WASHINGTON STATE UNIVERSITY
VANCOUVER
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School of Engineering and Computer Science

MECH 212: Dynamics

Catalog Data:		**212 Dynamics** 3 Course Prerequisite: MECH 211. Kinematics and kinetics of particles and rigid bodies; Newton's second law of motion; work-energy concept; impulse and momentum. Typically offered Spring.
Class Schedule:		Three 50-minute lecture sessions per week, for one semester.
Laboratory Schedule:		None
Prerequisites by Course:		MECH 211
Prerequisites by Topic:		1. Statics 2. Differential and Integral Calculus
Required Texts:		Beer, F. P., Johnston, E. R., and Mazurek, D. F., *Vector Mechanics for Engineers: Dynamics*, 11th Edition, 2016, McGraw-Hill Publishing Company
Course Coordinator:		Dr. Hamid Rad
Course Objectives:		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:		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 Student Outcomes	1-a. Demonstrate knowledge of fundamental scientific and/or engineering principles such as Newton's second law applied to both particle and rigid body motions. 1-c. Use appropriate energy conservation models to formulate solutions in dynamics problems. 1-d. Apply mathematics, scientific and/or engineering principles such as principles of work-energy and impulse-momentum toward solving dynamics problems.
	Other	

Required or Elective Course:	Required		
Relationship of Course to Program:	Meets: Educational Objectives 1, 2 Student Outcomes 1		
Prepared by:	Dr. Hamid Rad	Date:	March 15, 2018 (4/10/18 mb)
Approved by USC:	4/9/18		