

## **ME 302: Engineering Mechanics II**

**Lecture: M W 4-6 PM; RM GCB 203**

**Discussion: W 3-4 PM; GCB 209**

**Instructor: John Voccio, Adjunct Professor**

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### **Textbook:**

Williams, JH, Fundamentals of Applied Dynamics, John Wiley and Sons, Inc., 1996

### **Course Topics:**

Kinematics of particles and rigid bodies

- Inertial reference frames; coordinate systems
- Intermediate noninertial reference frames

Direct/Algebraic approach to kinetic analysis (Newtonian)

- Universal law of gravitation, linear and angular momenta, moments of inertia
- Work/energy relationship

Indirect approach to kinetic analysis (Lagrangian)

- Calculus of variations, Hamilton's principle, Lagrange's equation

<b>Grading:</b>	Homework	10%
	Quizzes:	30%
	Project:	10%
	Mid-Term:	25%
	Final Exam:	25%

### **Assignments:**

- HW problems will be assigned after class every other Wednesday and due the following Friday.
- The project will consist of describing the motion of a gyroscope. Students can work in teams of 2 or 3. Each group will be given a small toy gyroscope.

ME 302 Syllabus				
Week	Date	Required Reading	Topic	Quizzes & Exams
1	9/4	CH 2	Introduction Position, Velocity and Acceleration	
2	9/9		Position, Velocity and Acceleration	
	9/11	CH 3	Time Rate of Change of Vector	1
3	9/16		Intermediate Reference Frames	
	9/18			
4	9/23		2-Intermediate Reference Frames	
	9/25			2
5	9/30	CH 4	Particle Dynamics	
	10/2			
6	10/7	CH 6	Rigid Body Dynamics	
	10/9			3
7	10/15		Rigid Body Dynamics	
	10/16			
8	10/21		<b>Review</b>	
	10/23		<b>Mid-Term</b>	
9	10/28	CH 5	Lagrangian Dynamics	
	10/30			
10	11/4		Lagrangian Dynamics	
	11/6			4
11	11/11	CH 6	Lagrangian Dynamics for Rigid Bodies	
	11/13			
12	11/18		Lagrangian Dynamics for Rigid Bodies	
	11/20			5
13	11/25	CH 8	1 DOF, First Order Response	
	11/27		<b>Thanksgiving Break</b>	
14	12/2		1 DOF, First Order Response	
	12/4		1 DOF, Second Order Response	6
15	12/9			
	12/11		<b>Last Day of Classes: Review</b>	