

**The University of Jordan  
School of Engineering**



Department	Course Name	Course Number	Semester
Mechanical Engineering	Applications in Mechanical Design	0904538	

**2019 Course Catalog Description**

A project oriented course aimed at applying the design and selection techniques covered in machine design courses into an integrated project using modern software packages. Students work in teams on real life mechanical design problems.

**Instructors**

Name	E-mail	Sec	Office Hours	Lecture Time

**Text Books**

	Text book 1	Text book 2
<b>Title</b>	Shigley's Mechanical Engineering Design	Design of Machinery
<b>Author(s)</b>	R. G. Budynas and J. K. Nisbett	Norton, R. L.
<b>Publisher, Year, Edition</b>	McGraw Hill, 2011, 9 <sup>th</sup> SI	McGraw Hill, Third Edition, (SI Units)

**References**

<b>Books</b>	1. Charles E. Wilson, J. Peter Sadler (1993) Kinematics and Dynamics of Machinery, Second Edition. Harper Collins. 2. Waldron, Kinzel (2004) Kinematics, Dynamics, and Design of Machinery, second Edition. John Wiley & Sons
<b>Journals</b>	ASME Journal of Mechanical Design Mechanism and Machine Theory, <a href="http://www.elsevier.com/locate/mechmt">www.elsevier.com/locate/mechmt</a>
<b>Internet links</b>	<a href="http://highered.mcgraw-hill.com/sites/0073529281/student_view0/">http://highered.mcgraw-hill.com/sites/0073529281/student_view0/</a>

**Prerequisites**

<b>Prerequisites by topic</b>	
<b>Prerequisites by course</b>	Machine Design (2) 0904436
<b>Co-requisites by course</b>	-
<b>Prerequisite for</b>	

**Topics Covered**

Week	Topics	Chapter in Text	Sections
1-3	Introduction to the design process and component selection		
2-4	Design problem selection, assignment and definition		
5-6	Identification of the design approach and exploring alternatives		
7-8	Working on and presentation of design concepts and approach		
8-10	Defining the final design approach and procedure		
11-13	Working on the design in teams		
14-16	Presentations and evaluations		

**Mapping of Course Outcomes to ABET Student Outcomes**

SOs	Course Outcomes
1	1. To identify, formulate, and solve engineering problems.
2	2. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
3	3. An ability to communicate effectively.

5	4. Ability to function positively in teams.						
<b>Evaluation</b>							
<b>Assessment Tools</b>			<b>Expected Due Date</b>				<b>Weight</b>
<b>Course Work</b>							30%
<b>Midterm Oral Exam</b>							30%
<b>Design Final Report and Final Presentation</b>							40%
<b>Contribution of Course to Meet the Professional Components</b>							
The course contributes to building the abilities and skills for designing a real life mechanical system by choosing from alternatives and making proper selections of mechanical components.							
<b>Relationship to Student Outcomes</b>							
<b>SOs</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Availability</b>	X	X	X		X		
<b>Relationship to Mechanical Engineering Program Objectives (MEPOs)</b>							
<b>MEPO1</b>		<b>MEPO2</b>		<b>MEPO3</b>		<b>MEPO4</b>	
<b>ABET Student Outcomes (SOs)</b>							
<b>1</b>	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics						
<b>2</b>	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors						
<b>3</b>	An ability to communicate effectively with a range of audiences						
<b>4</b>	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts						
<b>5</b>	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives						
<b>6</b>	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions						
<b>7</b>	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies						
<b>Updated by ABET Committee, 2021</b>							