Mechanics of Materials
EGM 3520 Section 1683

Class Periods: M W F, 2nd period, 8:30 am – 9:20 am
Weil Hall 270
Spring 2026

Instructor:
Name: Ghatu Subhash, Ph.D.
Email Address: subhash@ufl.edu
Office Phone Number: 352-392-7005 (prefer contact through Canvas website)
Office Hours: Mon/Wed/Fri, Reitz Union (in front of Constans Theatre open space) 9:25 am – 10: 25 am

Teaching Assistant/Peer Mentor/Supervised Teaching Student:
Please contact through the Canvas website

- TAs and their office hours will be communicated through Canvas during the 1st week.

Course Description
Introduction to stress and strain, stress-strain-temperature relations and mechanical properties of materials. Analysis of systems subjected to axial load, torsion load and bending. Design concepts, indeterminate structures and applications (for more details see Assignment Sheet).

Course Pre-Requisites / Co-Requisites
EGM 2511 (Not EGM 2500) and MAC 2313
Engineering Mechanics: Statics and Analytical Geometry/Calculus III

Course Objectives
The purpose of this course is to provide students with the means to analyze and design load bearing structures including machines. Upon completion of this course, each student should have:

1. A basic understanding of engineering mechanics and the ability to apply this understanding to analyze and solve a given problem.
2. A basic understanding of material properties and mechanical deformation.
3. The ability to apply advanced science and engineering principles in the design and analysis of structures to support loads within a given limit of safety.

Materials and Supply Fees
None

Required Textbooks and Software

- Title: Mechanics of Materials, Seventh Edition
- Author: Beer, F.P.; Johnston, Jr., E.R.; DeWolf, J.T.; and Mazurek, D.F.
- Publication date and edition: Eighth edition of this textbook is also sufficient, but it is the student's responsibility to confirm that problems assigned from the seventh edition are consistent with those in the eighth edition.
- ISBN number:

Required Computer
Recommended Computer Specifications: https://it.ufl.edu/get-help/student-computer-recommendations/
HWCOE Computer Requirements: https://www.eng.ufl.edu/students/advising/fall-semester-checklist/computer-requirements/
A computer or a cell phone may be required for students to upload their Homework every week.

Date	Topics	Sections Covered	Assignment Due*
1/12	Statics review	Statics Review, 1.1	----------
1/14	Stress	1.1, 1.2	HW1: Statics PDF
1/16	Stress components	1.3, 1.4	HW2: 1.7, 1.10
1/19	----------	*Holiday*----------	
1/21	Design Considerations	1.5	HW3: 1.32, 1.35
1/23	Strain, Axial Deformation	2.1 ***Quiz 1***	HW4: 1.43, 1.55
1/26	Axial Def., Statically Ind.	2.1, 2.2	HW5: 2.3, 2.14
1/28	Temperature Change	2.3	HW6: 2.25, 2.27
1/30	3D Hooke's Law	2.4-2.8	HW7: 2.33, 2.39
2/2	Stress Concentrations	2.10, 2.11	HW8: 2.68, 2.77
2/4	Plastic Deformation	2.12	HW9: 2.95, 2.97
2/6	Torsional Stresses	3.1 ***Quiz 2***	HW10: 2.102, 2.105
2/9	Gears & Statically Ind.	3.2, 3.3	HW11: 3.10, 3.17
2/11	Design of Shafts	3.4-3.6	HW12: 3.36, 3.41
2/13	Pure Bending	4.1, 4.2	HW13: 3.70, 3.74
2/16	Exam I Review		----------
2/17	***Tuesday, Exam 1 8:20 – 10:10 pm***	***TUR Turlington Hall L005 (last names A - K)***	
2/17	***Tuesday, Exam 1 8:20 – 10:10 pm***	***Weil Hall 270 (last names L - Z)***	
2/18	Pure Bending	4.1, 4.2	----------
2/20	Bending Deformation	4.2, 4.3	HW14: 4.10, 4.11
2/23	Composite Beams	4.4, 4.5	HW15: 4.9, 4.16
2/25	Elastoplastic Beams	4.6, 4.7 ***Quiz 3***	HW16: 4.33, 4.40
2/27	Transverse Loading	5.1	HW17: 4.68, 4.71
3/2	V and M Diagrams	5.2	HW18: 5.4, 5.9
3/4	Design of Beams	5.3	HW19: 5.52, 5.59
3/6	Shear Flow in Beams	6.1	HW20: 5.69, 5.76
3/9	Shear Stresses in Beams	6.1, 6.2 ***Quiz 4***	HW21: 6.4, 6.7
3/11	Thin-Walled Members	6.3, 6.4	HW22: 6.15, 6.23
3/13	Stress Transformations	7.1	HW23: 6.30, 6.40
3/16– 3/20	----------	Spring Break ----------	
3/23	Mohr's circle	7.2, 7.3	HW24: 7.7, 7.14
3/25	Mohr's circle	7.3, 7.4 ***Quiz 5***	HW25: 7.31, 7.41
3/27	Failure criteria	7.5	HW26: 7.66, 7.77
3/30	Pressure Vessels, Plane Strain	7.6, 7.7	----------
4/1	Exam II Review		----------
4/2	***Thursday, Exam II 8:20 – 10:10 pm***	***TUR Turlington Hall L005 (last names A - K)***	
4/2	***Thursday, Exam II 8:20 – 10:10 pm***	***Weil Hall 270 (last names L - Z)***	
4/3	Measurement of Strain	7.8, 7.9	HW27: 7.87, 7.92
4/6	Combined Loading	8.1, 8.3	HW28: 7.137, 7.145
4/8	Combined Loading	8.3	HW29: 8.37, 8.38
4/10	Beam Deflections	9.1	HW30: 8.43, 8.47
4/13	Statically Ind. Beams	9.2 ***Quiz 6***	HW31: 9.2, 9.10
4/15	Singularity Functions	9.3	HW32: 9.20, 9.21
4/17	Superposition	9.4	HW33: 9.46, 9.53
4/20	Column Buckling	10.1, 10.3	HW34: 9.66, 9.89
4/22	Exam 3 Review	Final Exam Review	HW35: 10.11, 10.26

Final Exam per https://registrar.ufl.edu/courses/final-exam: **Thursday Apr 30, 7:30-9:30 am, Weil 270**

*Assignments are due to Canvas by 11:00 PM on the listed date.

Evaluation of Grades

Your grade for this course will be determined based on your performance on homework, quizzes, and exams as follows:

Homework (weekly assignments) 10%
An Assignment Sheet with homework problems and their due dates is provided at the end.

Homework is to be submitted electronically on Canvas by 10:00 pm on the due date. Working in groups is permitted. However, copying homework is NOT permitted. To assist the graders, homework should adhere to the following format: Each problem should be on a single sheet of paper, with a clear problem statement, appropriate free-body diagram, and the solution with reasonable significant digits inside a box. Use of solution manuals or websites to complete homework is considered cheating and a violation of the honor policy.

Doing Homework Problems regularly is VERY IMPORTANT. The problem solving skills that you develop by doing the homework are similar to the skills that you will need in the real world of engineering practice. Students are encouraged to develop a problem-solving procedure, rather than memorize how to complete a certain type of problem. TAs have been instructed to look for problem solving process and explanations, not just answers.

For grading purposes, your 2 lowest homework scores will be dropped.

Quizzes (6) 15%
Quizzes will be given in the first 12 minutes of class on assigned days. The purpose of the quizzes is to periodically assess your understanding of course topics in a short format in a lower stress environment than exams.
For grading purposes, your lowest score on one of the Quizzes will be dropped.

Exams (3) 25% Each
Exams 1 and 2 will be conducted in the evenings from 8:20 pm to 10:10 pm on the assigned days. The exam location will be announced on Canvas once UF assigns the rooms.
Exam 3 will be conducted during the Finals Week as per the date and time announced by the Registrar's office.

Grading Policy

An example numerical grading scheme is shown below. This information is a general guide; the course instructor reserves the right to adjust the final numerical grading demarcations. Course grades will be "elevated" (curved) if necessary – this decision will not be made until the end of the semester once all exams and homework assignments are graded. Additional information may be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

100–93.4 = A, 93.3–90.0 = A-
89.9–86.7 = B+, 86.6–83.4 = B, 83.3–80.0 = B-
79.9–76.7 = C+, 76.6–73.4 = C, 73.3–70.0 = C-
69.9–66.7 = D+, 66.6–63.4 = D, 63.3–60.0 = D-
60.0-0.0 = E

Academic Policies & Resources

To support consistent and accessible communication of university-wide student resources, instructors must include this link to academic policies and campus resources: https://go.ufl.edu/syllabuspolicies. Instructor-specific guidelines for courses must accommodate these policies.

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
- Your academic advisor or Graduate Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu