

ENGR 2332 Mechanics of Materials

SECTION NUMBER AND SYNONYM:

CREDITS: (3-3-0)

INSTRUCTOR:

COURSE DESCRIPTION:

Stresses and deformations in solids; stress-strain relationships and torsion; Beams, shafts and columns; elastic deflections in beams; combined loading and combined stresses. Emphasis on applications to engineering problems.

PREREQUISITES:

1. ENGR 2301 or equivalent.
2. MATH 2415 or equivalent.

TEXT:

Gere and Goodno: **Mechanics of Materials, 7th edition.**

OTHER: Scientific calculator.

METHODOLOGY: Lecture. (Class discussion and problem solving).

LECTURE: (example) MW: 5:40 -6:55 P.M. RGC 328

OFFICE LOCATION:

PHONE NUMBER:

E-MAIL ADDRESS:

OFFICE HOURS:

APPOINTMENT HOURS:

COURSE RATIONALE: Standard course in mechanics of materials focusing on analysis of stresses and strains for axially and torsionally loaded structural members; bending and shear stresses in beams and beam deflections; Emphasis on application to engineering problems.

GRADING SYSTEM: (The grading system may vary depending on the instructor)

Two exams	40%
Final exam	40%
Homework	10%
Quizzes	10%

COURSE POLICIES:

1. Attendance Policy: [up to each instructor]
2. Withdrawals: [Instructor initiated withdrawals are discouraged. Instructor may want to include the last day of student and instructor initiated withdrawals.]
3. Incomplete Rule: see incomplete rule in the College catalog. (This section in the catalog is 3 paragraphs long.)
4. Scholastic Dishonesty: Acts prohibited by the college for which discipline may be administered include scholastic dishonesty, including but not limited to cheating on an exam or quiz, plagiarizing, and unauthorized collaboration with another in preparing outside work. Academic work submitted by students shall be the result of their thought, research or self-expression. Academic work is defined as, but not limited to tests, quizzes, whether taken electronically or on paper; projects, either individual or group; classroom presentations, and homework.
5. Academic Freedom: Students are free to disagree with instructors on matters of opinion or personal philosophy, and will incur no penalty from doing so. However, instructors will judge student work based upon its relation to the current state of mainstream scientific fact and theory students are allowed to voice opinions, concerns, complaints and suggestions to the instructor. However, it is up to the instructor to decide how to use the students comments to meet the class best interests.
6. Student Discipline: Matters of student discipline will be adjudicated by the instructor on a case-by-case basis, in conjunction with the Task Force Leader or Dean. Students may consult with the Office of Student Services or the Associate Dean at their campus on these matters.
7. Office with Student with Disabilities: Each ACC campus offers support services for students with documented physical or psychological disabilities. Students with disabilities must request reasonable accommodations through the Office for Students with Disabilities on the campus where they expect to take the majority of

their classes. Students are encouraged to do this three weeks before the start of the semester.

8. **Safety Statement:** Health and safety are paramount values in science classrooms, laboratories and field activities. You are expected to learn, understand and comply with ACC environmental, health and safety procedures and agree to follow the ACC science safety policy. You are expected to conduct yourself professionally with respect and courtesy to all. Anyone who thoughtlessly or intentionally jeopardizes the health or safety of another individual will be immediately dismissed from the days activity, may be withdrawn from the class, and/or barred from attending future activities. Specific safety training will take place before most activities. If you are late and miss this training, you will not be able to participate in the activity. You can read the complete ACC science safety policy at: http://www2.austincc.edu/sci_safe/.

ENGR 2332 Course Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Solve problems involving the mechanical properties of materials under various types of loadings and calculate stresses and strains and material deformation.
2. Determine stress and strain in axially loaded structural members for uniform and nonuniform loading.
3. Determine stress and strain in torsionally loaded structural members for uniform and nonuniform loading.
4. Compute the stress state both analytically and graphically at various orientation angles.
5. Compute the principal normal stresses and maximum shear stresses.
6. Draw the shear force and bending moment diagrams and determine the maximum shear and maximum bending moment for various types of beam loadings.
7. Calculate the normal and shear stresses in beams of various types of cross sections subjected to various loadings.
8. Compute stresses and strains in pressure vessels.
9. Compute stresses and strains in beams subjected to combined loadings.
10. Determine beam deflection and find the equation of the deflection curve for various beam types and beam loadings for statically determinate and indeterminate beams.
11. Solve practical engineering problems subjected to various constraints similar to those encountered in engineering design.

[Instructor may add to objectives as appropriate]

COURSE OUTLINE/CALENDAR:

To be provided by each instructor. Can be attached as an appendix to the syllabus.

TESTING CENTER POLICY:

Engineering tests may not be given in the testing center except for make up tests.