

Course Description Form			
Course Code and Name	CENG477 MICROCONTROLLERS (TECH.ELECT.)		
Course Semester	7		
Catalog Content	Fundamentals of microcontrollers and microcomputer systems. 8 bit microprocessors and structures. ALU, recorders and control units. Computer data transmission, machine language, assembly language and types. Addressing methods. Command types and assembly programming. Input-output control and applications, integrated circuits, microprocessors, control circuits and PIC programming.		
Textbook	Ramesh S. Gaonkar, "Fundamentals of Microcontrollers and Applications in Embedded Systems", 978-8187972297, 2010.		
Supplementary Textbooks	Peter Spasov, "Microcontroller Technology: The 68HC11, 5/E" , 9780131129849, 2005. Microprocessors and Microcontrollers (Second Edition) by R.S. Kaler, 2013.		
Credit	6		
Prerequisites of the Course (Attendance Requirements)	There is no prerequisite or co-requisite for this course.		
Type of the Course	Technical Elective		
Instruction Language	English		
Course Objectives	Teaching microcontrollers, writing assembly programs using mentioned command types and designing circuits.		
Course Learning Outcomes	1. Ability to have knowledge about microcontrollers and microprocessors, 2. Ability to learn and design ALU, integrated and control circuits 3. Ability to write basic programs using assembly language 4. Ability to implement PIC programming		
Instruction Methods	The mode of delivery of this course is face to face.		
Weekly Schedule	1. Week: Introduction to micro controllers 2. Week: Microcomputer systems basics 3. Week: Microprocessors and structures 4. Week: ALU, recorders and control units 5. Week: Computer data transmission, 6. Week: Machine language 7. Week: Assembly language and types 8. Week: Addressing methods 9. Week: Command types and assembly programming 10. Week: Input-output control and applications 11. Week: Integrated circuits 12. Week: Control circuits 13. Week: Control circuits 14. Week: PIC programming		
Teaching and Learning Methods <i>(These are examples. Please fill which activities you use in the course)</i>	Weekly theoretical course hours: 3 Reading Activities Internet browsing, library work Designing and implementing materials Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam		
Assessment Criteria		Numbers	Total Weighting (%)
	Midterm Exams	1	30
	Assignment	2	30
	Application	0	
	Projects	0	
	Practice	0	

	Quiz	0					
	Percent of In-term Studies (%)		60				
	Percentage of Final Exam to Total Score (%)		40				
	Attendance						
Workload	Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load			
	Weekly Theoretical Course Hours	14	3	42			
	Weekly Tutorial Hours			0			
	Reading Tasks	14	2	28			
	Studies	12	2	24			
	Material Design and Implementation	5	5	25			
	Report Preparing			0			
	Preparing a Presentation			0			
	Presentations			0			
	Midterm Exam and Preparation for Midterm Exam	1	15	15			
	Final Exam and Preparation for Final Exam	1	15	15			
	Other (should be emphasized)			0			
	Total Workload			149			
	Total Workload / 25			5.96			
	Course Credit (ECTS)			6			
	Contribution Level Between Course Learning Outcomes and Program Outcomes	No	Program Outcomes	1	2	3	4
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					