

ENGR 2143 Strength of Materials – revised 10-Dec-2004

Fall 2004

Department of Physics and Engineering

University of Central Oklahoma

Location	Howell Hall 100
Time	MWF 12:00 p.m. - 12:50 p.m.
Instructor	Evan Lemley, Ph.D.; Assoc. Prof., Department of Physics and Engineering
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Office Hours	TR 10:00 a.m. - 11:00 a.m. & F 9:00 a.m. – 10:00 a.m. or by appointment.
Final	W December 15, 2004 from 11:00 a.m. - 12:50 p.m.

Course Description

This course provides an introduction to solid mechanics, including concepts of stress and strain, mechanical behavior of engineering materials, and analysis of loaded-bearing members.

Prerequisites

ENGR 2033 Statics

Textbook

Mechanics of Materials, Sixth Edition, James M. Gere, Thomson Brooks/Cole, 2004. Please bring your textbook to class for each meeting.

Calculator

You must own a scientific calculator – see the list of allowed calculators for exams in the Department of Physics and Engineering. Please bring your calculator to class for each meeting.

Engineering Paper

Engineering Paper -- available from Thompson' s Bokstore or Triangle A&E at Broadway Ext. and 63rd. Please use engineering paper for all homework assignments.

Internet & E-mail

Access to the Internet and ability to send and receive E-mail. If you do not have a computer at home you can use machines on the UCO campus: Look at

<http://technology.ucok.edu/support/microcomplab.htm>

for a full list of available general use computers on campus.

Portable Electronic Devices (including cell phones)

Please turn off any portable electronic devices (esp. cell phones) during class. You may not access any portable electronic device during exams except calculators that are on the approved list for Physics and Engineering courses.

Objectives

The student shall be able to

Calculate the stress and strain in loaded two-force members.

1. Demonstrate understanding of stress and strain diagrams for engineering materials and of the application of Hooke's and Poisson's laws to loaded members.
2. Calculate stresses in axially loaded members.
3. Calculate stresses in torsionally loaded members.
4. Calculate stresses in flexurally loaded members.
5. Calculate shear stresses in loaded members.
6. Use stress and strain transformation theory and Mohr's circle to calculate principle stresses in loaded members.
7. Analyze and design beams and shafts.
8. Calculate deflections of beams and shafts.
9. Demonstrate understanding of the application of energy methods to the analysis of beams and trusses.

Instruction Techniques

Lecture will be used predominantly although sometimes recitation periods will be employed.

Class Policies

Attendance is not required, but you will be responsible for any announcements or notes from class (and quizzes).

Attendance is mandatory for all exams or other graded activities (e.g. project competitions or presentations).

Cheating or academic dishonesty of any kind will not be tolerated.

Homework

Working HW problems in a timely manner is the best way to do well on exams and in the class as a whole. Homework is due at the beginning of the class period on the due-date or due-day.

Homework should be neatly written on only one side of your paper, folded length-wise with your name written on the outside of the folded pages before turning it in. Each problem should fit all of the following criteria: clearly labeled, **one problem per sheet of paper**, legible and organized.

HW papers that do not fit these criteria will be penalized accordingly. See the attached HW Format section for details on the presentation of HW problems. You may also visit the following site for an electronic version of the homework format requirements:

http://engrphys.lemley.org/courses/hwk_format.php

Each HW problem you turn in is worth ten points. Some problems will be graded on detailed solutions and others will be graded on effort. I will **not** tell you ahead of time which or how many problems will be graded relative to a detailed solution, but on the returned and graded HW paper a check mark next to the problem number will indicate full effort (or ten points) and a numerical score (e.g. 8/10) next to the problem number will be used on those problems under more scrutiny.

Project (cancelled)

There will be a Team Design Project in the last third of the semester. This project will constitute 15% of your grade (the equivalent of one exam). You will receive a hand-out describing your

project roughly midway through the semester.

Grading Policies

The following table shows the breakdown of credit for the course.

HW and misc.	10%
Highest Exam	25%
2 nd Highest Exam	20%
Lowest Exam	15%
Final	30%
Total	100%

Tentative Grading Scale

90-100% -- A, 80-90% -- B, 70-80% -- C, 60-70% -- D, <60% -- F

STUDENT INFORMATION SHEET / SYLLABUS ATTACHMENT

See separate handout or go to:

<http://www.busn.ucok.edu/academicaffairs/FORMS/StudentINFOFall04.pdf>

Tentative Class Schedule for Strength of Materials Fall 2004

Week #	Day	Date	Topics and Activities	Covered
1	M	23Aug2004	Syllabus and 1.1 – 1.2	
	W	25Aug2004	1.3 – 1.4	
	F	27Aug2004	1.5 – 1.8	
2	M	30Aug2004	2.1 – 2.3	
	W	01Sep2004	2.4 – 2.5	
	F	03Sep2004	2.6 – 2.7	
3	M	06Sep2004	LABOR DAY – NO CLASS	
	W	08Sep2004	2.8 and 2.10	
	F	10Sep2004	3.1 – 3.3	
4	M	13Sep2004	3.4 – 3.5	
	W	15Sep2004	3.6 – 3.7	
	F	17Sep2004	3.8	
5	M	20Sep2004	3.9 – 3.10	
	W	22Sep2004	4.1 – 4.3	
	F	24Sep2004	EXAM 1	
6	M	27Sep2004	4.3 – 4.4	
	W	29Sep2004	4.5	
	F	01Oct2004	5.1 – 5.4	
7	M	04Oct2004	5.5 – 5.6	
	W	06Oct2004	5.7 – 5.9	
	F	08Oct2004	5.10 – 5.11	
8	M	11Oct2004	6.1 – 6.2	
	W	13Oct2004	6.3, 6.5 – 6.6	
	F	15Oct2004	7.1 – 7.3	
9	M	18Oct2004	7.4	
	W	20Oct2004	7.5 – 7.7	
	F	22Oct2004	FALL BREAK – NO CLASS	
10	M	25Oct2004	8.1 – 8.3	
	W	27Oct2004	EXAM 2	
	F	29Oct2004	8.4 -8.5	
11	M	01Nov2004	9.1 – 9.3	
	W	03Nov2004	9.4	
	F	05Nov2004	9.5 – 9.6	
12	M	08Nov2004	9.7 – 9.9	
	W	10Nov2004	10.1 – 10.2	
	F	12Nov2004	10.3 – 10.4	
13	M	15Nov2004	10.5	
	W	17Nov2004	11.1 – 11.2	
	F	19Nov2004	11.3	
14	M	22Nov2004	11.4	
	W	24Nov2004	THANKSGIVING BREAK – NO CLASS	
	F	26Nov2004	THANKSGIVING BREAK – NO CLASS	
15	M	29Nov2004	11.5 – 11.6	
	W	01Dec2004	11.7 – 11.8	
	F	03Dec2004	EXAM 3	
16	M	06Dec2004	11.9	
	W	08Dec2004	Project Presentations	
	F	10Dec2004	Project Presentations and Class Wrap-Up	
17	W	15Dec2004	W December 15, 2004 from 11:00 a.m. - 12:50 p.m.	