COURSE DESCRIPTION FORM	
Course Code and Name	CENG497 EMBEDDED SYSTEMS (TECH.ELECT.)
Course Semester	7
Catalogue Data of the Course (*Course Content*)	The basic structure of embedded systems, Embedded systems problem-solving methods, Micro-control circuits, Methods of programming for embedded systems, etc.
Course Textbooks	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 (*ECTS*)	6
Prerequisites for the Course (*Attendance Requirements*)	There is no prerequisite or co-requisite for this course.
Course Type	Elective
Language of Instruction	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 Method *(Face-to-face, Distance education etc.)*	The mode of delivery of this course is Face to face
Weekly Schedule of the Course	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 .
Teaching Activities *(The time spent for the activities listed here will determine the amount of credit required)*	Weekly theoretical course hours: 3 Reading activities Internet search and library work Midterm and revision for midterm Final exam and revision for final exam

Assessment Criteria

	Number(s)	Weight (%)
Midterm exam	1	30
Assignment	2	30
Application		
Project		
Practice		
Quiz		
Final exam	1	40
Total		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	0	0	0
Reading activities	14	3	42
Internet search and library work	14	3	42
Designing and implementing materials	0	0	0
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			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.						
8	Ability to work effectively individually and as a team member or leader in intradisciplinary and multidisciplinary teams (face-to-face, remote, or hybrid).						
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.						
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.						

Lecturer(s) and Contact Information	Lecturer Dr. Muhammet Ünal muhunal@gazi.edu.tr