

NUCL 273: MECHANICS OF MATERIALS

POLICIES

- Instructor:** Martin Bertodano, Ph.: 49169, bertodan@purdue.edu
Office hours: NUC 112D, M, W 10:30a – 12:30p.
- Graders:** Patrick Foster, foste103@purdue.edu and Christian Sweeney, sweeney3@purdue.edu
Office hours: NUCL 115, Tu 2p - 4p, Fr 1p – 3p.
- Text:** Beer and Johnston, 7e edition including McGraw-Hill Connect key (not International edition)
- Grading:** Exams: 70%
Homework: 25%
Attendance: 5%
A+: 95-100, A: 90-94.9, A-: 85-89.9, B: 70-84.9, C: 55-69.9, D: 40-54.9, F: 0-39.9
B, C, D, F are broken in plus-minus ranges of 5 points like A.
- Exams:** Two 1-1/2 hour exams and one 2 hour final (with bonus problem).
- Homework:** Homework assignments are listed in the attached schedule. They MUST be completed in McGraw-Hill Connect (avg. grade) or handed in individually in class. Due at beginning of second period after assignment date; accepted one period late with 10% penalty; not accepted otherwise; lateness may be excused for acceptable reasons. *Homework handed outside of class will not be graded.* No homework are dropped in the final grade. Hw 14 is worth double.
Presentation rules for handed-in homework:
1. Use engineering paper and add a cover sheet with name and problem #s.
 2. Professional quality presentation is the goal; work neatly: organize paper well, use straightedge to draw lines, use one side of sheet only.
 3. Show complete free body diagrams: show known forces in known direction, show unknowns in positive direction, use proper symbols, and show all dimensions.
- Be extremely critical of your own work!! You are responsible for making certain that your results are correct. You can achieve this by using the tests of “reasonableness”, checking by another method or against previous results, and/or consulting with other students, the grader, or the instructor.
- When a homework dispute arises please discuss it with the grader first.
- Attendance:** Attendance rate above 70% will merit 5 points of the final grade. The 25% margin is an allowance for sickness, Purdue related travel, other absence reason or plain exhaustion.
University Senate Document 6-5, March 19, 2007: The University expects that students will attend classes for which they are registered. At times, however, either anticipated or unanticipated absences can occur. The student bears the responsibility of informing the instructor in a timely fashion, when possible. The instructor bears the responsibility of trying to accommodate the student either by excusing the student or allowing the student to make up work, when possible. The University expects both students and their instructors to approach problems with class attendance in a manner that is reasonable.
- Emergencies:** In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. Further information will be posted in the course website.
- Ethics:** *As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.*
- Exams:* Exams will be closed book, closed notes, but needed equations will be furnished. Completely independent work is required; copying is unacceptable and copied work will warrant an F for the course.
- Homework:* getting help from the instructor, grader or other students is encouraged BUT be careful not to lean heavily on others... make sure you understand concepts.

SYLLABUS

Specific Course Information:

Analysis of stress and strain; equations of equilibrium and compatibility, stress-strain laws; extension, torsion and bending of bars; membrane theory of pressure vessels; elastic stability, elected topics.

3 Credit Hours.

Prerequisite: ME 270

Classification: Required

Learning Outcomes:

1. To develop and understanding of simple structures subject to axial, bending, shearing, torsion or pressure loading.
2. To learn a systematic approach to engineering problem solving.
3. To introduce students to simple design problems.

List of Topics:

Material properties; loads, reactions, axial load: stress and deformation, including statically indeterminate systems, axial force, shear force, bending moments, flexural stresses in beams, shear stresses in beams, beam deflections, torsion: stress and deformation, including statically indeterminate systems, combined loadings; elastic stress analysis and design, elastic buckling.