PURDUE UNIVERSITY. FORT WAYNE Civil and Me Engineering

Department of Civil and Mechanical

Course	ME 25300 – An Introduction to Mechanics	
Type of Course	Required for EE program	
Catalog Description	A shortened combined course in statics, including a study of force systems, free-body diagrams, problems in equilibrium, and mass moment of inertia. Dynamics, including introduction to rigid body kinematics, kinetics using Newton's laws, and mechanical vibrations.	
Credits	2	
Contact Hours	2	
Prerequisite Courses	MA 26100 and PHYS 15200	
Prerequisites by Topics	Plane and solid geometry Scalar and vector algebra Trigonometry Analytical geometry Techniques of integration and differentiations Vector calculus Force and moment Newton's laws	
Textbook	Statics and Dynamics, R. C. Hibbeler, Prentice Hall, current edition.	
Course Objectives	Learn to construct and to solve mathematical models which describe the effects of force and motion on a variety of structures and machines that are of concern to engineers.	
Course Outcomes	 Students who successfully complete this course will have demonstrated an ability to: 1. Describe position, forces, and moments in terms of vector forms in two and three dimensions. (1) 2. Determine the resultant of a force system including distributed forces. (1) 3. Draw free body diagram for rigid bodies. (1) 4. Compute support reactions on a structure. (1) 5. Calculate centers of gravity and mass moment of inertia. (1) 6. Determine the kinematics relationships between position, velocity, and acceleration for two-dimensional motion of rigid bodies. (1) 7. Apply Newton's second law for rigid bodies in two dimensions. (1) 8. Understand the fundamentals of mechanical vibrations and the electrical circuit analogs. (1) 	

Lecture Topics	 General principles and units Force vectors Equilibrium Force system resultant Friction Kinematics of planar rigid body Force and acceleration of rigid body Mechanical vibrations
Computer Usage	None
Laboratory Experience	None
Design Experience	None
Coordinator	Nashwan T. Younis, Ph.D.
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