Course Description Form	
Course Code and Name	CENG497 EMBEDDED SYSTEMS (TECH.ELECT.)
Course Semester	7
Catalog Content	The basic structure of embedded systems, Embedded systems problem-solving methods, Micro-control circuits, Methods of programming for embedded systems, etc.
Textbook	Embedded Systems with ARM Cortex-M Microcontrollers in Assembly Language and C Third Edition by Yifeng Zhu, 2017.
Supplementary Textbooks	Embedded Systems Architecture: A Comprehensive Guide for Engineers and Programmers (Embedded Technology), Tammy Noergaard, Newnes, 2005 Embedded Design with the PIC18F452 Microcontroller, John B. PEATMAN, Prentice Hall, 2003 Exploring Raspberry Pi: Interfacing to the Real World with Embedded Linux 1st Edition by Derek Molloy, 2016.
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	Microprocessors are used in places where microprocessors are high power demanding expensive and too high power for the application. In this course the students are thought the principles of microprocessor interdisciplinary applications. Some of the course topics are implemented in a project done by the student (groups) within a limited time frame. A popular microcontroller will be used for class work implementations.
Course Learning Outcomes	1. To plan the design process of embedded systems 2. To solve the problems faced by the embedded system design 3. To develop software for embedded systems 4. To use embedded system interfaces
Instruction Methods	The mode of delivery of this course is Face to face

<table>
<tr><td>Weekly Schedule</td><td>1. Week: The basic structure of embedded systems
2. Week: Embedded systems problem-solving methods
3. Week: Embedded systems problem-solving methods
4. Week: Real-time operating systems
5. Week: Embedded System Development process
6. Week: Micro-control circuits
7. Week: Hardware tools used in Embedded Systems
8. Week: Hardware tools used in Embedded Systems
9. Week: Methods of programming for embedded systems
10. Week: Embedded systems, digital input / output applications
11. Week: Embedded systems, analog input / output applications
12. Week: Serial communication applications in embedded systems
13. Week: Memory use applications in embedded systems
14. Week: Memory use applications in embedded systems</td></tr>
<tr><td>Teaching and Learning Methods

(These are examples. Please fill which activities you use in the course)</td><td>Weekly theoretical course hours: 3
Reading Activities
Internet browsing, library work
Preparation of Midterm and Midterm Exam
Final Exam and Preparation for Final Exam</td></tr>
<tr><td>Assessment Criteria</td><td>
<table>
<tr><th></th><th>Numbers</th><th>Total Weighting (%)</th></tr>
<tr><td>Midterm Exams</td><td>1</td><td>30</td></tr>
<tr><td>Assignment</td><td>2</td><td>30</td></tr>
<tr><td>Application</td><td></td><td></td></tr>
<tr><td>Projects</td><td></td><td></td></tr>
<tr><td>Practice</td><td></td><td></td></tr>
<tr><td>Quiz</td><td></td><td></td></tr>
<tr><td>Percent of In-term Studies (%)</td><td></td><td>60</td></tr>
<tr><td>Percentage of Final Exam to Total Score (%)</td><td></td><td>40</td></tr>
<tr><td>Attendance</td><td></td><td></td></tr>
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Workload

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

Contribution Level Between Course Learning Outcomes and Program Outcomes

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				
The Course's Lecturer(s) and Contact Information	Computer Engineering Department Chair bmbb@gazi.edu.tr						