ME 305 B1: Mechanics of Materials

Fall 2011

Instructor and Class Information

Instructor: Prof. Peter A. Zink, pzink@bu.edu, (617)358-1631
Office, Hours: 730 Commonwealth, ENA209; Tuesday 2-3 PM; email to set up other times
Class Times, Location: Tuesdays and Thursdays 10-12, PSY B35
Discussion Times, Location: Monday 3-4, GCB 204 // Weds 1-2, PSY B47
Lab Coordinator Kara Mogensen, karam@bu.edu, (617)358-1565
Lab Times, Location: TBD, EMA307
GTFs Caipeng (Andy) Chen, andychen1988@gmail.com // Haiyue Li, lihaiyue@mail.ustc.edu.cn
GTF Office, Hours: TBD
Prerequisites: EK301
Course Website: http://blackboard.bu.edu

Textbooks

Required: An Introduction to the Mechanics of Solids, S. H. Crandall et al., McGraw-Hill, SI ed., 2007. Suggested Reference: Mechanics of Materials, James M. Gere, Seventh Edition, Cengage, 2009.

Requirements for Homework Assignments

- 1. Do your homework on clean $8-\frac{1}{2}$ " x 11" paper. Staple all sheets together.
- 2. Write carefully and neatly.
- 3. Buy two triangles, a template for drawing circles, and a scale. Draw all figures and diagrams with these instruments. Alternatively, you may use a computer program.
- 4. All numerical values of dimensional quantities must include units.
- 5. When practical, develop an algebraic result before substituting numerical values.
- 6. Homework assignments are due in class on the due date. Late homework will not be accepted.

Class Policies

- Answers to pre-lab questions are due to the GTFs at the beginning of lab period to the GTFs. As with homeworks, late pre-labs answers will not be accepted.
- Laboratory reports are due at the beginning of the next scheduled laboratory session. As with homeworks, late laboratory reports will not be accepted.
- It is your responsibility to check with the GTF to make sure that all homeworks and labs have been recorded correctly, and that you are not missing any points on the grade sheet on blackboard. After two weeks from the time the assignment is returned there will be no change in grades.

- Except in cases of extreme emergency, making up of missed examinations will be permitted only with prior approval by the professor BEFORE the regularly scheduled exam time.
- Students must follow the new BU Academic Conduct Code, which can be found at http://www.bu.edu/academics/files/2011/08/AcademicConductCode.pdf. Any violation of this conduct code will be reported to the College of Engineering Academic Conduct Committee.
- A structural design project will be assigned. Projects will be collaborative, in that they will be group projects each group should work together to complete the project.

Grading

- Three examinations, each worth 20% of final grade.
- Homework assignments, together worth 10% of final grade.
- Structural design project, worth 15% of final grade.
- Three laboratory exercises, together worth 15% of final grade.

Approximate List of Topics to be Covered

Week Beginning	Topics	Reading
9/5	Statics of deformable bodies	Secs. 1.1–1.11, 2.1–2.7
9/12	Shear force and bending moment distributions	Secs. 3.1–3.6
9/19	Stress components	Secs. 4.1–4.3
9/26	"	Secs. 4.4–4.7
10/3	Strain components	Secs. 4.8–4.10
10/10	"	Secs. 4.11–4.14
10/17	Stress-strain-temperature relations	Secs. 5.1–5.6
10/24	Torsion	Secs. 6.1–6.5
10/31	"	Secs. 6.6–6.12
11/7	Stresses in beams	Secs. 7.1–7.5
11/14	"	Secs. 7.6–7.10
11/21	Deflections of beams	Secs. 8.1–8.3
12/28	"	Secs. 8.4–8.7
12/5	Elastic stability; buckling	Secs. 9.1–9.4