The University of Jordan
School of Engineering
Industrial Engineering Department
Fall 2025/2026

Course name:	Engineering Design			
Course code:	0906333			
Credits hours	3			
Contact hours/room:	(8:30 – 9:30 Sun, Tue) & (11:30 – 12:30 Mon ,Wed)			
Course instructor's name, E-mail, and phone:	Eng.Rawan Al-Tarawneh rtarawneh@ju.edu.jo			
Course Coordinator:	Eng.Rawan Al-Tarawneh			
Text book:	-Shigley's Mechanical Engineering Design, R.G. Budynas, *J.K.Nisbett*, 10th edition in SI Units, McGraw Hill, 2011			
Other reference(s):	1. Mechanics of Materials, R.C. Hibbeler, 4th. Ed.,2000, Prentice Hall 2. Mechanics of Materials, F.P. Beer, E.R.Johnston, and J.T. Dewolf, 3rd Edition, 2002, McGraw-Hill, Inc. 3. Mechanics of Materials, by W.F. Riley, L.D. Sturges, and D.H. Morris, 5th Edition, 1999, John Wiley and Sons, Inc 4- Mechanics of Materials, James M. Gere, 5th ed., 2001, Brooks/Cole Thomson Learning			
Course Description:	Types of stress and type of strain, stress strain analysis, principle stresses, Mohr\s circle yield criteria, transmission mechanisms and kinematics. Joints, pulleys, and belts. Gears, gear train, cams, clutches , brakes and flywheels. Hydraulic components and circuits, bolts, Power screw, Bearings, Fatigue, shafts, keys and springs. System integration.			
Providing Department:	Industrial Engineering			
Prerequisite Course:	0906231 + 0904131			
Course type	Mandatory			
Assessment Methods:	**Method**	**Weight %**	**Date**	
	Mid-term Exam	30		
	Course work	5	N/A	
	Creo 5 Lab assignments	15		
	Final Exam	50	TBD	
Course Learning Outcomes:	#	**After successful completion of this course, the student will be able to**		**SO**
	CLO1	Students will be able to calculate the life of ball ,roller bearings and tapered bearings		**2**
	CLO2	Perform fatigue failure analysis both finite and infinite life distributions		**1**
	CLO3	Be able to use the CAD/CAM package Creo 5 as a tool to visualize and design machine elements		**7**
	CLO4	Students will be able to determine shaft parameters so that design conditions for performance are met		**1,2**

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	CLO5	Be able to identify thread Standards, Power Screws, Threaded Fasteners, Fastener and member stiffness, Tension and shear connections, Setscrews, Keys and Pins	**2**

	# of Weeks	Reading Material	Topic
Brief list of topics	1	Ch1	Introduction to Basic Mechanical Engineering Design
	1	Ch2	Materials
	1	Ch3	Load and Stress Analysis and Flywheels
	2	Ch4	Deflection and Stiffness
	2	Ch5	Failure Theories
	2	Ch6	Fatigue
	2	Ch7	shafts, keys
	2	Ch 8	Bolts, Screws, Fasteners and the design of Non permanent Joints
	2	Ch 11	Rolling-Contact Bearings
	2	Ch10	Springs
	2	Ch14	Gears+gear trains + System integration
	Creo 5 session will be covered in a weekly planned classes		

Important Notes:

- Passing grade must earn in all the components (Lectures and lab) of this class.
- Prompt, regular attendance is necessary for the lecture, and the exams. There is no makeup for the Midterm exam, missing them will give you zero grade.
- Any students needing assistance because of any disabilities must notify the instructor, and follow established university procedures.
- Cheating and Honor Code
- Any student caught cheating, or helping someone cheat, will be reported to the Dean Council Students are expected to be ready to take a quiz any time they have a class. There will be no make-up quizzes or home works.
- Any students with disabilities who need accommodations in this course are encouraged to speak with the instructor as soon as possible to make appropriate arrangements for these accommodations.

The B.Sc. in industrial Engineering program enables students to achieve, by the time of graduation the following program learning outcome (SOs)			
1	*An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.*	*5*	*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.*
2	*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.*	*6*	*. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.*
3	*An ability to communicate effectively with a range of audiences.*	*7*	*An ability to acquire and apply new knowledge as needed, using appropriate learning strategies*
4	*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.*		