COURSE DESCRIPTION FORM	
Course Code and Name	CENG481 SYSTEM ENGINEERING (TECH. ELECT.)
Course Semester	5
Catalogue Data of the Course (*Course Content*)	Theoretical and practical aspects of system and requirements engineering, system-oriented engineering practices, foundation in systems thinking and the principles of system engineering.
Course Textbooks	Kossiakoff, A., Sweet, W. N., Seymour, S. J., & Biemer, S. M. (2011). Systems Engineering Principles and Practice (2nd ed.). John Wiley & Sons, Inc. ISBN: 978-0470405482.
Supplementary Textbooks	Laplante, P. A., & Kassab, M. (2021). Requirements Engineering for Software and Systems (4th ed.). CRC Press, Taylor & Francis Group. ISBN: 978-1032275994. Sommerville, I. (2020). Engineering Software Products: An Introduction to Modern Software Engineering, eBook, Global Edition. Pearson Education. ISBN: 9781292376349.
Credit (*ECTS*)	6
Prerequisites for the Course (*Attendance Requirements*)	There is no prerequisite or co-requisite for this course.
Course Type	Elective
Language of Instruction	English
Course Objectives	This course provides an in-depth understanding of system engineering principles, focusing on requirements engineering, risk management, and project management. Through practical workshops, it equips students with hands-on experience and critical thinking skills necessary for professional practice.
Course Learning Outcomes	1. Demonstrate a comprehensive understanding of system engineering principles, including the ability to analyze, design, and manage complex systems 2. Develop proficiency in gathering, analyzing, and managing system requirements, as well as identifying and mitigating risks 3. Gain expertise in employing software management techniques tailored to specific use-cases
Instruction Method *(Face-to-face, Distance education etc.)*	The mode of delivery of this course is face to face.
Weekly Schedule of the Course	Week 1: Overview of Modern Software Engineering Week 2: Systems Thinking and Engineering Concepts Week 3: Software Design and Development Processes Week 4: Design & Analysis in Requirements Engineering Week 5: Introduction to Requirements Engineering Week 6: Requirements Elicitation and Specification Week 7: Use-cases and UML Week 8: Midterm Exam Week 9: DevOps and Continuous Integration/Continuous Deployment Week 10: Software Development Processes Week 11: Agile Software Development Week 12: Scrum & Lean Week 13: Kanban and Extreme Programming Week 14: Final Exam Preparation and Review
Teaching Activities *(The time spent for the activities listed here will determine the amount of credit required)*	Weekly theoretical course hours Reading activities Designing and implementing materials Midterm and revision for midterm Final exam and revision for final exam

Assessment Criteria		Number(s)	Weight (%)				
	Midterm exam	1	30				
	Assignment	5	30				
	Application						
	Project						
	Practice						
	Quiz						
	Final exam	1	40				
	Total	7	100				

Workload of the Course	Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload			
	Weekly theoretical course hours	14	3	42			
	Weekly practical course hours						
	Reading activities	12	4	48			
	Internet search and library work						
	Designing and implementing materials	10	3	30			
	Making a report						
	Preparing and making presentations						
	Midterm and revision for midterm	1	15	15			
	Final exam and revision for final exam	1	15	15			
	Total workload			150			
	Total workload/ 25			6			
	Course Credit (ECTS)			6			

Contribution Level between Course Outcomes and Program Outcomes	No	Program Outcomes	1	2	3	4	5
	1	Knowledge of mathematics, science, basic engineering, computing, and computer engineering; ability to use this knowledge in solving complex engineering problems.					x
	2	Ability to define, formulate and analyze complex engineering problems using basic science, mathematics and engineering knowledge and considering the UN Sustainable Development Goals relevant to the problems addressed.				x	
	3	Ability to design creative solutions to complex engineering problems; ability to design complex systems, processes, devices, software, algorithms or products to meet current and future requirements, considering realistic constraints and conditions.				x	
	4	Ability to select, use and develop appropriate techniques, resources and modern engineering and informatics tools, including estimation and modeling, for the analysis and solution of complex engineering problems while being aware of their limitations.					x
	5	Ability to use research methods to examine complex engineering problems or research topics in computer engineering, including reviewing the literature, designing experiments, conducting experiments, collecting data, analyzing and interpreting results.			x		
	6	Knowledge of the effects of engineering practices and the standards used in these				x	

No.	Description					
	practices on society, health and safety, economy, sustainability and environment within the scope of the UN Sustainable Development Goals; awareness of the consequences of engineering solutions in the fields of information security and law.					
7	Acting in accordance with engineering professional principles and knowledge on ethical responsibility; awareness of acting impartially, without discrimination on any issue, and being inclusive of diversity.			x		
8	Ability to work effectively individually and as a team member or leader in intradisciplinary and multidisciplinary teams (face-to-face, remote, or hybrid).				x	
9	Ability to conduct effective verbal and written communication on technical issues in Turkish or English, prepare reports, make effective presentations and prepare software documentation, considering the various differences of the target audience (such as education, language, profession).				x	
10	Knowledge of business practices such as project, risk and change management and economic feasibility analysis; awareness of entrepreneurship and innovation.			x		
11	Lifelong learning skill that includes the ability to learn independently and continuously, to adapt to new and developing scientific practices and technologies, and to think inquisitively about technological changes.				x	

Lecturer(s) and Contact Information	Lecturer's First/Last Name: Assoc. Prof. Dr. Murat YILMAZ E-mail address: my@gazi.edu.tr