

<b>Course Description Form</b>	
<b>Course Code and Name</b>	CENG453 REAL TIME SYSTEMS (TECH.ELECT.)
<b>Course Semester</b>	7
<b>Catalog Content</b>	Real time systems. Real time operating system concepts: process switching, synchronization, data communication. Real time software development methods and tools
<b>Textbook</b>	Real-Time Systems by Jane W. S. Liu, 2000.
<b>Supplementary Textbooks</b>	Alan Burns, Andy Wellings, "Real-Time Systems and Programming Languages: Ada, Real-Time Java and C/Real-Time POSIX", 978-0321417459, 2005.  Real-Time Systems: Design Principles for Distributed Embedded Applications by Kopetz, Hermann, 2011.
<b>Credit</b>	6
<b>Prerequisites of the Course</b> ( Attendance Requirements)	There is no prerequisite or co-requisite for this course
<b>Type of the Course</b>	Elective
<b>Instruction Language</b>	English
<b>Course Objectives</b>	The aim of this course is to provide the students with the information concerning basic knowledge of how to model and analyze a real-time system.
<b>Course Learning Outcomes</b>	Real-Time Systems. Concepts of Real Time Operating Systems: Scheduling, Time Synchronization, Data Communications.
<b>Instruction Methods</b>	The mode of delivery of this course is Face to face
<b>Weekly Schedule</b>	<ol style="list-style-type: none"> <li>1. Week: Real-Time Systems</li> <li>2. Week: Real-Time Systems</li> <li>3. Week: Real-Time Operating System Concepts</li> <li>4. Week: Real-Time Operating System Concepts</li> <li>5. Week: Task Switching</li> <li>6. Week: Task Switching</li> <li>7. Week: Time Alignment</li> <li>8. Week: Time Alignment</li> <li>9. Week: Data Communications</li> <li>10. Week: Data Communications</li> <li>11. Week: Real-Time Software Development Methodologies</li> <li>12. Week: Real-Time Software Development Methodologies</li> <li>13. Week: Real-Time Software Development Tools</li> <li>14. Week: Real-Time Software Development Tools</li> </ol>
<b>Teaching and Learning Methods</b> (These are examples. Please fill which activities you use in the course)	Weekly theoretical course hours: 3 Reading Activities Internet browsing, library work Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam

<b>Assessment Criteria</b>		<b>Numbers</b>	<b>Total Weighting (%)</b>
	Midterm Exams	1	30
	Assignment	5	30
	Application	0	0
	Projects	0	0
	Practice	0	0
	Quiz	0	0
	Percent of In-term Studies (%)		60
	Percentage of Final Exam to Total Score (%)		40
	Attendance		

<b>Workload</b>	<b>Activity</b>	<b>Total Number of Weeks</b>	<b>Duration (weekly hour)</b>	<b>Total Period Work Load</b>
	Weekly Theoretical Course Hours	14	3	42
	Weekly Tutorial Hours	0	0	0
	Reading Tasks	14	3	42
	Studies	14	3	42
	Material Design and Implementation	0	0	0
	Report Preparing	0	0	0
	Preparing a Presentation	0	0	0
	Presentations	0	0	0
	Midterm Exam and Preparation for Midterm Exam	1	12	12
	Final Exam and Preparation for Final Exam	1	12	12
	Other ( should be emphasized)	0	0	0
	<b>Total Workload</b>			<b>150</b>
	<b>Total Workload / 25</b>			<b>6</b>
<b>Course Credit (ECTS)</b>			<b>6</b>	

<b>Contribution Level Between Course Learning Outcomes and Program Outcomes</b>	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 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				
<b>The Course's Lecturer(s) and Contact Information</b>	Computer Engineering Department Chair bmbb@gazi.edu.tr						