<table>
<tr><th colspan="2">COURSE DESCRIPTION FORM</th></tr>
<tr><td>Course Code and Name</td><td>CENG318 MICROPROCESSORS</td></tr>
<tr><td>Course Semester</td><td>6</td></tr>
<tr><td>Catalogue Data of the Course (Course Content)</td><td>Microprocessor basic concepts, processor architectures, memory addressing and addressing modes, programming with assembly language, stack and segments, data segment and data types, arithmetic and logic instruction sets, branch and loop usage, interrupts, BIOS programming, macros, signed numbers and arrays.</td></tr>
<tr><td>Course Textbooks</td><td>The Intel Microprocessors (8th Edition) by Barry B. Brey, 2008.</td></tr>
<tr><td>Supplementary Textbooks</td><td>Antonakos, James L., An introduction to the Intel family of microprocessors, Prentice Hall, 1999.
Microprocessors and Microcontrollers (Second Edition) by R.S. Kaler, 2013.</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>Compulsory</td></tr>
<tr><td>Language of Instruction</td><td>English</td></tr>
<tr><td>Course Objectives</td><td>It is aimed to be learned the structure of microprocessors, memory addressing, addressing modes, segments, stacks, command sets and implementing all concepts with assembly language during laboratory hours.</td></tr>
<tr><td>Course Learning Outcomes</td><td>1. Having knowledge about microprocessors
2. Learning microprocessor architectures, instruction sets, addressing modes.
3. Learning concepts of stack, subroutine, macro, interrupts
4. Learning the assembly language to develop low-level programs.
5. Writing basic programs with assembly language</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>1. Week: Introduction to microprocessors, basic concepts
2. Week: Microprocessor architectures
3. Week: Memory addressing, addressing modes,
4. Week: Programming with assembly language
5. Week: Programming with assembly language
6. Week: Stacks and segments
7. Week: Data segment and data types
8. Week: Arithmetic and logic instruction sets
9. Week: Arithmetic and logic instruction sets
10. Week: Branch, call and loop usage
11. Week: Interrupts, INT21H and INT10H instructions
12. Week: BIOS programming
13. Week: Macros
14. Week: Signed numbers and arrays</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
Weekly practical course hours:2
Reading activities
Internet search and library work
Designing and implementing materials
Making a report
Preparing and making presentations
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>25</td></tr>
<tr><td>Assignment</td><td>0</td><td></td></tr>
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Application	10	15
Project	1	20
Practice	0	
Quiz	0	
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	10	2	20
Reading activities	14	2	28
Internet search and library work	12	1	12
Designing and implementing materials	1	12	12
Making a report	1	4	4
Preparing and making presentations	1	2	2
Midterm and revision for midterm	1	15	15
Final exam and revision for final exam	1	15	15
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.				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 Dr. Muhammet Ünal muhunal@gazi.edu.tr						