ME 305: Mechanics of Materials

Spring 2018

Instructor and Class Information

**Instructor:** Dr. Harold Park, Professor of Mechanical Engineering  
**Office:** 730 Commonwealth, ENA 212 (this building is directly above CVS).  
**Email:** parkhs@bu.edu  
**Phone:** (617) 353-4208  
**Office Hours:** W 11-12, other times available via appointment (email preferred)  
**Class Hours:** TTh 9:00-10:45 AM  
**Classroom:** EPC 209  
**Prerequisites:** EK301  
**Course Website:** Blackboard ([http://learn.bu.edu](http://learn.bu.edu))  
**Midterms:** VERY tentatively on Thursday, February 15 and Thursday, March 29  
**Labs:** Tentatively the weeks of February 6 (Tension), March 20 (Torsion) and April 10 (Bending)  
**Final Exam:** TBD

**TA Information**

Weiwei Tao (wwtao@bu.edu)  
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**Course Summary**

This course will introduce students to the theory and application of the fundamentals of mechanics of materials. The course will help enhance students problem-solving skills. After completing the course, students will be prepared for advanced courses in structural engineering. Specific learning objectives of this course are:  
1. Gain a general understanding of normal and shear stresses and the relationship between stress and strain.  
2. Be able to analyze axially loaded members (statically determinant and indeterminate) and determine the resulting stresses and displacements.  
3. Be able to analyze members with circular cross-sections loaded in torsion.  
4. Determine bending and shear stress distribution of members loaded in pure bending and transverse loads.  
5. Be able to determine slopes and deflections of beams.  
6. Understand the concept of stress transformation and be able to determine principle stresses and maximum in-plane shear stresses from a given state of stress.  
7. Gain a general understanding of buckling and stability of columns with varying support conditions.

**Textbook**


**Mastering Engineering Information**

[http://www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com)  
Course ID: park76973
Class Policies

• Homeworks will be assigned each week on the mastering engineering course site.

• All discussion sections are open to any student enrolled in the course. The discussion sections will focus on solving problems assigned for homework and other, similar problems.

• If you must miss class, see a classmate to obtain the class notes. If, after reviewing the material you have missed, you have questions, see the instructor during office hours and/or teaching fell during discussion sections to get your questions answered.

• All complaints related to grading labs, projects and exams must be reported to the instructor within one week after the grades are announced.

• There will be three laboratories in the course.

Academic Conduct

• Students must follow the COE Academic Conduct Code, which is found in the COE Undergraduate Student Handbook (http://www.bu.edu/academics/eng/policies/academic-conduct/). Any violation of this conduct code will be reported to the COE Academic Conduct Committee.

• Plagiarism is discussed briefly in the conduct code. However, for several reasons, this subject warrants additional emphasis. In engineering, just as in humanities, science, and social science disciplines, plagiarism is unacceptable. Plagiarism is theft of another person’s ideas and is a punishable offense in the same way that any form of theft is an offense. Plagiarism harms the individual whose ideas have been stolen. Original thought is highly valued in engineering and is expected from students in this course in preparing and completing all course assignments.

• Quizzes, Midterm and Final Exams: These assignments are to be completed by each student individually with no consultation with any other person other than the proctor.

• Homework and Lab Reports: Students are permitted to consult with each other regarding approaches to solving problems in these assignments. However, everything that is written down and turned in must be authored by the student getting credit for the assignment, and any sources that were consulted while completing the assignment must be referenced. For example, if you consult with another person in preparing one section of a laboratory report, you should write "Consulted with ⟨person’s name⟩ in preparing this section" in that section of the report. Similarly, if you consult with a textbook other than the course text or a webpage, acknowledge this in writing in the relevant section of the report or project.

Approximate List of Topics to be Covered

Stress, strain, mechanical properties of materials, axial loading, torsion, bending, transverse shear, stress transformation, deflection of beams and shafts, buckling

Grading

• Homeworks: 5%
• Labs: 20%
• Midterm 1: 25%
• Midterm 2: 25%
• Final exam 25%: