

## ENGR 222 – Mechanics of Materials

Fall 2021

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### 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

### Topics

- Stress/Strain
- Axial Loads
- Torsion
- Bending
- Shear
- Combined Loadings
- Stress Transformations
- Beam Deflection
- Buckling

### Website:

<https://canvas.uwsp.edu>

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

### Meeting Times:

- Wednesday - Marshfield - Room 126 - 11:00AM - 11:50AM
- Thursday - Wausau - Room 284 - 11:00AM - 11:50AM
- Friday - Stevens Point - Science Building A112 - 9:00AM - 9:50AM
- All meetings also in Zoom, check Canvas for link

### Grading

- 5% - In-class problems: During the face-to-face portion of the class problems will be completed with help from other students and the instructor. Credit will be given for simply doing these problems
- 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.
- 10% - 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.
- 40% - Exams: 3 equally weighted 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 are shown in the schedule. Labs will be using various modes. More details regarding labs will be given as we approach each lab.

### Grading Scale

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

**Course Schedule:**

<b>Date</b>	<b>Topic</b>	<b>Date</b>	<b>Topic</b>	
2-Sep	Introduction	25-Oct		
3-Sep		26-Oct		
6-Sep		Combined Loading & Beam Design	27-Oct	
7-Sep	28-Oct			
8-Sep	Stress		29-Oct	
9-Sep			1-Nov	Exam 2
10-Sep			2-Nov	
13-Sep	Strain & Material Properties (Lab 1)	3-Nov		
14-Sep		4-Nov	Stress/Strain Transformation (Lab 5)	
15-Sep		5-Nov		
16-Sep			8-Nov	
17-Sep			9-Nov	Beam Deflection (Lab 6)
20-Sep	Axial Loading (Lab 2)	10-Nov		
21-Sep		11-Nov		
22-Sep		12-Nov		
23-Sep			15-Nov	Indeterminate Beams
24-Sep			16-Nov	
27-Sep	Exam 1	17-Nov		
28-Sep			18-Nov	
29-Sep	Torsion (Lab 3)	19-Nov		
30-Sep		22-Nov	Buckling & Lab Work (Lab 7)	
1-Oct		23-Nov		
4-Oct	24-Nov			
5-Oct	Shear/Bending Moment Diagrams	25-Nov	Thanksgiving	
6-Oct		26-Nov		
7-Oct		29-Nov	Buckling	
8-Oct		30-Nov		
11-Oct		1-Dec		
12-Oct	Bending (Lab 4)	2-Dec		
13-Oct			3-Dec	
14-Oct			6-Dec	Exam 3
15-Oct			7-Dec	
18-Oct		Transverse Shear	8-Dec	Final Review/Lab Completion
19-Oct	9-Dec			
20-Oct	10-Dec			
21-Oct	14-Dec		Final Exam	
22-Oct	15-Dec			
	16-Dec			