Jordan University of Science and Technology
Faculty of Engineering
Industrial Engineering Department

IE218 Dynamics And Vibrations - JNQF Level: 7
First Semester 2023-2024

Course Catalog
3 Credit Hours. The course covers planar kinematics of rigid bodies, relative motion analysis of velocity and acceleration, planar kinetics of rigid bodies: force and acceleration method, work-energy method, and impulse-momentum method. The course also includes an introduction to the analysis of free and forced vibrations of simple systems.

Text Book	
Title	Engineering Mechanics Dynamics
Author(s)	R.C.Hibbeler
Edition	14th Edition
Short Name	Ref 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 2	Vector Mechanics For Engineers - Dynamics	Ferdinand Beer, Russell Johnston, William Clausen	8th Edition	

Instructor	
Name	**Dr. Abdallah Al-Dwairi**
Office Location	M5L3
Office Hours	
Email	dwairy@just.edu.jo

Class Schedule & Room

Section 1:
 Lecture Time: Sun, Tue, Thu : 10:30 - 11:30
 Room: C3017

Section 2:
 Lecture Time: Sun, Tue, Thu : 12:30 - 13:30
 Room: CH2110

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
292130	IE213 Mechanics Of Materials 1	Prerequisite / Pass
902030	MATH203 Ordinary Differential Equations	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2, 3, 4	Planar Kinematics of a rigid body	From **Ref 1**
Weeks 5, 6	Kinetics a rigid body: Force and acceleration	From **Ref 1**
Weeks 7, 8, 9	Planar kinetics of a rigid body: Work and Energy	From **Ref 1**
Weeks 9, 10	Planar kinetics of a rigid body: Impulse and Momentum	From **Ref 1**
Weeks 11, 12, 13	Mechanical Vibrations	From **Ref 1**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Develop an ability to solve planar kinematics problems of rigid bodies and their systems using scalar and vector methods. [1SO1] [1L7K1, 1L7S1]	30%	
Develop an ability to solve rigid-body kinetics problems by applying the force-acceleration method. [1SO1] [1L7K1, 1L7S1]	15%	
Develop an ability to solve rigid-body kinetics problems by applying the work-energy method. [1SO1] [1L7K1, 1L7S1]	15%	
Develop an ability to solve rigid-body kinetics problems by applying the impulse-momentum theorem. [1SO1] [1L7K1, 1L7S1]	15%	
Develop an ability to analyze free and forced vibrations of simple mechanical systems. [1SO1] [1L7K1, 1L7S1]	25%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
100						

Relationship to NQF Outcomes (Out of 100%)	
L7K1	L7S1
50	50

Evaluation	
Assessment Tool	**Weight**
First Exam	20%
Second Exam	20%
Quizzes	10%
Final Exam	50%

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