



ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228551-151248551 **COURSE TITLE:** Introduction to Embedded Systems

Semester	Weekly Hours		COURSE				
	Theoretical	Practical	Credits	ECTS	Type	Language	
FALL	3	2	4	7	Compulsory () Elective (✓)	Turkish () English (x)	
Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).							
Math and Basic Science		Electrical Engineering [mark (✓) if there is high design content]		General Education		Humanities	
		(✓)					
Assessment		THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
		Type	Number	%	Activity Type	Number	%
Midterm		Midterm	1	30	Quiz		
		Quiz			Lab performance		
		Homework			Report		
		Project	1	40	Oral exam		
		Other (.....)			Other (.....)		
Final			1	30			
Makeup exam (Oral/Written)							
Prerequisites		none					
Brief content of the course		Studying basics of the embedded hardware and software systems. Studying theory and applications of the embedded software structures, commonly used hardware sub-modules.					
Objectives of the course		Having a theoretical and practical background on embedded systems which the industry needs commonly today.					
Contribution of the course towards professional education		This course will support and contribute to many electrical and electronics courses by giving programming architectures knowledge as hardware and software for industrial applications.					
Outcomes of the course		5,6 10 (outcomes of the program listed below)					
Textbook of the course		Embedded Hardware, J Ganssle, T Noergaard, F Eady, L Edwards, DJ Katz, R G, Ken Arnold, K Hyder, B Perrin, C Huddleston					
Other reference books		Designing Embedded Systems with PIC Microcontrollers Principles and applications, Tim Wilmshurst					
Required material for the course		STM32 Based development sets will be used with supporting software and hardware materials.					

WEEKLY PLAN OF THE COURSE	
Week	Topics
1	Introduction
2	Embedded Hardware Basics
3	Logic Circuits
4	Embedded Processors
5	Embedded Board Buses and I/O
6	Memory Systems
7	Timing Analysis in Embedded Systems
8	Midterm
9	Midterm
10	Choosing a Microcontroller and Other Design Decisions
11	The Essence of Microcontroller, Networking; RS-232 and Other Communication Protocols
12	Interfacing to Sensors and Actuators
13	Other Useful Hardware Design Tips and Techniques
14	PC Board Design Issues
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	X			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	X			
7	Communicating effectively in oral and written form both in Turkish and English.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		X		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: Very high

3: Medium

2: Low

1: None

Name of Instructor(s):

Assist. Prof. Dr. Gökhan Dındış

Signature(s):

Date: