

Course Description Form	
Course Code and Name	BM315 ENGINEERING PROJECT
Course Semester	5
Catalog Content	Engineering disciplines and fields. Engineering ethics. Fundamental concepts and tools used by engineers: measurement systems, energy, engineering economics etc. Future areas in engineering: Data science, Artificial intelligence, Internet of Things, Industry 4.0, Smart cities, Bioinformatics, Environment-friendly engineering. Introduction to engineering design: Working principles of design teams, defining design problems, requirement analysis, developing solution options, evaluating options and decision process. Planning the design, production, and testing. Performance evaluation. Reporting. TUBITAK Grants and Projects, EU Projects, Preparing project proposals. Patents and utility models. Intellectual property & rights. Project collaborations. Innovation and technological development. Project planning, writing, reporting and presentation.
Textbook	P. Kosky, R. Balmer, W. Keat, G. Wise; <i>Exploring Engineering: An Introduction to Engineering and Design</i> ; 4th Ed. Elsevier, 2016.
Supplementary Textbooks	H. Jack; <i>Engineering Design, Planning and Management</i> , 2013, Elsevier R.M. Ford, C.S. Coulston, <i>Design for Electrical and Computer Engineers</i> , 2008, McGraw Hill, MUDEK Documents Law on Protecting Personal Data Turkish Patent Institute Documents Ministry of Science Industry and Technology Documents Current Internet Documents
Credit	2
Prerequisites of the Course (Attendance Requirements)	-
Type of the Course	Compulsory
Instruction Language	Turkish
Course Objectives	Goal: Introducing engineering students to fundamental design concepts and project preparation processes with an interdisciplinary view. Objective: Equipping students with interdisciplinary work and design project preparation skills, information on TUBITAK Grants and Projects, EU Projects, Preparing project proposals, Patents and utility models, Intellectual property & rights, Project collaborations. Innovation and technological development.

<p>Course Learning Outcomes</p>	<p>Students who have successfully completed this course will have gained the following abilities:</p> <ol style="list-style-type: none"> 1. Information on other engineering fields and ability to cooperate with students from those fields. 2. Defining design problems and developing solution options 3. Planning time, budget and human resources 4. Information on project management, risk management, change management 5. Ability to write design project reports and defend their designs in front of a group of people 6. Knowledge of project grants and how to utilize them 7. Knowledge on intellectual rights and protection 8. Culture of cooperation 9. Awareness of the importance of innovation and technology 10. Respect of ethical values 																																	
<p>Instruction Methods</p>	<p>The mode of delivery of this course is face to face</p>																																	
<p>Weekly Schedule</p>	<p>Week 1: What do engineers do? What is engineering ethics? Week 2: Fundamental concepts and tools used by engineers: measurement systems, energy, engineering economics etc. Week 3: Fundamental concepts of computer engineering and related fields Week 4: Data science, Artificial intelligence, Internet of Things, Industry 4.0, Smart cities, Quantum computing, Environment-friendly engineering. Week 5: Data science, Artificial intelligence, Internet of Things, Industry 4.0, Smart cities, Quantum computing, Environment-friendly engineering. Week 6: Introduction to engineering design. Week 7: Working principles of design teams Week 8: Defining design problems Week 9: Planning the design, production, and testing processes. Performance evaluation Week 10: Project grants, intellectual rights Week 11: Innovation, technology, investment Week 12: Environment-friendly engineering, engineering and society Week 13: Teamwork Week 14: Teamwork</p>																																	
<p>Teaching and Learning Methods</p> <p><i>(These are examples. Please fill which activities you use in the course)</i></p>	<p>Weekly theoretical course hours: 2 Reading Activities Internet browsing, library work Material Design and Implementation Preparing Reports Preparing Presentation Presentation Preparation for Midterm and Midterm Exam Final Exam and Preparation for Final Exam</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>1</td> <td>20</td> </tr> <tr> <td>Assignment</td> <td>4</td> <td>10</td> </tr> <tr> <td>Application</td> <td>1</td> <td>10</td> </tr> <tr> <td>Projects</td> <td>1</td> <td>20</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>60</td> </tr> <tr> <td>Percentage of Final Exam to Total Score (%)</td> <td></td> <td>40</td> </tr> <tr> <td>Attendance</td> <td></td> <td></td> </tr> </tbody> </table>		Numbers	Total Weighting (%)	Midterm Exams	1	20	Assignment	4	10	Application	1	10	Projects	1	20	Practice			Quiz			Percent of In-term Studies (%)		60	Percentage of Final Exam to Total Score (%)		40	Attendance					
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Workload	Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load
	Weekly Theoretical Course Hours	14	2	28
	Weekly Tutorial Hours	0	0	0
	Reading Tasks	4	1	4
	Studies	4	1	4
	Material Design and Implementation	2	2	4
	Report Preparing	3	1	3
	Preparing a Presentation	1	2	2
	Presentations	1	1	1
	Midterm Exam and Preparation for Midterm Exam	1	4	4
	Final Exam and Preparation for Final Exam	1	5	5
	Other (should be emphasized)	0	0	0
	Total Workload			55
	Total Workload / 25			2,2
	Course Credit (ECTS)			2

Contribution Level Between Course Learning Outcomes and Program Outcomes	No	Program Outcomes	1	2	3	4	5
	1	Sufficient knowledge on mathematics, science and computer engineering; ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems			X		
	2	Ability to identify, define, formulate and solve complex engineering problems; ability to choose and apply appropriate analysis and modelling methods for these purposes				X	
	3	Ability to design a complex system, process, device, software, algorithm, or product under realistic constraints and circumstances to meet certain requirements; ability to apply modern design techniques for this purpose					X
	4	Ability to choose, develop and use modern techniques and tools necessary for engineering applications; ability to effectively use computing technologies					X
	5	Ability to design and implement systems or experiments to solve engineering problems, collect and interpret data to evaluate and analyze the results of solutions					X
	6	Ability to work effectively in intradisciplinary and interdisciplinary teams or individually					X
	7	Ability to efficiently prepare, evaluate and interpret reports					X
	8	Ability to make presentations and conduct effective verbal and written communication in Turkish and English					X
	9	Awareness of the necessity of lifelong learning; ability to access information, follow scientific and technological developments; ability to perpetually renew oneself				X	
	10	Awareness of professional and ethical responsibility, ability to act in accordance with ethical principles					X

	11	Ability to apply knowledge on project management, risk management and change management					X
	12	Awareness of entrepreneurship and innovation, ability to design and build				X	
	13	Ability to devise local and global solutions to contemporary issues considering the effects of engineering applications on health, environment and security		X			
	14	Awareness of the legal consequences of engineering solutions			X		
	15	Ability to apply knowledge on software development process and documentation rules			X		
	16	Knowledge on standards used in engineering applications	X				
	17	Awareness of occupational health and safety, information security and privacy			X		
The Course's Lecturer(s) and Contact Information		Prof. Dr. Şeref SAĞIROĞLU ss@gazi.edu.tr					