ENGR 221 – Dynamics

Spring 2021

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Description:
Kinematics, force-mass-acceleration relations, work and energy, impulse and momentum and moments of inertia of mass. This course will serve the requirements of the several engineering curricula.

Text:
Hibbeler – Engineering Mechanics: Dynamics, ***ANY EDITION***

Course Websites:

- We will be using Canvas for the website in the course. The URL is https://www.uwsp.edu/canvas and you login using your UWSP username and password.
- Class and office hours will be held using zoom. Class Zoom room is posted on Canvas The office hours zoom URL is uwsp.zoom.us/j/8176801330.

Grading:

- 5% - In-class problems: Approximately every week we will have a day devoted to an in-class assignment consisting of problems based on the previous class meetings. It can be worked on in groups. Full credit will be given for simply completing the 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 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, 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. One sheet of notes, textbook, and a calculator will be allowed on the final exam. Partial credit will be given.
- 10% - Design Project: Design, build, and mathematically model a system. More details will follow.

Course Schedule:

Date	Topic	Due
25-Jan	Rectilinear Kinematics	
27-Jan	Constant Acceleration/Graphical Kinematics	
29-Jan	Problem Day	
1-Feb	Rectangular Coordinates/Projectiles	HW1
3-Feb	Normal/Tangential Coordinates	Quiz1
5-Feb	Problem Day	
8-Feb	Cylindrical Coordinates	HW2
10-Feb	Dependent/Relative Motion	Quiz2
12-Feb	Problem Day	
15-Feb	Review	HW3
17-Feb	Exam 1	Quiz3
19-Feb	Newton's 2nd Law: Rectangular	
22-Feb	2nd Law: Normal/Tangential Coordinates	
24-Feb	2nd Law: Cylindrical Coordinates	
26-Feb	Problem Day	
1-Mar	Work/Energy	HW4
3-Mar	Power/Conservation of Energy	Quiz4
5-Mar	Problem Day	
8-Mar	Impulse/Momentum	HW5
10-Mar	Conservation of Momentum/Impact	Quiz5
12-Mar	Angular Momentum	
15-Mar	Problem Day	
17-Mar	Review	HW6
19-Mar	Exam 2	Quiz6
22-Mar		
24-Mar	Spring Break	
26-Mar		
29-Mar	Fixed axis rotation	
31-Mar	Relative Motion Analysis: Velocity	
2-Apr	Problem Day	
5-Apr	Relative Motion Analysis: Acceleration	HW7
7-Apr	Analysis using Rotating Axes	Quiz7
9-Apr	Problem Day	
12-Apr	Review	HW8
14-Apr	Exam 3	
16-Apr	2nd Law: Rigid Body Translation/Rotation	
19-Apr	2nd Law: Rigid Body General Motion	
21-Apr	Problem Day	
23-Apr	Rigid Body Work/Energy	HW9
26-Apr	Rigid Body Conservation of Energy	Quiz9
28-Apr	Problem Day	
30-Apr	Angular Momentum	HW10
3-May	Conservation of Angular Momentum/Impact	Quiz10
5-May	Problem Day	
7-May	Review	HW11
10-May	Exam 4	Quiz11
12-May	Design Projects	
14-May	Review	
20-May	Final Exam (8:00 am)	