



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



Course Number and Name	IE420 Design of Machinery
Course Description	The course introduces the concepts of Mobility of mechanisms; Graphical and analytical position analysis, Analytical velocity and acceleration analysis; Introduction to linkage design; and Cam mechanisms.
Credits and contact hours	2 Credit hours; 2 hours of lectures
Pre- or Co-requisites	IE212 Dynamics and Vibrations, IE324 Machine Component Design
Required/ Elective	Required

Text Book(s)	Machines and Mechanisms: Applied Kinematic Analysis by David H. Myszka, Upper Sadle River, New Jersey Fourth Edition or Latest
Software tools	Working Model 2D
References	<ol style="list-style-type: none"> 1) Kinematics, Dynamics, and Design of Machinery by Waldron, K. J., and Kinzel, G. L 2) Mechanism Design: Analysis and Synthesis, Volume 1, by Arthur Erdman and others 3) Theory of Machines and Mechanisms by Shigley and Uicker; 4) Design of Machinery by Robert Norton; 5) Mechanisms and Dynamics of Machinery by Mabie, H. H.

Course Objectives	<p>Upon completion of this course, the students will</p> <ul style="list-style-type: none"> • be able to define degrees of freedom of a mechanism • be familiar with the application of 2 of the most wide spreading mechanisms; 4-bar mechanism, and crank-slider mechanism. • be able to analyze the position, velocity, and acceleration of any point of a mechanism. • be able to design a mechanism based on functional criteria. • be familiar with working model 2D software
Measured Outcomes	C

Topics	Chapters in Text	Evaluation	
Introduction and Basic Concepts	Chapters 1 and 2	Class Work	10
Position Analysis	Chapter 4	Midterm Exam	30
Mechanism Design	Chapter 5	Physical Model	10
Velocity and Acceleration Analysis	Chapter 6 and 7	Working Model 2D Quiz	10
Cam Mechanism Design	Chapter 9	Final Exam	40