<table>
<tr><th colspan="2">COURSE DESCRIPTION FORM</th></tr>
<tr><td>Course Code and Name</td><td>CENG453 REAL TIME SYSTEMS (TECH. ELECT.)</td></tr>
<tr><td>Course Semester</td><td>7</td></tr>
<tr><td>Catalogue Data of the Course (Course Content)</td><td>Real-time systems. Real-time operating system concepts: process switching, synchronization, data communication. Real-time software development methods and tools</td></tr>
<tr><td>Course Textbooks</td><td>Real-Time Systems by Jane W. S. Liu, 2000</td></tr>
<tr><td>Supplementary Textbooks</td><td>Real-Time Systems: Design Principles for Distributed Embedded Applications by Kopetz, Hermann, 2011</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>Selective</td></tr>
<tr><td>Language of Instruction</td><td>English</td></tr>
<tr><td>Course Objectives</td><td>Real-time systems consist of software/hardware components embedded within large systems consisting of other subsystems. Real-time systems must be compatible with certain timing constraints imposed by real-world processes in the environment. This course provides foundational knowledge for real-time system modeling and analysis.</td></tr>
<tr><td>Course Learning Outcomes</td><td>1. Understanding the difference between real-time systems and other computer systems
2. Learning the design processes of real-time systems
3. Learning the models necessary to design real-time systems</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>Week 1: Real-Time Systems
Week 2: Real-Time Systems
Week 3: Real-Time Operating Systems Concepts
Week 4: Real-Time Operating Systems Concepts
Week 5: Task Switching
Week 6: Task Switching
Week 7: Time Alignment
Week 8: Time Alignment
Week 9: Data Communication
Week 10: Data Communication
Week 11: Real-Time Software Development Methods
Week 12: Real-Time Software Development Methods
Week 13: Real-Time Software Development Tools
Week 14: Real-Time Software Development Tools</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
Designing and implementing materials
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	2	30
Application		
Project		
Practice		
Quiz		
Final exam	1	40
Total	4	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	14	3	42
Internet search and library work	14	3	42
Designing and implementing materials	3	2	6
Making a report			
Preparing and making presentations			
Midterm and revision for midterm	1	12	12
Final exam and revision for final exam	1	12	12
Total workload			156
Total workload/ 25			6,24
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.				X	
	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: Asst.Prof. Dr. Hüseyin Temuçin E-mail address: huseyintemucin@gazi.edu.tr						