

CE 420/520 Advanced Mechanics of Materials

Fall 2003

Text: A.P Boresi and R.J. Schmidt, Advanced Mechanics of Materials, 6th ed., Wiley, 2003.

References: R. Solecki and R.J. Conant, Advanced Mechanics of Materials, Oxford, 2003.
W.B. Bickford, Advanced Mechanics of Materials, Addison Wesley, 1998.
R.G. Budynas, Advanced Strength and Applied Stress Analysis, 2nd ed., McGraw-Hill, 1999.
R.D. Cook and W.C. Young, Advanced Mechanics of Materials, 2nd ed., Prentice Hall, 1999.

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Office Hours: TR 1:00-2:00 or by appointment

Examination Schedule:

Exam No. 1	October 28
Exam No. 2	November 20
Final exam	Tuesday, December 9, 10:15-12:05 P.M.

Engineering Science Credit: 4

Engineering Science: 100%

Catalog Course Description:

Advanced Mechanics of Materials (4)

Advanced studies in mechanics of materials including fundamentals of elasticity, phenomenological material behavior, and theories of failure. Timoshenko beam theory, stress functions, shear stresses, unsymmetrical sections, and beams on elastic foundations. Thick-walled cylinders; approximate methods. Prerequisites: EAS 212, Mth 256 or equivalent.

Course Objectives - students must:

1. Demonstrate a good understanding of the fundamental concepts in solid mechanics and be able to apply these concepts to the solutions of engineering problems.
2. Be able to develop mathematical models to describe the problems.
3. Emphasize physical significance of the solutions and interpret the theoretical results to understand the material behavior of bodies under different loading conditions.

Grading System:

2 exams @ 30% each	60%
Final exam	30%
Homework*	10%

* Homework is due the meeting following its assignment, unless otherwise stated

<u>Date</u>	<u>Reading Assignment</u>	<u>Problems</u>
9/30	Secs. 2.1 – 2.3	
10/2	Secs. 2.4.1 – 2.4.3	
10/7	Secs. 2.4.4, 2.4.5, 2.5	2.1
10/9	Secs. 2.4.6 – 2.4.8	2.12b, 2.34
10/14	Secs. 2.8, 3.3 – 3.4	2.53, 2.55a, 2.56a, 2.58a
10/16	pp. 263 - 268	3.5, 3.6, 3.8, 3.15
10/21	Handout: Timoshenko Beam Theory	7.9
10/23	Timoshenko Beam Theory- cont.	handout
10/28	pp. 268 - 280	7.12
10/30		7.20, 7.31
11/4	Examination	
11/6	Problem Session	7.30
11/11	Holiday	
11/13	Sec. 7.3	7.42, 7.50

11/18	pp. 113 – 114, secs. 4.3.3, 4.4.1, 4.4.2	4.9, 4.10
11/20		4.11, 4.12
11/25	Examination	
11/27	Holiday	
<u>Date</u>	<u>Reading Assignment</u>	<u>Problems</u>
12/2	Rayleigh-Ritz Method	handout
12/4	Rayleigh-Ritz method- cont., review	