

ENGR 222 – Mechanics of Materials

Fall 2023

Instructor: Mark Holdhusen, Ph.D. (he/him/his)

E-mail: mholdhus@uwsp.edu

Phone: (715) 212-5364 (text)

Zoom: <https://wisconsin-edu.zoom.us/j/6053340979>

Office Hours

- Wausau (381-D): We 9:00-11:00
- Marshfield (433): Th 12:00-1:00
- Stevens Point (B109): Fr 10:00-11:00

Description

Stress and strain, torsion, bending of beams, compound stresses, principal stresses, deflections of beams, statically indeterminate members, columns, and elastic buckling.

Text

Hibbeler, R.C., *Mechanics of Materials (ANY EDITION)*, Pearson Prentice Hall

Website:

<https://canvas.uwsp.edu>

- This class is a hybrid format so much of the course is online at the above website.

Meeting Times:

- Monday – Virtual 8:00AM - 8:50AM
 - <https://wisconsin-edu.zoom.us/j/99514056300?pwd=Y0g0K3hKQlg5aXZkWkLNQVGRmZoZz09>
- Wednesday - Wausau - Room 284 - 8:00AM - 8:50AM
 - <https://wisconsin-edu.zoom.us/j/95589670477?pwd=VnNveHdRNOVDZGFvcitSSThKc2k0Zz09>
- Thursday - Marshfield - Room 207 - 9:00AM - 9:50AM
 - <https://wisconsin-edu.zoom.us/j/97391931777?pwd=NXV4aXVsTWxkWGdsSjdxWitNZWpZQT09>
- Friday - Stevens Point - Science Building A213 - 8:00AM - 8:50AM
 - <https://wisconsin-edu.zoom.us/j/94546031580?pwd=dzhjTENiQWRpYlB1aHh1LytVQmMzUT09>

Grading

- 5% - Pre-discussion problems: After each weekly virtual lecture, problems will be completed before the first weekly discussion section. Late work will not be accepted.
- 5% - Discussion problems: During the weekly face-to-face discussions, problems will be solved with help from other students and the instructor. Credit will be given for simply doing these problems. Late submissions will get half credit up to a week past the due date. Submissions more than one week late will be given no credit.
- 10% - Homework: Assignments are due weekly. Group work is encouraged on homework; however, each student must submit their own assignment. The answers will be given with the assignment. These answers should be used as a guide as to whether you've done the problem correctly. The homework will be graded for completeness only. Late submissions will get half credit up to a week past the due date. Submissions more than one week late will be given no credit.
- 5% - Online quizzes: Online quizzes via Canvas corresponding to each homework assignment. Each quiz will consist of a handful of questions from a larger bank of questions. You will be allowed 2 attempts for each quiz and the best score will be recorded. Due date extensions will not be given.
- 40% - Exams: 3 equally weighted 2-hour exams as shown on the schedule. These exams will be proctored outside of class. Each exam will consist of a few open-ended problems like those done for homework. One 8.5" x 11" sheet of notes, your textbook, and calculator is allowed. You must use your own note sheet. Partial credit will be given.
- 15% - Final Exam: The final exam will consist of 10 multiple choice questions taken from the Fundamentals of Engineering certification exam. Partial credit will be given for getting the correct answer and partial credit will be given for the work done to achieve the answer. One sheet of notes, your textbook, and a calculator will be allowed on the final exam.
- 20% - Labs: The dates of these labs will be determined based on availability. Approximate due dates are shown in the course schedule. Labs will be using various modes. More details regarding labs will be given as we approach each lab.

Grading Scale

- 93 – 100% = A
- 90 – 92% = A-
- 87 – 89% = B+
- 83 – 86% = B
- 80 – 82% = B-
- 77 – 79% = C+
- 73 – 76% = C
- 70 – 72% = C-
- 67 – 69% = D+
- 63 – 66% = D
- 60 – 62% = D-
- < 59% = F

Course Schedule:

Date	Topic	Assignments	Date	Topic	Assignments
4-Sep		Labor Day	30-Oct		Homework 7
5-Sep			31-Oct		Quiz 7
6-Sep	Stress		1-Nov	Review 2	
7-Sep			2-Nov		Lab 5: Pressure Vessel
8-Sep		Discussion Problems 1	3-Nov		
11-Sep		Homework 1	6-Nov		Exam 2
12-Sep	Strain & Material Properties	Quiz 1	7-Nov	Stress/Strain Transformation	
13-Sep		Pre-Class Problems 2	8-Nov		Pre-Class Problems 8
14-Sep			9-Nov		
15-Sep		Discussion Problems 2	10-Nov		Discussion Problems 8
18-Sep		Homework 2	13-Nov		Homework 8
19-Sep	Axial Loading	Quiz 2	14-Nov	Beam Deflection	Quiz 8
20-Sep		Pre-Class Problems 3	15-Nov		Pre-Class Problems 9
21-Sep		Lab 1: Tension Test	16-Nov		
22-Sep		Discussion Problems 3	17-Nov		Discussion Problems 9
25-Sep		Homework 3	20-Nov	Indeterminate Beams	Homework 9
26-Sep		Quiz 3	21-Nov		Quiz 9
27-Sep	Review 1		22-Nov		Pre-Class Problems 10
28-Sep		Lab 2: Thermal Expansion	23-Nov		Thanksgiving
29-Sep			24-Nov		
2-Oct		Exam 1	27-Nov		Discussion Problems 10
3-Oct	Torsion		28-Nov		Homework 10/Quiz 10
4-Oct		Pre-Class Problems 4	29-Nov	Buckling	Pre-Class Problems 11
5-Oct			30-Nov		Lab 6: Beam Deflection
6-Oct		Discussion Problems 4	1-Dec	Discussion Problems 11	
9-Oct		Homework 4	4-Dec		Homework 11
10-Oct	Bending	Quiz 4	5-Dec	Review 3	Quiz 11
11-Oct		Pre-Class Problems 5	6-Dec		
12-Oct		Lab 3: Angle of Twist	7-Dec		Lab 7: Buckling
13-Oct		Discussion Problems 5	8-Dec		
16-Oct		Homework 5	11-Dec		Exam 3
17-Oct	Transverse Shear	Quiz 5	12-Dec		
18-Oct		Pre-Class Problems 6	13-Dec	Final Review	
19-Oct		Lab 4: Bending	14-Dec		
20-Oct		Discussion Problems 6	15-Dec		
23-Oct		Homework 6	18-Dec		Final Exam
24-Oct	Combined Loads & Beam Design	Quiz 6	19-Dec		
25-Oct		Pre-Class Problems 7	20-Dec		
26-Oct					
27-Oct		Discussion Problems 7			