

Fall 2003
EML 6653
APPLIED ELASTICITY

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|----------------------|--|----------------|-----------------|
| Class Room: | PHY 109 | Time: | 6-9 W |
| Instructor: | Autar K. Kaw, Professor | Office: | ENC 2215 |
| Telephone: | 974-5626 | E-mail: | kaw@eng.usf.edu |
| Office Hours: | 10:30-12 TTh or drop by or call or e-mail | | |
| Web Site: | www.eng.usf.edu/~kaw/class/elasticity | | |

Required Text Book: Advanced Strength and Applied Elasticity by Ugural and Fenster, PTR, Fourth Edition.

Objectives: Apply the fundamentals of elasticity to engineering problems. Comparison with solutions obtained by using elementary strength of materials in solving engineering problems will be emphasized. Practical problems will be solved and advantages of using particular methods will be illustrated.

Pre-Requisites: Strength of Materials or Mechanics of Materials or equivalent.

Course Grade:

Short quizzes (every class for first 30 mins) – 40 pts

Mid Term Exam (Wed November 5) - 30 pts

Cumulative Final Exam (Wed Dec 10) – 30 pts

Every quiz/exam is open textbook only.

Grading Scale:

Grade A+ is 95-100 (4.00) Grade A is 90-94 (4.00) Grade A- is 86-89 (3.67)

Grade B+ is 83-85 (3.33) Grade B is 80-82 (3.00) Grade B- is 76-79 (2.67)

Grade C+ is 73-75 (2.33) Grade C is 70-72 (2.00) Grade C– is 66-69 (1.67)

Grade D+ is 63-65 (1.33) Grade D is 60-62 (1.00) Grade D- is 56- 59 (0.67)

Grade F is 0- 55 (0.00).

Go to – <http://acad.usf.edu/grades.html> for further information about the new grading policy.

Make-up Policy: NO make-up tests OR quizzes will be given. However, in the event of a serious illness (physician's statement documenting severity of illness required), death in the family or other legitimate, documented, verifiable emergency resulting in the absence from a schedule test, a student may be given the same grade for the missed test as average of other tests. NOTIFICATION OF ABSENCE MUST BE GIVEN PRIOR TO THE COMMENCEMENT of the scheduled examination

or test to me. Do not presume that your reasons for missing an examination or test are acceptable unless authorization is given to you.

Course Schedule:

1. Analysis of Stress
2. Analysis of Strain
3. Stress-Strain Equations
3. Two Dimensional Problems in Elasticity
4. Criteria for Material Failure
5. Axisymmetrically Loaded Members
6. Energy Methods
7. Special Topics – Thermal Stresses, Finite Difference, Finite Elements, Boundary Element Methods

Follow Below for Third Edition

| Article no. | Assigned H.W | Suggested H.W |
|---|----------------------------|-----------------------|
| 1.1 to 1.10, 1.15 | 1.8, 1.14, 1.16, 1.29 | 1.1, 1.2, 1.5, 1.22 |
| 2.1 to 2.9, 2.13 | 2.2, 2.9, 2.23, 2.28 | 2.3, 2.8, 2.32 |
| 3.1 to 3.7, 3.10 | 3.3, 3.5, 3.7, 3.11 | 3.7, 3.12, 3.16, 3.32 |
| 8.1 to 8.8 | 8.3, 8.16, 8.27,8.31 | 8.2, 8.10, 8.24, 8.30 |
| 1.11 to 1.13 | 1.30, 1.33, 1.38, 1.42 | |
| 2.10 to 2.12 | 2.39, 2.43, 2.44, 2.45 | |
| 4.1 to 4.6, 4.9 | 4.2, 4.5, 4.12, 4.17 | 4.4, 4.6, 4.8,4.10 |
| 10.1 to 10.3, 10.10 | 10.23, 10.24, 10.25, 10.26 | |
| Special Topics (class notes) <i>Thermal Stresses, Finite Difference, Finite Elements, Boundary Element Methods</i> | To be announced | To be announced |

Follow Below for Fourth Edition

| Article no. | Assigned H.W | Suggested H.W |
|---|----------------------------|-----------------------|
| 1.1 to 1.11, 1.16 | 1.9, 1.18, 1.23, 1.39 | 1.1, 1.2, 1.6, 1.29 |
| 2.1 to 2.10, 2.14 | 2.2, 2.9, 2.25, 2.26 | 2.3, 2.8, 2.35 |
| 3.1 to 3.8, 3.11 | 3.5, 3.10, 3.13, 3.18 | 3.19, 3.23, 3.40 |
| 8.1 to 8.8 | 8.3, 8.16, 8.29, 8.34 | 8.2, 8.10, 8.25, 8.33 |
| 1.12 to 1.14 | 1.40, 1.43, 1.49, 1.53 | |
| 2.11 to 2.13 | 2.43, 2.48, 2.49, 2.52 | |
| 4.1 to 4.7, 4.10 | 4.3, 4.6, 4.13, 4.18 | 4.5, 4.7, 4.9, 4.11 |
| 10.1 to 10.3, 10.11 | 10.30, 10.32, 10.33, 10.34 | |
| Special Topics (class notes) <i>Thermal Stresses, Finite Difference, Finite Elements, Boundary Element Methods</i> | To be announced | To be announced |