CEE/ME2310 Statics

Instructor	Professor Wei Tong	***Phone***	8-1269
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Office Hours	12-1pm, Tuesdays & Thursdays	***Other Times***	By a prior appointment only

Textbook:

Bedford, A., and W. Fowler. *Engineering Mechanics: Statics*. Fifth Edition, 2007. Pearson Prentice Hall, Upper Saddle River, NJ. ISBN 0-13-612915-3.

Description:

Equilibrium of force systems; computations of reactions and internal forces; determinations of centroids and moments of inertia; introduction to vector mechanics. Forces and moments for planar and three-dimensional systems. Basic equilibrium conditions.
Prerequisite: MATH 1337 or equivalent.

Goals:

Introduce the concept of vector analysis as it applies to forces and moments acting in two- and three-dimensions. Apply the principle of equilibrium, using free-body diagrams, to particles and to rigid bodies in two- and three-dimensions. Develop the ability to analyze simple structures and machines for reactions and internal forces.

Grading Policy: 60% (=2x20%) Tests #1, #2 and #3, 10% class participation, and 30% Final Exam.

Final Grade Percentage Breakdown:

A	*100-95*	*C+*	*79-77*
A-	*94-90*	*C*	*76-73*
B+	*89-87*	*C-*	*72-70*
B	*86-83*	*D*	*69-60*
B-	*82-80*	*F*	*59-0*

Class Schedule/Locations:

4 hour daily lectures given 10:00-12:00pm and 1:00-3:00pm with one-hour lunch break. Attendance of lectures is required for the May term.

Relevant Program Outcomes

This course includes, but is not limited to, content that supports the educational objectives and outcomes of the environmental and civil engineering programs. Specific emphasis is placed on students attaining and demonstrating:

- An ability to apply knowledge of mathematics, science, and engineering (Outcome A).
- An ability to identify, formulate, and solve engineering problems (Outcome E).

Topics Covered and Tentative Lecture Schedule

Ch. 1. Introduction (May 15: 10-11am)

A. Units

Ch. 2. Vectors

A. Scalars and Vectors; Components in Two Dimensions; (May 15: 11-12pm)
B. Vector Components in Three Dimensions (May 15: 1-2pm)
C. Dot Products; Cross Products (May 15: 2-3pm)

Ch. 3. Forces

A. Forces, Equilibrium, and Free-Body Diagrams (May 16: 10-12pm)
B. Two-Dimensional Force Systems; Three-Dimensional Force Systems (May 16: 1-3pm)

Test #1 (Ch.1-3): May 19, Monday (10-11am review and 11-12pm exam time)

Ch. 4. Systems of Forces and Moments

A. Two-Dimensional Description of the Moment; The Moment Vector (May 19: 1-3pm)
B. Moment of a Force About a Line; Couples (May 20: 10-12pm)
C. Equivalent Systems (May 20: 1-3pm)

Ch. 5. Objects in Equilibrium

A. Two-Dimensional Applications; Three-Dimensional Applications (May 21: 10-12pm)
B. Two-Force and Three-Force Members (May 21: 1-3pm)

Test #2 (Ch.4-5): May 22, Thursday (10-11am review and 11-12pm exam time)

Ch. 6. Structures in Equilibrium

A. Trusses; The Method of Joints; The Method of Sections; Space Trusses (May 22: 1-3pm)
B. Frames and Machines (May 23: 10-12pm and 1-3pm)

Ch. 7. Centroids and Centers of Mass

A. Centroids of Areas; Centroids of Volumes and Lines (May 27: 10-12pm)
B. Distributed Loads; Centers of Mass (May 27: 1-3pm)

Test #3 (Ch.6-7): May 28, Tuesday (10-11am review and 11-12pm exam time)

Ch. 8. Moments of Inertia

A. Parallel-Axis Theorems (May 28: 1-3pm)
B. Mass Moment of Inertia (May 29: 10-11am)

Ch. 9. Friction

A. Coefficients of Friction (May 29: 11-12pm)
B. Simple Machines and Devices with Friction (May 29: 1-3pm)

Final Exam (Ch.1-9): May 30, Friday (10-12pm review and 1-3pm exam time)

Course Requirements:

Attendance: Attendance will be taken at each class session. It is the student's responsibility to let the instructor know of their presence if they come after roll has been taken. Attendance and class participation will be considered in the determination of the final grade. University policy states that any student absent from class more than 3 consecutive sessions may be dropped from the class.

Homework: Prepare for class by doing assigned readings in advance. Solution to the assigned problems will be posted on Blackboard (courses.smu.edu). You should correct your homework from the solutions. Homework must follow Mechanical Engineering Dept. guidelines.

Late Assignments: Assignments are due at the BEGINNING of class on the DUE DATE. Class time may **not** be used to complete late assignments. Late assignments may have up to a 30% penalty (the highest possible grade on a late assignment will be 70%). Late assignments will be accepted until the solutions are posted on the Blackboard (usually by 5pm two days after the due date).

Make-Up Tests: Make-up tests WILL NOT BE GIVEN unless ALL of these conditions are met in ADVANCE: 1) The instructor is notified in advance of the regularly scheduled exam that the student will be out. 2) Sufficient reason and documentation (note from the SMU Health Center or a doctor or coach) certifying that you were physically unable to take the exam at the regularly scheduled time is provided. If you are not sick enough to need a doctor, you will be expected to take the exam as scheduled. 3) The instructor gives his approval to take a make-up test.

Instructor reserves the right to make changes.

Classroom Policy (SMU):

* Disability Accommodations: Students needing academic accommodations for a disability must first be registered with Disability Accommodations & Success Strategies (DASS) to verify the disability and to establish eligibility for accommodations. Students may call 214-768-1470 or visit http://www.smu.edu/alec/dass to begin the process. Once registered, students should then schedule an appointment with the professor to make appropriate arrangements.

* Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

* Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)

* Student Learning Outcomes: Please include in your syllabi all student learning outcomes, both those specific to your course, as well as those that satisfy major and general education requirements.

* Final Exams: Final course examinations shall be given in all courses where they are appropriate, must be administered as specified in the official examination schedule, and shall not be administered during the last week of classes or during the Reading Period.