Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: https://catalog.uvu.edu/

Semester: Spring
Year: 2025
Course Prefix: EGDT
Course and Section #: 2600-~~001~~ 002
Course Title: Applied Structures I - Statics
Credits: 3

Course Description

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.

Prepares students for entry-level employment as a design drafter in structural, architectural, and mechanical drafting. The skills you learn in this course will give you the mathematical proficiency needed to complete upper division courses in preparation for employment in the many diverse drafting disciplines.

Course Attributes

This course has the following attributes:

☐ General Education Requirements
☐ Global/Intercultural Graduation Requirements
☐ Writing Enriched Graduation Requirements
☒ Discipline Core Requirements in Program
☐ Elective Core Requirements in Program
☒ Open Elective
Other: *Click here to enter text.*

Instructor Information

Instructor Name: Jonathan Allred, FHEA

Student 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.

Course Materials and Texts

1. Pencil (No ink is to be used on your assignments or tests as a writing device. Pencil erases and will help in the organization and readability of your work.)
2. Green engineer's computation pad (We will use this grid paper to create diagrams and once again organize our work.)
3. Scientific Calculator (We will be solving trigonometric expressions, i.e. sin cos tan.)
4. TEXTBOOK - Applied Statics and Strength of Materials, 7th Edition, Leonard Spiegel/George F. Limbrunner (This book is used in this class as well as in the next Applied Structures II - Strength of Materials class.)
5. Access to a computer and reliable internet connection
6. Access to a camera or scanner for documenting and submitting your course work. (blurry or illegible work will receive no credit)

Course Requirements

Course Assignments, Assessments, and Grading Policy

Assignments:

You have purchased a textbook for this course. The textbook will be used for assignment problems to help you apply the content you have learned. Every lesson has a few problems for you to solve from the book. After completing the assignment, you can input your answers into the corresponding assignment questions. You may use a number of resources to help you identify where your went wrong in the process if you get an answer wrong. Examples include group study, tutoring, paired study, etc. The purpose of these assignments is to give you multiple opportunities to apply the lesson content. You will see patterns to solving the problems as you complete these problems which will prepare you for future quizzes and tests. Correct the process and retake the assignment for a higher score. The Assignments will prepare you for the quizzes and exams.

Assessments:

Each lesson has a quiz you are to take after completing the corresponding assignment. Quizzes are timed. On the quizzes, you will be given two chances to input the correct answers. If you do not not get the right answer the first time go back and see if you can identify where you made a mistake. After the second try you will be able to see the correct answers. Use the correct answers to go back to your quiz and identify how to get that correct answer. The quizzes are another chance to prepare you for the exams.

Each exam can only be taken once. Exams are timed. You have been prepared with multiple chances to apply what you have learned before the exam. Make sure you give yourself enough time to complete the exam as listed in the exam description. There are 6 exams, including the final exam, in this course. Your lowest exam score will be dropped, out of those 6 exams, and will not be calculated into your final grade.

Grading Scale:

The following grading standards will be used in this class:

Grade	Percent
A	93-100
A-	90-92
B+	87-89

B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
E	0-59

Late Work Statement:
The best way to be successful in this course is to submit all assignments by their due date. Assignments are available from the beginning of the term and you are allowed to work ahead.

In the event that you will not be able to meet a due date, contact your instructor as soon as possible. All late work will incur a 10% late penalty for every day late. Example, if an assignment is 5 days late it will incur a 50% late penalty when it is turned in.

Required or Recommended Reading Assignments
NA

General Description of the Subject Matter of Each Lecture or Discussion
Module 1: Introduction to Trigonometry & Principles of Statics
Module 2: Resultant of a Force System - Method of Components & Moment of a Force
Module 3: Resultant of a Parallel Force System
Module 4: Resultant of a Nonconcurrent Force System & In-class Exam 1 - Resultants of Force Systems
Module 5: Equilibrium of Concurrent Force Systems & Equilibrium of Parallel Force Systems
Module 6: Equilibrium of Nonconcurrent Force Systems & In-class Exam 2 - Equilibrium of Force Systems
Module 7: Residential Construction Loads, Tributary Areas
Module 8: Sizing Joists & Rafters, Connections
Module 9: In-class Exam 3 - Residential Construction Loads, Tributary Areas, Load Paths & Sizing Joists & Rafters
Module 10: Analysis of Structures
Module 11: Analysis of Frames
Module 12: In-class Exam 4 - Analysis of Structures & Frames & Center of Gravity
Module 13: Centroid & Centroidal Axes of Composite Areas & Centroid & Centroidal Axes of Structural Built-Up Members
Module 14: Area Moments of Inertia & Composite Area Moments of Inertia
Module 15: Radius of Gyration, Polar Moment of Inertia & Exam 5 - Moments of Inertia, Radii of Gyration, Polar Moment of Inertia

Required Course Syllabus Statements

Generative AI
NA

Using Remote Testing Software
☒ This course does not use remote testing software.

☐ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities
Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU Accessibility Services at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity
At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in UVU Policy 541: *Student Code of Conduct*.

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a specially dedicated space for meditation, prayer, reflection, or other forms of religious expression.