

School of Mechanical Engineering and Computer Science
Mech 212: Dynamics

Catalog Data:	Mech 212 Dynamics; 3 credits Kinematics and kinetics of particles and rigid bodies; Newton's second law of motion; work-energy concept; impulse and momentum.
Class Schedule:	Three 50-minute lecture sessions per week, for one semester.
Laboratory Schedule:	None
Prerequisites by Course:	Mech 211
Prerequisites by Topic:	Statics Differential and Integral Calculus
Required Text:	Beer, F.P., Johnston, E. R. Jr., et al, <i>Vector Mechanics for Engineers: Dynamics</i> , 8 th Edition, 2007, McGraw-Hill Publishing Company.
Reference(s)	Meriam, J.L. and Kraige, L.G., <i>Engineering Mechanics – Dynamics</i> , John Wiley Publishing, <i>Any Edition</i> . Hibbeler, R. C., <i>Engineering Mechanics – Dynamics</i> , Prentice-Hall Publishing, <i>Any Edition</i> .
Course Coordinator:	Dr. Hamid Rad
Course Objectives:	<ol style="list-style-type: none"> 1. Analysis of motion of particles and rigid bodies in various coordinate systems. 2. Application of Newton's second law of motion; work-energy concept; impulse and momentum to the motion of particles and rigid bodies. 3. Relationship between forces and motion, writing the equations of motion for dynamic systems.
Topics Covered:	<ol style="list-style-type: none"> 1. Kinematics of particles, rectilinear motion of particles. 2. Curvilinear motion of particles in rectangular and cylindrical coordinates. 3. Kinetics of particles: Newton's second law of motion; work-energy concept; impulse and momentum. 4. Kinematics of rigid bodies, translation, rotation and plane general motion. 5. Velocity and acceleration analysis of system of rigid bodies. 6. Kinetics of rigid bodies: Newton's second law of motion; work-energy concept; impulse and momentum.
Lab Experiments and Activities:	None

Course Outcomes:	Students will be able to:		
	Assessed for Program Outcomes	A-1. Apply knowledge of mathematics to obtain solutions for motion of particles and rigid bodies.	
		A-2. Demonstrate knowledge of Newton's second law of motion; work-energy concept; and impulse and momentum.	
Other	A-3. Apply scientific principles, such as Newton's second law of motion; work-energy concept; and impulse and momentum to solve kinematics and kinetics problems.		
	E-2. Develop appropriate models to formulate solutions.		
Required or Elective Course:	Required		
Contribution to Professional Component:	Engineering Topics		
Relationship of Course to Program:	Meets: Educational Objectives <u>1, 2</u> Program Outcomes <u>A, E, K</u>		
Prepared by:	Dr. Hamid Rad	Date:	October 10, 2008
Approved by CAC:			