

Course Description Form	
Course Code and Name	CENG499 SYSTEM SIMULATION (TECH.ELECT.)
Course Semester	7
Catalog Content	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
Textbook	Discrete Event System Simulation, 5/e, Jerry Banks, John S. Carson, II, Barry L. Nelson, David M. Nicol, Pearson, ISBN: 0136062121
Supplementary Textbooks	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
Credit	6
Prerequisites of the Course (Attendance Requirements)	There is no prerequisite or co-requisite for this course.
Type of the Course	Elective
Instruction Language	English
Course Objectives	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.
Course Learning Outcomes	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.
Instruction Methods	The mode of delivery of this course is Face to face
Weekly Schedule	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

<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: 3 Reading Activities Internet browsing, library work Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam</p>					
<p>Assessment Criteria</p>		<p>Numbers</p>	<p>Total Weighting (%)</p>			
	Midterm Exams	1	30			
	Assignment	5	30			
	Application					
	Projects					
	Practice					
	Quiz					
	Percent of In-term Studies (%)		60			
	Percentage of Final Exam to Total Score (%)		40			
	Attendance					
<p>Workload</p>	<p>Activity</p>	<p>Total Number of Weeks</p>	<p>Duration (weekly hour)</p>	<p>Total Period Work Load</p>		
	Weekly Theoretical Course Hours	14	3	42		
	Weekly Tutorial Hours					
	Reading Tasks	12	4	48		
	Studies	12	4	48		
	Material Design and Implementation					
	Report Preparing					
	Preparing a Presentation					
	Presentations					
	Midterm Exam and Preparation for Midterm Exam	1	4	4		
	Final Exam and Preparation for Final Exam	2	4	8		
	Other (should be emphasized)					
	Total Workload			150		
	Total Workload / 25			6		
	Course Credit (ECTS)			6		
<p>Contribution Level Between Course Learning Outcomes and Program Outcomes</p>	<p>No</p> <p>Program Outcomes</p>	<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>	<p>5</p>
	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 sustainable systems		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 security, information security and privacy			X			
	The Course's Lecturer(s) and Contact Information		Computer Engineering Department Chair bmbb@gazi.edu.tr					

