

ME 526: Mechanics of Materials

Instructor

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Schedule

Lectures: Tuesdays and Thursdays, 5:10PM - 6:30 PM@DeMeritt 112
Recitation: Tuesdays, 12:40 PM - 2 PM@ Kingsbury N113 (01), N328 (02), and N343 (03)
Instructor office hours: 2 PM - 3:30 PM Tuesdays and by appointment

Course Description

Strength of materials. Analysis of members under torsion, axial, shear and bending stresses, superposition of stresses, stability of columns.

Prerequisites

ME 525

Teaching Assistants

Remil Mushthaq (remil.Mushthaq@unh.edu)
Ali Saeedi (Ali.Saeedi@unh.edu)
Stanislav Buklovskyi (S.Buklovskyi@unh.edu)
(*Office hours locations TBA*)

Office Hours: Wednesdays 2-4 PM
Office Hours: Fridays 2-4 PM
Office Hours: Mondays 2-4 PM

Textbook

Mechanics of Materials. Ferdinand P. Beer, E. Russell Johnston Jr., John T. DeWolf, David F. Mazurek. McGraw-Hill – Edition 8.

Grading Policy

Homeworks: 20%
Midterm Exam 1: 20%
Midterm Exam 2: 20%
Final Exam: 40%

Homeworks

Homeworks will be posted on a weekly cadence. The due date (typically in one week) will be noted on each homework. Your work must be turned in by the deadline to receive credit. Late submissions or requests for extension to deadlines will not be entertained except in special circumstances (such as illness etc.) and with proper supporting paperwork. Out of all the assigned homeworks, I will drop the homework with the least score.

Work Expectation

Over the course of the semester students will spend about 35 hours in lectures and 13 hours in recitation. Approximately 1 hour per lecture for the review of lecture notes and preparatory/follow-up reading per class is assumed (~ 26 hours total). Approximately ten problem sets are expected to be assigned and each problem set is expected to take about 9 hours (~ 90 hours total). The midterms and final exams are expected to take about 35 hours of cumulative review time. The total time that is expected to be devoted to this course is about 200 hours.

Classroom Policy

The classroom is a collective learning space. To ensure that everyone has a distraction-free and conducive learning environment, **use of phone/laptops/tablets is strongly discouraged in the class** unless it is for taking notes only. In my experience, these devices are not only distracting to your own learning but also to that of your fellow students. I also encourage everyone to ask plenty of questions. Chances are if you have a question, others have the same question too. And remember, *there are no stupid questions!*

Academic Honesty

Materials in this course are best learnt by discussion with fellow students. Therefore, discussions and collaborations on homeworks are encouraged. However, **each student must submit their own independent homework**. It is not acceptable to copy the work of another student or submit identical homeworks. **You should also acknowledge the resources and students that helped you in the discussion by indicating it on your homework submission**. No discussion is permitted for the exams. All students are expected to uphold UNH's Academic Honesty Policy.

Accessibility Services (Durham)

According to the Americans with Disabilities Act (as amended, 2008), each student with a disability has the right to request services from UNH to accommodate his/her/their disability. If you are a student with a documented disability or believe you may have a disability that requires accommodations, please contact Student Accessibility Services (SAS) at 201 Smith Hall. Accommodation letters are created by SAS with the student. Please follow-up with your instructor as soon as possible to ensure timely implementation of the identified accommodations in the letter. For more information refer to <https://www.unh.edu/studentaccessibility> or contact SAS at 603.862.2607, 711 (Relay NH) or sas.office@unh.edu.

Confidentiality and Mandatory Reporting of Sexual Violence or Harassment – Durham

The University of New Hampshire and its faculty are committed to assuring a safe and productive educational environment for all students and for the university as a whole. To this end, the university requires faculty members to report to the university's Title IX Coordinator (Laura Buchs, laura.buchs@unh.edu, 603-862-2930/1527 TTY) any incidents of sexual violence and harassment shared by students. If you wish to speak to a confidential support service provider who does not have this reporting responsibility because their discussions with clients are subject to legal privilege, you can contact SHARPP (Sexual Harassment & Rape Prevention Program) at (603) 862-7233/TTY(800) 735-2964. For more information about what happens when you report, how the university treats your

information once a report is made to the Title IX Coordinator, your rights and reporting options at UNH (including anonymous reporting options) please visit [student reporting options](#).

Tentative Lecture Schedule

Lecture	Date	Topic	Reading	Homeworks
(W1) 1	Jan 24 (T)	Introduction; Stress	Chapter 1, Section 2-4	
2	Jan 26 (Th)	Stress and Strain		HW 1 assigned
(W2) 3	Jan 31 (T)	Axial loading of bars; statically indeterminate problems	Chap 2, Sec 1A,B,D,G,2,3	
4	Feb 2 (Th)	Axial loading of bars; thermal loading		HW 1 due; HW 2 assigned
(W3) 5	Feb 7 (T)	Multi-axial elastic stress-strain response; Torsion of cylindrical bars	Chap 2, Sec 4-8	
6	Feb 9 (Th)	Torsion of cylindrical bars; statically indeterminate problems	Chap 3, Sec 1-3	HW 2 due; HW 3 assigned
(W4) 7	Feb 14 (T)	Pure bending	Chap 4, Sec 1-4	
8	Feb 16 (Th)	Pure bending		HW 3 due; HW 4 assigned
(W5) 9	Feb 21 (T)	Transverse loading of beams	Chap 5, Sec 1-3	
10	Feb 23 (Th)	Midterm exam 1		
(W6) 11	Feb 28 (T)	Transverse loading of beams; shear stresses in beams	Chap 6, Sec 1	HW 4 due
12	Mar 2 (Th)	Deflection of beams	Chap 9, Sec 1,2,4	HW 5 assigned
(W6) 13	Mar 7 (T)	Deflection of beams; statically indeterminate problems		
14	Mar 9 (Th)	Deflection of beams; superposition principle; thin-walled pressure vessels		Chap 7, Sec 6
(W7) 15	Mar 21 (T)	Stress transformations	Chap 7, Sec 1,2	

Lecture	Date	Topic	Reading	Homeworks
16	Mar 23 (Th)	Strain transformations	Chap 7, Sec 7,9	HW 6 due; HW 7 assigned
(W8) 17	Mar 28 (T)	Energy methods	Chap 11, Sec 1-3, 5-9	
18	Mar 30 (Th)	Midterm exam 2		
(W9) 19	Apr 4 (T)	Energy methods	Chap 11, Sec 1-3, 5-9	HW 7 due
20	Apr 6 (Th)	Energy methods		HW 8 assigned
(W10) 21	Apr 11 (T)	Structural stability and buckling	Chap 10, Sec 1	
22	Apr 13 (Th)	Structural stability and buckling		HW 8 due; HW 9 assigned
(W11) 23	Apr 18 (T)	Combined Stress	Chap 8, Sec 3	
24	Apr 20 (Th)	Combined Stress		HW 9 due; HW 10 assigned
(W12) 25	Apr 25 (T)	Yielding; elastic-plastic stress-strain response	Chap 7, Sec 5	
26	Apr 27 (Th)	Failure theories		HW 10 due
(W13) 27	May 2 (T)	Elastic-plastic bending	Chap 4, Sec 6	
28	May 4 (Th)	Other topics		
		Final Exam		