Course Information	0905435 Machine Design (2) (3-2-4)		
	3 Credits	Compulsory	Fall 2014
	Prerequisites by Course: 0905430 Machine Design (1)* , 0905331 Theory of Machines .		
	Co-requisites by Course: -		
	Prerequisites for: Statics , Mechanics of materials .		
	Schedule: Lecture, 13:00-14:00, STTh, L123		
Instructor	Dr . Nazzal Salem		
Contact Information	Nazzal_Salem@yahoo.com, Office L134, Phone: 05-3821100-2041		
Office hours	10:00-11:00, STTH; 10:00-11:00, MW, or by appointment		
Textbook	SHIGLEY'S MECHANICAL ENGINEERING DESIGN, NINTH EDITION .		
References and Resources	R.C.Hebbler , Mechanics of Materials , 9th edition. 1. Statics and Dynamics , Machine Design (1) 9th edition		
Evaluation Criteria	**Activity**	**Percent (%)**	
	Quizzes and Homework	10	
	First Exam	20	
	Second Exam	20	
	Final Exam	50	
Course Description	Design of screws, fasteners, and connections. Welded, brazed, and bounded joints. Mechanical springs. Rolling and journal bearing. Spur, helical, bevel, and worm gears. Clutches, brakes, coupling, and Flywheels. Flexible mechanical elements (belts, chains, rope). Case studies and design projects.		

Intended Learning Outcomes	**Course Outcome**	**[%]**
	1. Become proficient in the modeling and analysis of simple dynamic systems- both systems of simple particles and also rigid bodies in two and three dimensions - including the choice and use of appropriate analysis methods (kinematics, kinetics, energy and momentum methods, impact, and single degree of freedom (vibrations).	45%
	2. Gain experience and confidence in the use of computers to solve dynamic problems through the development	35%
	3. Gain an appreciation of and a facility for producing well-organized and clearly written work to facilitate communications with others and review by supervisors .	20%
Relationships to Program Outcomes	a Ability to apply knowledge of mathematics, science, and engineering (H) e Ability to identify, formulate, and solve mechanical engineering problems (H) k Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (L)	

Contribution to the Professional Components	Mathematics and Basic Sciences		-
	Engineering Topics	Engineering Sciences	90%
		Engineering Design	10%
	General Education		-
Course Outline	Subject		Hours
	Introduction and Definitions. Standards and codes		12
	Design of screws, fasteners, and connections. Welded, brazed, and bounded joints. Mechanical springs **Exam I (up to end of week 5)**		11
	Rolling and journal bearing. Spur, helical, bevel, and worm gears		7
	Clutches		6
	Brakes, coupling, and Flywheels. **Exam II (up to end of week 11)**		6
	Flexible mechanical elements (belts, chains, rope). Case . studies and design projects		3
	Review, Final Exam		3
Policies:	**Attendance** Attendance will be checked each class. *Students are expected to attend each lecture*. University regulations will be strictly followed for students exceeding the maximum number of absences. **Homework** - Homework assignment are due at the beginning of class the day they are due. - No late homework will be accepted unless prior arrangement have been made with the instructor - *No make-up allowed on homework.* - You can consult each other regarding homework solution s however each assignment must be your own solution. Verbatim or duplicates assignments will be *regarded as cheating*. **Class participation and behavior** - Classroom participation is a part of learning; it is only by asking questions and talking through ideas that you can come to fully understand the material - Please do not engage in behavior which detracts from the ability of other students to learn. Such behaviors include arriving at class late, speaking or whispering while the instructor and students are discussing ideas or asking questions, reading messages newspapers in class, cell-phones ringing, etc.		

Week	Date	Sec	Topic	Homework	Due date
1	12/10/2014	**12**	**Kinematics of a Particle**		
		12.1	Introduction		
		12.2	Rectilinear Kinematics: Continuous Motion		
2	19/10/2014	12.4	General Curvilinear Motion		
		12.5	Curvilinear Motion: Rectangular Components		
		12.6	Motion of Projectile		
3	26/10/2014	12.7	Curvilinear Motion: Normal and Tangential Components		
		12.8	Curvilinear Motion: Cylindrical Components		
4	2/11/2014	12.9	Absolute Dependent Motion Analysis of Two Particles		
		12.10	Relative-Motion Analysis of Two Particles Using Translating Axes		
5	9/11/2014	**16**	**Planar Kinematics of a Rigid Body**		
		16.1	Rigid-body Motion		
		16.2	Translation		
		16.3	Rotation about a Fixed Axis		
6	16/11/2014	16.4	Absolute Motion Analysis		
		16.5	Relative-Motion Analysis: Velocity		
		16.6	Instantaneous Center of Zero Velocity		
7	23/11/2014		**Exam I (up to end of week 5)**		
		16.7	Relative-Motion Analysis: Acceleration		
8	30/11/2014	16.8	Relative-Motion Analysis using Rotating Axes		
		17	**Planar Kinetics of a Rigid Body: Force and Acceleration**		
		17.1	Moment of Inertia		
9	7/12/2014	17.2	Planar Kinetic Equations of Motion		
		17.3	Equations of Motion: Translation		
10	14/12/2014	17.4	Equations of Motion: Rotation about a Fixed Axis		
		17.5	Equations of Motion: General Plane Motion		
11	21/12/2014	**18**	**Planar Kinetics of a Rigid Body: Work and Energy**		
		18.1	Kinetic Energy		
		18.2	The Work of a Force		
		18.3	The Work of a Couple		
12	28/12/2014	18.4	Principle of Work and Energy		

		18.5	Conservation of Energy **Exam II (up to end of week 12)**		
13	4/01/2014	**19**	**Planar Kinetics of a Rigid Body: Impulse and Momentum**		
		19.1	Linear and Angular Momentum		
		19.2	Principle of Impulse and momentum		
14	11/01/2014	19.3	Conservation of Momentum		
		15.4	Impact		
		19.4	Eccentric Impact		
15	18/01/2014	**22**	**Vibrations**		
		22.1	Undamped Free Vibration		
		22.3	Undamped Forced Vibration		
16	25/01/2014		Final Exam		