



**JORDAN UNIVERSITY OF SCIENCE AND
TECHNOLOGY
INDUSTRIAL ENGINEERING DEPARTMENT**



Course Number and Name	IE212 Dynamics and Vibrations
Course Description	The course covers planar kinematics of rigid bodies, relative motion, analysis of velocity and acceleration, planar kinetics of rigid bodies: force and acceleration. The course also includes an introduction to free vibrations: harmonic motion, viscous damping, response to harmonic excitation of undamped and damped systems, and an introduction to forced vibrations.
Credits and contact hours	3 Credit hours; 3 hours of lectures
Pre- or Co-requisites	Math 203, Differential Equations
Required/ Elective	Required

Text Book(s)	Vector Mechanics For Engineers-Dynamic-eighth edition (2007) in SI units (or newer). Ferdinand Beer, Russell Johnston, William Clausen
Software tools	N/A
References	N/A

Course Objectives	<p>Upon completion of this course, the students will</p> <ul style="list-style-type: none"> Understand and appreciate the topic of dynamics and vibrations and its various aspects Analyze planar kinematics of rigid bodies, relative motion analysis of velocity and acceleration, planar kinetics of rigid bodies: force and acceleration, work and energy methods. Analyze the free vibrations: harmonic motion, viscous damping, response to harmonic excitation of undamped and damped systems, and an introduction to forced vibrations.
Measured Outcomes	A

Topics	Chapters in Text	Evaluation	
Kinematics of Particles	Chapters 11	Class Work	10
Kinetics of Particles	Chapter 12	First Exam	25
Kinematics of Rigid Bodies	Chapter 15	Second Exam	25
Kinetics of Rigid Bodies	Chapter 16	Final Exam	40
Mechanical Vibrations	Chapter 19		