culminates in the preparation of a written paper and oral presentation describing the results of the research project as required for PHYS 499B. May be taken concurrently with PHYS 499B.

PHYS 499B
Senior Thesis
1:0:3 Su, F, Sp

• Prerequisite(s): Instructor and Departmental approval
Continues PHYS 499A. Provides an opportunity for senior physics majors to present the results of a current research project supervised by a department faculty member. Includes independent study as necessary. Culminates in the preparation of a written paper and oral presentation describing the results of the research project.

PJST—PEACE AND JUSTICE STUDIES

PJST 3000
Introduction to Peace and Justice Studies
3:3:0 Su, F, Sp

• Prerequisite(s): PHIL 2050
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.

PJST 3020
The Ethics of War and Peace
3:3:0 Su, F, Sp

• Prerequisite(s): PHIL 2050
Introduces literature concerning the ethics of conflict, war, terrorism, and peace. Considers alternative conceptions of these phenomena, as will be alternative approaches and ethical theories in respect to how conflict of various kinds might most effectively and morally be preempted or diminished. Addresses various defense theories and religious traditions' teachings about conflict, violence, and peace.

POLS—POLITICAL SCIENCE

POLS 1000 SS
American Heritage
3:3:0 F, Sp

Studies the founding of American constitutional government. Considers the cultural, economic, legal, political, and social ramifications of the Constitution of the United States.

POLS 1010 SS
Introduction to Political Science
3:3:0 F, Sp

Explores the nature of politics and power. Compares constitutional systems of government with closed totalitarian systems such as the Communist Bloc nations. Examines public opinion, political

communications, interest groups, party politics, ideologies, governmental institutions, bureaucracies, and government legal systems. Studies the role of violence and revolution. Emphasizes the influence of these political elements on the average citizens.

POLS 1020
Political Ideologies
 3:3:0 F
 Surveys the major historical and current political ideologies including liberalism, Marxism, fascism and Islamism.

POLS 1100 AS
American National Government
 3:3:0 F, Sp
 Studies history and structure of American National Government, rights and responsibilities of citizens, political institutions, political processes, and governmental policies.

POLS 1440
Introduction to Middle East Politics
 3:3:0 Not 09-10
 Studies social, historical, political and religious influences affecting the Middle East. Explores forces that motivate policy and decision-making. Examines current issues such as the Arab-Israeli conflict, political Islam, petroleum power and U.S. foreign policy. Presents profiles of selected modern Middle East states and the balance of power in the region.

POLS 1800 GS
Our Global Community
 3:3:0 Not 09-10
 Examines geography, climate and topography of Western Europe, Asia, Latin America, Pacific Rim, sub-Saharan Africa and Middle/East Islamic regions. Studies the unique social, cultural, economic and political differences and resulting tensions and conflicts. Explores how historical experience affect the expectations and perceptions of selected populations.

POLS 2100 SS
Introduction to International Relations
 3:3:0 F, Sp
 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.

POLS 2120
Political Parties
 3:3:0 On Sufficient Demand
 • Prerequisite(s): POLS 1100 or consent of instructor
 Examines the American political party system with special attention given to the history, campaign strategies, and ideologies of American political parties.

POLS 2200 SS
Introduction to Comparative Politics
 3:3:0 F, Sp
 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.

POLS 230G
Introduction to Political Theory
 3:3:0 F, Sp
 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.

POLS 3000
Political Analysis
 3:3:0 F
 • Prerequisite(s): (MATH 1040 or MATH 1050) and POLS 1010
 Covers the analytical and quantitative methodologies used in political science and public policy research. Includes statistical analysis, database research, and writing exercises.

POLS 3030
State and Local Government
 3:3:0 F
 Examines the operation and structure of American State and Local Government with special attention to the Utah experience. Explores the local political process, administrative practices, and intergovernmental relations.

POLS 3100
Survey of International Terrorism
 3:3:0 Sp
 A survey course of political violence and terrorism in the modern world. Studies terrorism and other forms of political violence and how they relate to fundamentalism, such as the Shiite Islamic, and Christian identity movements in the United States and Western Europe. Examines the concept of religious and political terrorism, as well as the ideologies, tactics, and organizations common to most terrorist groups.

POLS 3150
US Presidency
 3:3:0 F
 • Prerequisite(s): ENGL 1010
 Studies the executive branch of American national government. Examines the basic functions, tenets, and institutions of the federal executive branch. Special attention given to the powers, roles, and structure of the presidency. Analyzes the various complexities of executive politics and policies.

POLS 3180
Public Opinion and Political Behavior
 3:3:0 On Sufficient Demand
 Explores the formation and role of public opinion in politics and its impact on political behavior. Topics covered are: how, and to what extent, individuals form their attitudes about politics; how researchers go about attempting to measure public opinion; the distribution and determinants of public opinion regarding a broad range of political issues; and how political attitudes affect political participation.

POLS 3200
US Congress
 3:3:0 F
 • Prerequisite(s): ENGL 1010
 Examines the legislative branch of American national government. Explores concepts of legislative theory,

examining basic structure, functions, powers and roles of Congress. Gives special attention to the legislative process, constitutional structure, and modern development of federal legislature.

POLS 3250 (Cross-listed with: LEGL 3250)
Introduction to Law and Politics
 3:3:0 F
 • Prerequisite(s): POLS 1010 or POLS 1100
 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.

POLS 3300
Introduction to Public Administration
 3:3:0 F
 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.

POLS 3400
American Foreign Policy
 3:3:0 Sp
 • Prerequisite(s): POLS 1100
 Examines the development and theories of American foreign policy with special emphasis on the twentieth and twenty-first centuries. Surveys the process by which American foreign policy is formulated and examines major events and trends in policy since World War II.

POLS 3500
International Relations of the Middle East
 3:3:0 On Sufficient Demand
 • Prerequisite(s): POLS 2100 or consent of instructor
 Covers the impact of the West on the Middle East, the Arab-Israeli wars, the rise of Islamic fundamentalist terrorist groups and regimes, the Iran-Iraq war (1980-1988), the Iraq-Kuwait-US war (1990-1991), the Impact of 9/11, as well as the foreign policies of several major states in the Middle East.

POLS 3590
American Indian Law and Tribal Government
 3:3:0 F
 • Prerequisite(s): (ENGL 2010 or ENGL 2020) or permission of instructor
 Surveys American Indian law in treaties, statutes, case law, regulations, and executive orders, and analyzes various policy approaches to the federal trust relationship, tribal sovereignty over internal affairs, civil jurisdiction over tribal lands, management of natural resources of tribal lands, hunting and fishing rights, and cultural preservation. Examines the traditional and modern forms of various Indian tribal governments.

POLS 356G
Comparative Politics of Central Asia
 3:3:0 On Sufficient Demand
 • Prerequisite(s): ENGL 1010
 Introduces students to the region of Central Asia with its complex nature and origins of instability. Places regional conflicts to the context of global political developments. Analyzes the historical background of its problems and challenges in combination with studies of its dynamically developing politics.

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POLS 3600
International Relations of East Asia
 3:3:0 On Sufficient Demand
 Studies the emergence, from the nineteenth century, of modern nations from the rich and varied cultures and societies of Pacific Asia. Focuses on China, Japan and Korea. Explores the historical and geographical context of the development of East and Southeast Asia. Examines the transformation between East and West as well as the persistence of tradition. Discusses the political, economic and cultural changes in a region whose economic output rivals that of any other area of the world.

POLS 3610
International Organization
 3:3:0 On Sufficient Demand
 • Prerequisite(s): POLS 2100
 Focuses on the the role of international institutions in the modern state system. Analyzes procedures of international cooperation in key issue areas including: the peaceful settlement of disputes and international security, human rights, economic development, and the environment.

POLS 3680
International Political Economy
 3:3:0 On Sufficient Demand
 • Prerequisite(s): POLS 2100
 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.

POLS 420R
Issues and Topics in Political Science
 3:3:0 On Sufficient Demand
 • Prerequisite(s): ENGL 2010 or ENGL 2020
 Surveys a specific topic in political science. Topic varies each semester. May be repeated for a maximum of 6 credits toward graduation.

POLS 4720
Foundations of American Constitutionalism
 3:3:0 F
 • Prerequisite(s): POLS 1100, or POLS 1000, or by consent of instructor
 Examines the political and constitutional foundations of American constitution-making, beginning with the English Charter of Liberties in 1100 ACE and ending with the United States Bill Rights of 1791. Employs a comparative analysis of early Anglo-American constitutional thought, with special attention being given to the writings of prominent 17th century and 18th century constitutional theorists (e.g. Coke, Bacon, Burke, Penn, Dickinson, Mason, Adams, Madison, Marshall).

POLS 4790
US Constitution
 3:3:0 Sp
 • Prerequisite(s): POLS 1100 or POLS 1000
 Examines the United States Constitution as the political blueprint of American national government. Explores the basic constitutional powers and structures of the federal government, and the prominent political and constitutional conflicts between its executive, legislative, and judicial branches. Addresses such key elements of constitutional design as limited and empowered

government, enumerated and implied powers, separation of powers, checks and balances, federalism, and the Bill of Rights. Employs a critical analysis of modern constitutional politics.

POLS 480R
Internship
 2 to 9:1:5 to 40 On Sufficient Demand
 • Prerequisite(s): POLS 1100
 Provides opportunities for internship experience in political organizations, government offices, and non-governmental organizations. May be repeated for a maximum of 9 credits toward graduation.

POLS 4850
State Legislative Internship Seminar
 3:3:0 On Sufficient Demand
 • Pre- or Corequisite(s): ENGL 1010
 Prepares students who have been selected to serve as interns to the Utah State Legislature. Focuses on legislative behavior and organization; bill and law making; research and policy; comparative state government and politics and internship requirements.

POLS 490R
Independent Study
 1 to 4:1 to 4:0 On Sufficient Demand
 • Prerequisite(s): ENGL 2010 or ENGL 2020
 Provides independent study for students unable to secure a desired class within regular semester curriculum offerings. With the approval of dean and/or department chair, student and instructor design and complete readings and other projects at the upper division level. May be repeated for a maximum of six credits toward graduation.

POLS 4990
Senior Seminar
 3:3:0 Sp
 • Prerequisite(s): Senior standing in Political Science and POLS 3000
 Includes readings and discussions about fundamental political science problems and issues. Offers directed research project tailored to each student's special interests.

PORT—PORTUGUESE

PORT 1010 LH
Beginning Portuguese I
 5:5:1 F, Sp
 For those with no prior Portuguese. Emphasizes listening, speaking, and writing skills along with basic grammar, vocabulary and verb conjugations all within the cultural context of modern Brazil and Portugal. Use eclectic methodology requiring conversational exchanges.

PORT 1020 LH
Beginning Portuguese II
 5:5:1 F, Sp
 • Prerequisite(s): Students need equivalent knowledge of PORT 1010
 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.

PORT 1050 LH
Intensive Portuguese for Spanish Speaker
 5:5:1 On Sufficient Demand
 • Prerequisite(s): SPAN 3050, native speaker, or permission of instructor
 Intensive overview of basic Portuguese for Spanish speakers. Practices listening, speaking, reading, and writing skills as well as discusses cultural aspects of Portuguese-speaking societies. Uses an eclectic method of instruction, emphasizing conversational exchange.

PORT 2010 LH
Intermediate Portuguese I
 5:5:1 F
 • Prerequisite(s): Students need equivalent knowledge of PORT 1020
 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.

PORT 2020 HH
Intermediate Portuguese II
 3:3:0 Sp
 • Prerequisite(s): Students need equivalent knowledge of PORT 2010
 Continuation of PORT 2010. Includes remaining grammar and language concepts, literature and cultural readings. Emphasizes literary readings, conversational exchanges as well as creative writing.

PORT 3050 LH
Advanced Portuguese
 3:3:0 F, Sp
 • Prerequisite(s): One year residency in Portuguese speaking country or placement test
 For non-native Portuguese speakers with a fairly good mastery of basic Portuguese. Overviews basic Portuguese grammar with special emphasis on major concepts. Overviews Luso-Brazilian literatures and cultures.

PORT 3200
Business Portuguese
 3:3:0 On Sufficient Demand
 • Prerequisite(s): Students need equivalent knowledge of PORT 3050
 For those who plan to pursue a career in international business or related field, learn the business language for Portuguese, or understand Portuguese speaking cultures. Teaches Portuguese business terminology. Presents the role of Portuguese-speaking countries in a global economy. Explores how students can effectively do business with Brazilian and Portuguese companies within the framework of Lusophone cultures. Includes current materials dealing with today's issues. Taught entirely in the Portuguese language.

PORT 3520
Brazilian Culture and Civilization
 3:3:0 On Sufficient Demand
 • Prerequisite(s): Students need equivalent knowledge of PORT 3050
 Explores a multitude of aspects that construct Brazilian national identity. Completers should acquire an understanding of contemporary issues, and ethnic and economic development of Brazil, as well as historical interdependence with other nations. Presentations and class instructions conducted entirely in Portuguese.