

Course Description Form	
Course Code and Name	MM424 Graduation Design Project II
Course Semester	Spring
Catalog Content	The design process. Problem solving and decision making. Modeling and simulation. Use of computers in engineering design and CAD. Project engineering, planning, and management. Design optimization. Economic decision making: cost and reliability. Human and ecological factors in design. Case studies.
Textbook	Engineering Design: A Materials and Processing Approach" by George Ellwood DIETER. Mc Graw Hill Publishing, 2000
Supplementary Textbooks	1. Childs, Peter R. N. <i>Mechanical Design Engineering Handbook</i> . Butterworth-Heinemann, 2014. 2. Budynas, Richard G., and Keith J. Nisbett. <i>Shigley's Mechanical Engineering Design</i> . McGraw-Hill, 2015. 3. Onwubiko, Chinyere Okechi. <i>Introduction to Engineering Design Optimization</i> . Prentice-Hall, 2000.
Credit	7
Prerequisites of the Course (Attendance Requirements)	MM423
Type of the Course	Compulsory
Instruction Language	Turkish
Course Objectives	This course aims to provide students with the competence to design a machine or a mechanical system that performs specific tasks using realistic constraints and using the information they have learned from the courses they have taken during their Mechanical Engineering education.
Course Learning Outcomes	1. Identifies, defines, formulates and solves Mechanical Engineering problems. 2. Applies appropriate analytical methods and modeling techniques to this end. 3. Analyzes a system, system component or process and designs it under realistic constraints to meet the desired requirements. 4. Designs and conducts experiments, collects data, analyzes and interprets results.
Instruction Methods	The mode of delivery of this course is in-class.
Weekly Schedule	1. Design. 2. Design. 3. Design. 4. Design. 5. Design. 6. Design. 7. Design. 8. Design. 9. Design. 10. Design. 11. Design. 12. Evaluation of the results and report writing 13. Evaluation of the results and report writing 14. Preliminary preparation to make a presentation in front of the jury. 15. Preliminary preparation to make a presentation in front of the jury.

<p>Teaching and Learning Methods</p> <p><i>(These are examples. Please fill which activities you use in the course)</i></p>	<p>Reading Activities Internet browsing, library work Designing and implementing materials Report preparing Preparing a Presentation Presentations</p>																																																															
<p>Assessment Criteria</p>	<table border="1"> <thead> <tr> <th></th> <th>Numbers</th> <th>Total Weighting (%)</th> </tr> </thead> <tbody> <tr> <td>Midterm Exams</td> <td></td> <td></td> </tr> <tr> <td>Assignment</td> <td></td> <td></td> </tr> <tr> <td>Application</td> <td></td> <td></td> </tr> <tr> <td>Projects</td> <td>1</td> <td>100</td> </tr> <tr> <td>Practice</td> <td></td> <td></td> </tr> <tr> <td>Quiz</td> <td></td> <td></td> </tr> <tr> <td>Percent of In-term Studies (%)</td> <td></td> <td></td> </tr> <tr> <td>Percentage of Final Exam to Total Score (%)</td> <td></td> <td></td> </tr> <tr> <td>Attendance</td> <td></td> <td></td> </tr> </tbody> </table>				Numbers	Total Weighting (%)	Midterm Exams			Assignment			Application			Projects	1	100	Practice			Quiz			Percent of In-term Studies (%)			Percentage of Final Exam to Total Score (%)			Attendance																																	
	Numbers	Total Weighting (%)																																																														
Midterm Exams																																																																
Assignment																																																																
Application																																																																
Projects	1	100																																																														
Practice																																																																
Quiz																																																																
Percent of In-term Studies (%)																																																																
Percentage of Final Exam to Total Score (%)																																																																
Attendance																																																																
<p>Workload</p>	<table border="1"> <thead> <tr> <th>Activity</th> <th>Total Number of Weeks</th> <th>Duration (weekly hour)</th> <th>Total Period Work Load</th> </tr> </thead> <tbody> <tr> <td>Weekly Theoretical Course Hours</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Weekly Tutorial Hours</td> <td>14</td> <td>2</td> <td>28</td> </tr> <tr> <td>Reading Tasks</td> <td>6</td> <td>3</td> <td>18</td> </tr> <tr> <td>Studies</td> <td>10</td> <td>3</td> <td>30</td> </tr> <tr> <td>Material Design and Implementation</td> <td>12</td> <td>3</td> <td>36</td> </tr> <tr> <td>Report Preparing</td> <td>6</td> <td>4</td> <td>24</td> </tr> <tr> <td>Preparing a Presentation</td> <td>6</td> <td>4</td> <td>24</td> </tr> <tr> <td>Presentations</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>Midterm Exam and Preperation for Midterm Exam</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Final Exam and Preperation for Final Exam</td> <td>5</td> <td>3</td> <td>15</td> </tr> <tr> <td>Other (should be emphasized)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total Workload</td> <td></td> <td></td> <td>176</td> </tr> <tr> <td>Total Workload / 25</td> <td></td> <td></td> <td>7.04</td> </tr> <tr> <td>Course Credit (ECTS)</td> <td></td> <td></td> <td>7</td> </tr> </tbody> </table>				Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load	Weekly Theoretical Course Hours				Weekly Tutorial Hours	14	2	28	Reading Tasks	6	3	18	Studies	10	3	30	Material Design and Implementation	12	3	36	Report Preparing	6	4	24	Preparing a Presentation	6	4	24	Presentations	1	1	1	Midterm Exam and Preperation for Midterm Exam				Final Exam and Preperation for Final Exam	5	3	15	Other (should be emphasized)				Total Workload			176	Total Workload / 25			7.04	Course Credit (ECTS)			7
Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load																																																													
Weekly Theoretical Course Hours																																																																
Weekly Tutorial Hours	14	2	28																																																													
Reading Tasks	6	3	18																																																													
Studies	10	3	30																																																													
Material Design and Implementation	12	3	36																																																													
Report Preparing	6	4	24																																																													
Preparing a Presentation	6	4	24																																																													
Presentations	1	1	1																																																													
Midterm Exam and Preperation for Midterm Exam																																																																
Final Exam and Preperation for Final Exam	5	3	15																																																													
Other (should be emphasized)																																																																
Total Workload			176																																																													
Total Workload / 25			7.04																																																													
Course Credit (ECTS)			7																																																													

Contribution Level Between Course Learning Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Adequate knowledge of subjects specific to mathematics, natural sciences and related engineering disciplines; ability to use theoretical and applied knowledge related to these areas in complex engineering problems.					
2	Ability to identify, define, formulate, and solve complex engineering problems; ability to select and apply appropriate analysis and modeling methods to this end.					x
3	Ability to design a complex system, process, device or product under realistic constraints and conditions to meet specific requirements; ability to apply modern design methods for this purpose.					x
4	Ability to develop, select and use modern techniques and tools required for the analysis and solution of complex problems encountered in engineering practice; ability to use information technologies effectively.					
5	Ability to design and conduct experiments, collect data, analyze and interpret results to investigate complex engineering problems or discipline-specific research topics					x
6	Ability to work effectively in disciplinary and multi-disciplinary teams; ability to work individually.					
7	Ability to communicate effectively in Turkish, both orally and in writing; knowledge of at least one foreign language; the ability to write effective reports and understand written reports, to prepare design and production reports, to deliver effective presentations, to give and receive clear and understandable instructions.					
8	Awareness of the necessity of lifelong learning; the ability to access information, to follow developments in science and technology, and to renew oneself constantly.					
9	Acting in accordance with ethical principles, professional and ethical responsibility; information about standards used in engineering applications.					
10	Information about business life practices such as project management, risk management and change management; awareness of					

		entrepreneurship, innovation; information about sustainable development.					
	11	Knowledge about the universal and social effects of engineering applications on health, environment and safety and the problems of the age reflected in the engineering field; awareness of the legal consequences of engineering solutions.					
The Course's Lecturer(s) and Contact Informations	Academic Staff						