

ENGR 220 – Statics

Spring 2021

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Description:

Principles of mechanics, force systems, equilibrium, structures, distributed forces, moments of inertia of areas, and friction. The course will serve the requirements of the several engineering curricula.

Text:

Hibbeler, R.C., *Engineering Mechanics: Statics (ANY EDITION)* by Prentice Hall

- If you will take Dynamics at UWSP consider purchasing the combined text with Dynamics.

Topics:

- Force vectors and moments
- Equilibrium of particles and rigid bodies
- Trusses, frames, and machines
- Friction
- Center of Gravity
- Moment of Inertia

Website:

<https://canvas.uwsp.edu>

- Log in with your email name and password. It contains short lectures that should be viewed before each class. Class time will be spent doing problems. It also will contain grades, assignments, etc.

Grading:

5% - In-class problems: Quasi-weekly there will be problems given in class. These problems will be completed in class with help from other students and the instructor. Credit will be given for simply doing these problems

10% - Homework: Assignments, due after each problem day. 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: Quasi-weekly 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.

50% - Exams: 4 equally weighted exams as shown on the schedule. Each exam will consist of a few open-ended problems similar to 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.

10% - Bridge Project: Design, build, and mathematically model a bridge made from wood.

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:

Date	Topic	Due Dates
25-Jan	Introduction	
27-Jan	Vectors	
29-Jan	2D Cartesian Vectors	
1-Feb	Problem Day	
3-Feb	3D Cartesian Vectors	HW1
5-Feb	Position Vectors	Quiz 1
8-Feb	Problem Day	
10-Feb	2D Moments	HW2
12-Feb	3D Moments	Quiz 2
15-Feb	Problem Day	
17-Feb	Dot Product	HW3
19-Feb	Couples	Quiz 3
22-Feb	System Reduction	
24-Feb	Problem Day	
26-Feb	Review	HW4
1-Mar	Exam #1	Quiz 4
3-Mar	2D Particle Equilibrium	
5-Mar	2D Rigid Body Equilibrium	
8-Mar	Problem Day	
10-Mar	3D Particle Equilibrium	HW5
12-Mar	3D Rigid Body Equilibrium	Quiz 5
15-Mar	Problem Day	
17-Mar	Review	HW6
19-Mar	Exam #2	Quiz 6
22-Mar		
24-Mar	Spring Break	
26-Mar		
29-Mar	Method of Joints	
31-Mar	Method of Sections	
2-Apr	Problem Day	
5-Apr	Frames and Machines	HW7
7-Apr	Extra Frames and Machines	Quiz 7
9-Apr	Problem Day	
12-Apr	Friction	HW8
14-Apr	Friction Applications	Quiz 8
16-Apr	Problem Day	
19-Apr	Review	HW9
21-Apr	Exam #3	Quiz 9
23-Apr	Centroids	
26-Apr	Distributed Loading/Internal Loadings	
28-Apr	Problem Day	
30-Apr	Area Moment of Inertia	HW10
3-May	Mass Moment of Inertia	Quiz 10
5-May	Problem Day	
7-May	Review	HW11
10-May	Exam #4	Quiz 11
12-May	Bridge Competition	
14-May	Review	
17-May	Final Exam (10:15 am)	