

MENG 303 – Computer Aided Engineering Design						
Eastern Mediterranean University						
Faculty of Engineering						
Department: Mechanical Engineering						
Program Code: 23		Program: Mechanical Engineering		Year/Semester: 2022-2023 FALL		
Course Code: MENG303		Course Title: Computer Aided Engineering Design		Credit hours		
				Lec.	Tut/Lab	Total
				2	3	3
Categorization of Course: <input checked="" type="checkbox"/> Engineering or Area Core <input type="checkbox"/> Engineering Course offered by other programs <input type="checkbox"/> Engineering Area Elective <input type="checkbox"/> Mathematics and Basic Sciences <input type="checkbox"/> General Education			Categorization of Credits: Mathematics & Basic Science: - Engineering Topics: - General Education: - Major Engineering Design: 3			
Instructor Name: Prof. Dr. Qasim Zeeshan			Office no: ME141		Office Tel: 6301361	
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Course Web Page: https://staff.emu.edu.tr/qasimzeeshan/en/teaching/meng-303						
Textbook(s): David G. ULLMAN, The Mechanical Design Process, 4th edition, Mc Graw Hill, 2010						
Catalog Description: Design Process, Engineering Specifications, Project Planning, Concept Generation, Evaluation & Selection, Material and Manufacturing Process Selection, Design for Manufacturability and Assembly, Design for Cost, Design for Environment, Design for Reliability, Design for Test and Maintenance, Human Factors in Design, CAD Modeling and Analysis.						
Prerequisite(s)		MENG104, MENG364*				
Type of Course		<input checked="" type="checkbox"/> Required <input type="checkbox"/> Selected Elective <input type="checkbox"/> Elective				
Student Outcomes						
1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics				<input checked="" type="checkbox"/>	
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				<input checked="" type="checkbox"/>	
3	an ability to communicate effectively with a range of audiences				<input checked="" type="checkbox"/>	
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				<input checked="" type="checkbox"/>	
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				<input checked="" type="checkbox"/>	
6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions				<input checked="" type="checkbox"/>	
7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.				<input checked="" type="checkbox"/>	

Course Learning Outcomes		Student Outcomes							Assessment and Percentages
		1	2	3	4	5	6	7	
1	Modeling and analysis of mechanical parts and assemblies in CAD software		X				X		Midterm Exam Theory 10% Lab 10% Final Examination (Theory) 20% (Lab) 20% Design Project 40% * Project is group submissions, however, viva voce/ oral examination will be conducted for each group member individually during the Project Presentations.
2	Understand the fundamentals of mechanical design		X						
3	Define design objectives, design constraints and product specifications.		X			X			
4	Collect and review related data such as technical information, regulations, and standards etc. from credible literature resources to generate solutions.		X			X		X	
5	Manage concept generation, evaluation & selection.	X	X			X			
6	Develop an effective design strategy and project plan		X			X			
7	Design a system to meet the design criteria and constraints (such as cost, economic, resource availability, environment, sustainability, safety, manufacturability, assembly, reliability, testing and maintenance, and product life cycle considerations).	X	X		X	X			
8	Develop detailed manufacturing/ simulation plan		X			X			
9	Develop a testing plan for verification and validation		X			X	X		
10	Understand the significance of relevant engineering standards for materials, components, manufacturing and product qualification		X			X			
11	Understand the major characteristics of engineering drawings according to the technical drawing standards		X			X			
12	Manage design documentation		X	X	X	X			
	%age weight of Student Outcomes	H	H	L	M	H	H	L	

Topics Covered in Lectures		Topics Covered in Lab
Week 1	Design Process	Introduction to CAD Modeling
Week 2	Understanding Mechanical Design	Sketch entities and tools
Week 3	Designer and Design Teams	Part Modeling
Week 4	Engineering Specifications	Part Modeling
Week 5	Planning for Design	Threads and Fasteners
Week 6	Concept Generation	Gears
Week 7	Concept Evaluation and Selection	Spring and Keys
Week 8	Midterm Examination	Midterm Lab Exam
Week 9	Product Generation	Assemblies
Week 10	Design for Cost	Assemblies
Week 11	Design for Manufacturing	Assemblies
Week 12	Design for Assembly	Analysis of mechanical parts
Week 13	Design for Reliability, Test & Maintenance	Analysis of mechanical parts
Week 14	Design for Environment and End of Life	Analysis of mechanical parts
Week 15	Revision	Final Lab Exam
Week 16	Final Theory Examination	Final Lab Exam

Important Notes Regarding the Course: University rules and regulations are applied to this course. For details, please see <http://mevzuat.emu.edu.tr>

Exam and Quiz Policy:

The midterm and final exams are OPEN book.

Makeups:

1. There is no make-up or resit for the Labs and Lab Exams.
2. A student who fails to sit for an examination for a valid reason is given a make-up exam. Within three working days after the examination, students who wish to take a make-up must submit a **written statement** to the course instructor explaining the reason(s) for his/her request.
3. Eligibility to take a **Make-Up Exam**:
 - a. Student must contact the Instructor immediately within “**three working days**” after the examination when (s)he has missed the mid-term exam or final exam and to discuss with the faculty about the date and time to take the make-up exam.
 - b. Student must secure a “**Make-Up Exam Form**” from the department Office or from instructor website & fill-out the Form. For each Make-Up Exam, please use separate Form.
 - c. Student must secure the approval from the instructor for taking the Make-Up Exam.
 - d. Failure to take the Make-Up Exam at the agreed date and time will lead to a “NG” Grade for the Make-Up Exam, midterm or final.

NG Policy:

1. “**NG**” **Nil Grade/ Failing from Absenteeism:** Students who do not comply with the required level attendance and/or not fulfilling the requirements for the evaluation of the course are given the “NG” grade by the Instructor of the Course based on the criteria determined by the Faculty/School Academic Council. Students are informed about the criteria for receiving the “NG” grade by the related course instructor at the beginning of the semester. “NG” grade is included in the computation of GPA and CGPA.
2. Student attendance is monitored and assessed by the course instructor. A student who fails to meet the requirements of a course or who is absent more than the limit specified by the Faculty is considered to be unsuccessful in that course.
3. Students who do not attend any of the above assessment activities (such as mid-term exam, final exam, lab exam, design project report etc.) will be given NG (Nil Grade).
4. Late Submissions of the Assignments, Lab Reports and Project will be graded as zero.

Appeals:

Any appeal against the marks of any assessment component must be made to the course instructor within one week following the announcement of the marks. Any appeal concerning a semester grade must be made to the course instructor no later than the end of the registration period of the following semester.