ESOGU ELECTRICAL-ELECTRONICS ENGINEERING DEPARTMENT
COURSE INFORMATION FORM

Course Title	Course Code
Microcomputer Laboratory	151225406

Semester in Program	Number of Course Hours per Week		ECTS Credit
	Theory	Practice	
5	0	2	2

Course ECTS Credit Distribution				
Basic Sciences	Engineering Sciences	Design	General Education	Social
0	2	0	0	0

Language of Instruction	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite	None
Objectives of the Course	The aim of the course is to teach hardware and software development tools, assembly and C language programming, simulation and debugging methods, and parallel and serial interfaces.
Brief Course Content	Assembly and C language programming, simulation and debugging, digital input and output, counter and timers, interrupts, text and grafic LCD, serial communication, ADC and DAC.

	Learning Outcomes of the Course	Contributed POs	Teaching Methods *	Assessment Methods **
1	Students can write programs in assembly/C language for microcomputers.	5a, 5b, 6b	3, 4	A, E, I
2	They can make simulations.	5a, 5b, 6b	3, 4	A, E, I
3	They will have knowledge about code debugging methods.	5a, 5b, 6b	3, 4	A, E, I
4	They canselect the most appropriate communication method for the interfaces.	5a, 5b, 6b	3, 4	A, E, I
5	They can design digital and analog input/output interfaces.	5a, 5b, 6b	3, 4	A, E, I
6	They can apply serial communication methods.	5a, 5b, 6b	3, 4	A, E, I
7				
8				

*Teaching Methods 1:Lecture, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Problem Solving, 11:Induvidual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation
**Assessment Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

Main Textbook	PICmicro Mid-Range MCU Family Reference Manual, Microchip Technology Inc. 1997
Supplementary Resources	Programlama, örnek uygulamalar, databook, vb yardımcı materyaller www.microchip.com sitesinde bulunabilir.
Necessary Course Material	Yok

Course Weekly Schedule	
1	Laboratory Rules and Introduction to the Course

2	Introduction to Micro C/ Keil C51 IDE
3	Assembly Programming
4	C Programming
5	Digital IO -Switch and LED interface
6	Timer and Counter
7	Interrupts
8	Mid-Term Exams
9	Multiplexed Display
10	Text and Graphic LCD
11	Serial Communication
12	ADC and Temperature measurement
13	DAC and Signal Generation
14	Writing and testing a hex keypad scanning program using PORTB
15	USART
16,17	Final Exams

Calculation of Course Workload			
Activities	**Count**	**Time (Hour)**	**Total Workload (Hour)**
Weekly classroom time	14	2	28
Weekly study time (review, reinforcing, preparation)	14	1	14
Homework			
Taking a quiz			
Studying for a quiz			
Oral exam			
Studying for an oral exam			
Report writing (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1		
Studying for Mid-Term Exam	1		
Final Exam	1	1	1
Studying for Final Exam	1	10	10
		Total workload	**53**
		Total workload / 30	**1.77**
		Course ECTS Credit	**2**

Assessment	
Activity Type	**%**
Mid-term	
Experimental Skill	60
Homework	
Bir öğe seçin.	
Bir öğe seçin.	

Final Exam		40
	Total	100

<table>
<tr><th colspan="3">COURSE CONTRIBUTION TO THE PROGRAM OUTCOMES
(5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)</th></tr>
<tr><th>NO</th><th>PROGRAM OUTCOMES</th><th>Contribution</th></tr>
<tr><td rowspan="4">1</td><td>a. Sufficient knowledge of mathematics</td><td></td></tr>
<tr><td>b. Sufficient knowledge of basic sciences</td><td></td></tr>
<tr><td>c. Sufficient basic engineering and Electrical-Electronics engineering knowledge</td><td></td></tr>
<tr><td>d. Skill of applying all these knowledge and experience to complicated Electrical-Electronics engineering problems</td><td></td></tr>
<tr><td>2</td><td>Skill of defining, identifying, formulating and solving the complicated problems in Electrical-Electronics engineering and related areas by applying appropriate analysis and modelling methods.</td><td></td></tr>
<tr><td>3</td><td>Skill of designing a complicated process, system, equipment or product by applying modern design methods under realistic constraints and conditions.</td><td></td></tr>
<tr><td rowspan="2">4</td><td>To analyze and solve the complicated engineering problems:
a. skill of developing, selecting and applying the required techniques and devices</td><td></td></tr>
<tr><td>b. skill of using information technologies effectively</td><td></td></tr>
<tr><td rowspan="2">5</td><td>To study the complicated on the complicated Electrical-Electronics engineering problems and research subjects:
a. skill of experimental design</td><td>3</td></tr>
<tr><td>b. skill of performing the experiments, collecting the data and analyzing and interpreting the results</td><td>5</td></tr>
<tr><td rowspan="2">6</td><td>a. Skill of performing individual studies</td><td></td></tr>
<tr><td>b. Skill of performing intra and interdisciplinary and multidisciplinary teamwork and studies</td><td>2</td></tr>
<tr><td rowspan="4">7</td><td>a. Skill of effective oral and written communication in Turkish and English</td><td>3</td></tr>
<tr><td>b. Skill of improving and using foreign language knowledge</td><td></td></tr>
<tr><td>c. Skill of effective reporting, understanding the reports and preparing the design and production reports</td><td>3</td></tr>
<tr><td>d. Skill of effective presentation and giving and getting clear and understandable instructions.</td><td></td></tr>
<tr><td>8</td><td>Awareness of the necessity of life-long learning and skill of accessing to information and following the improvements in contemporary science and technology</td><td></td></tr>
<tr><td rowspan="2">9</td><td>a. Awareness of necessity of behaving in accordance with the ethical principles and awareness of the importance of having professional ethical responsibilities</td><td></td></tr>
<tr><td>b. Knowledge about legal regulations and standards of engineering</td><td></td></tr>
<tr><td rowspan="3">10</td><td>a. Knowledge about project management, risk management and change management</td><td></td></tr>
<tr><td>b. Awareness of the significance of entrepreneurship and innovation</td><td></td></tr>
<tr><td>c. Knowledge about sustainable development</td><td></td></tr>
<tr><td>11</td><td>Knowledge about the effects of engineering applications and practices on the global and social health, ecology and safety, knowledge about the current problems in relation to the working areas of Electrical-Electronics engineering; and awareness of the legal issues resulting from engineering solutions</td><td></td></tr>
<tr><td>12</td><td>Knowledge about modern problems in local and universal scale</td><td></td></tr>
</table>

INSTRUCTORS				
Prepared by	Prof. Dr. Salih FADIL			

Date: 22.07.2024