MEC 262 - Engineering Dynamics

The State University of New York, Korea

Spring 2021

Course Title: Engineering Dynamics

Instructor: Prof. Yang, Min Yang

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Lectures: TuTh @ 12:30 AM - 1:50 PM

Recitation: Th @ 3:30 - 4:23 PM

Office Hours: TuTh @ 10:00 - 12:00 AM

Textbook: J. L. Meriam, "Dynamics" 8th Edition in SI Version, Wiley

Course Description:

Engineering dynamics focuses on kinematics and dynamics of particles and rigid bodies in space. The goal of this course is to introduce the physical principles to the analysis of particle and rigid-body motion problems. The students learn to represent and compute displacement, velocity, and acceleration of particles, systems of particles, and rigid bodies in various coordinate systems. The class builds upon Kinematics to include Dynamics of particles and the systems of particles, equation of motion, energy and momentum methods and collisions. In the end, Free, forced, and damped vibrations of particles and rigid bodies are covered.

Topics:

Week	Date	Topic (Subject to change)	Reading
1	2/23	Introduction	Ch1
	2/25	Kinematics of Particles	Ch2
2	3/2	Kinematics of Particles	Ch2
	3/4	Kinematics of Particles	Ch2
3	3/9	Kinetics of Particles	Ch3

3/11 Kinetics of Particles Ch3				
3/18 Kinetics of Particles Ch3		3/11	Kinetics of Particles	Ch3
3/18 Kinetics of Particles Ch3	4	3/16	Kinetics of Particles	Ch3
3/25 Kinetics of Particles Ch3		3/18	Kinetics of Particles	Ch3
3/25 Kinetics of Particles Ch3	5	3/23	Kinetics of Particles	Ch3
4/1 Kinetics of Systems of Particles 4/6 Kinetics of Systems of Particles Ch4 A/8 Kinetics of Systems of Particles Ch4 8 4/13 Review 4/15 Midterm Exam. 9 4/20 Plane Kinematics of Rigid Bodies Ch5 4/22 Plane Kinematics of Rigid Bodies Ch5 4/29 Plane Kinematics of Rigid Bodies Ch5 4/29 Plane Kinematics of Rigid Bodies Ch5 10 5/4 Adjustment Day 5/6 Adjustment Day 5/6 Adjustment Day 5/11 Plane Kinetics of Rigid Bodies Ch6 5/13 Plane Kinetics of Rigid Bodies Ch6 5/18 Plane Kinetics of Rigid Bodies Ch6 5/20 Plane Kinetics of Rigid Bodies Ch6 5/20 Plane Kinetics of Rigid Bodies Ch6 5/27 Introduction to Three-Dimensional Dynamics of Rigid Bodies Ch7 15 6/1 Introduction to Three-Dimensional Dynamics of Rigid Bodies Ch7 6/3 Vibration and Time Response Ch8 Reading Day 6/10 Reading Day 17 6/15 (11-17) Finals		3/25	Kinetics of Particles	Ch3
4/1 Kinetics of Systems of Particles Ch4 7	6	3/30	Kinetics of Systems of Particles	Ch4
7 4/8 Kinetics of Systems of Particles Ch4 8 4/13 Review 4/15 Midterm Exam. 9 4/20 Plane Kinematics of Rigid Bodies Ch5 10 4/27 Plane Kinematics of Rigid Bodies Ch5 10 4/29 Plane Kinematics of Rigid Bodies Ch5 11 5/4 Adjustment Day Ch6 5/1 Adjustment Day Ch6 5/13 Plane Kinetics of Rigid Bodies Ch6 5/13 Plane Kinetics of Rigid Bodies Ch6 5/18 Plane Kinetics of Rigid Bodies Ch6 5/20 Plane Kinetics of Rigid Bodies Ch6 14 5/25 Introduction to Three-Dimensional Dynamics of Rigid Bodies Ch7 15 6/1 Introduction to Three-Dimensional Dynamics of Rigid Bodies Ch7 15 6/1 Introduction to Three-Dimensional Dynamics of Rigid Bodies Ch7 16 6/8 Reading Day Ch8 17 6/15 (11-17) Finals Ch9		4/1	Kinetics of Systems of Particles	Ch4
4/8 Kinetics of Systems of Particles 4/13 Review 4/15 Midterm Exam. Plane Kinematics of Rigid Bodies Ch5 4/22 Plane Kinematics of Rigid Bodies Ch5 4/29 Plane Kinematics of Rigid Bodies Ch5 A/29 Plane Kinematics of Rigid Bodies Ch5 Adjustment Day 5/6 Adjustment Day 5/6 Adjustment Day 5/11 Plane Kinetics of Rigid Bodies Ch6 5/13 Plane Kinetics of Rigid Bodies Ch6 5/18 Plane Kinetics of Rigid Bodies Ch6 5/20 Plane Kinetics of Rigid Bodies Ch6 14 5/25 Introduction to Three-Dimensional Dynamics of Rigid Bodies Ch7 5/27 Introduction to Three-Dimensional Dynamics of Rigid Bodies Ch7 6/3 Vibration and Time Response Ch8 Reading Day 6/10 Reading Day 17 6/15 (11-17) Finals	7	4/6	Kinetics of Systems of Particles	Ch4
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16 6/8 Reading Day 6/10 Reading Day 17 6/15 (11-17) Finals	15	6/1	Introduction to Three-Dimensional Dynamics of Rigid Bodies	Ch7
6/10 Reading Day 17 6/15 (11-17) Finals		6/3	Vibration and Time Response	Ch8
17 6/15 (11-17) Finals	16	6/8	Reading Day	
		6/10	Reading Day	
6/17 Semester End	17	6/15	(11-17) Finals	
		6/17	Semester End	

Assignments & Deadlines: Home works are due in class. Home works will not be accepted after the class on the day they are due, and will receive zero in grade.

Examinations: 3 Exams. (Written & Oral)

Grading:

3 Homeworks	
3 Exams.	30%
Term project	
Attendance	

Grading Scale: The grading distribution will be converted to the point with the given weight percentage, and the total point (sum of each point) is to be normalized to 100. Then, the final grade will be given based the following point range. A: 95-100, A-: 90-95 B+: 85-90, B: 80-85, B-: 75-80 C+: 70-75, C: 65-70, C-: 60-65 D+: 55-60, D: 50-55 F: below 50

(Subject to change)

Policies:

- Homework assignments will be posted on the Blackboard.
- The Blackboard can be accessed at http://blackboard.stonybrok.edu/
- The time and details about exams will be announced in the class (and also posted on the Blackboard).
- It is the responsibility of students to make sure that they can access the Blackboard and they have a working email registered with it. The blackboard should be checked frequently for new materials.
- Quiz will be closed book and note.