<table>
<tr><th colspan="2">COURSE DESCRIPTION FORM</th></tr>
<tr><td>Course Code and Name</td><td>CENG499 SYSTEM SIMULATION (TECH.ELECT.)</td></tr>
<tr><td>Course Semester</td><td>7</td></tr>
<tr><td>Catalogue Data of the Course (Course Content)</td><td>Definitions: System, Model, Simulation, General problem solving techniques, Simulation methods, Computer applications, Simulation modeling classes, Computer applications, Simulation modeling classes, Digital and analog computers used in the simulation, Output Analysis, Simulation programming languages</td></tr>
<tr><td>Course Textbooks</td><td>Discrete Event System Simulation, 5/e, Jerry Banks, John S. Carson, II, Barry L. Nelson, David M. Nicol, Pearson, ISBN: 0136062121</td></tr>
<tr><td>Supplementary Textbooks</td><td>Simulation with Arena, 5/e, W. David Kelton, Randall P. Sadowski, Nancy B. Zupick, Rockwell Automation, McGraw-Hill Higher Education, ISBN: 0073401315
Simio and Simulation: Modeling, Analysis, Applications, 3/e, W. David Kelton, Jeffrey S. Smith and David T. Sturrock, ISBN: 978-1-49-2116424</td></tr>
<tr><td>Credit (ECTS)</td><td>6</td></tr>
<tr><td>Prerequisites for the Course (Attendance Requirements)</td><td>There is no prerequisite or co-requisite for this course.</td></tr>
<tr><td>Course Type</td><td>Elective</td></tr>
<tr><td>Language of Instruction</td><td>English</td></tr>
<tr><td>Course Objectives</td><td>Teaching to examine the behaviour of a system, model new systems, and compare and analyze the alternative systems by using various simulation methods are among the objectives of this course.</td></tr>
<tr><td>Course Learning Outcomes</td><td>At the end of the course, the students will be able to

1. examine the behaviour of a system
2. model new systems, and
3. compare and analyze the alternative systems by using various simulation methods.</td></tr>
<tr><td>Instruction Method
(Face-to-face, Distance education etc.)</td><td>The mode of delivery of this course is Face to face</td></tr>
<tr><td>Weekly Schedule of the Course</td><td>1. Week: Definitions: System, Model, Simulation
2. Week: General problem solving techniques
3. Week: General problem solving techniques
4. Week: Simulation methods
5. Week: Simulation methods
6. Week: Computer applications
7. Week: Computer applications
8. Week: Simulation modeling classes
9. Week: Simulation modeling classes
10. Week: Digital and analog computers used in the simulation
11. Week: Digital and analog computers used in the simulation
12. Week: Output Analysis
13. Week: Simulation programming languages
14. Week: Simulation programming languages</td></tr>
<tr><td>Teaching Activities
(The time spent for the activities listed here will determine the amount of credit required)</td><td>Weekly theoretical course hours: 3
Reading Activities
Internet search and library work
Midterm and revision for midterm
Final exam and revision for final exam</td></tr>
<tr><td>Assessment Criteria</td><td>
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<tr><th></th><th>Number(s)</th><th>Weight (%)</th></tr>
<tr><td>Midterm exam</td><td>1</td><td>30</td></tr>
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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	12	4	48
Designing and implementing materials			
Making a report			
Preparing and making presentations			
Midterm and revision for midterm	1	4	4
Final exam and revision for final exam	2	4	8
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 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).					
	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	Assoc. Prof. Dr. Oktay Yıldız oyildiz@gazi.edu.tr						