



ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228544 – 151248544 **COURSE TITLE:** DSP System Design

Semester	Weekly Hours		COURSE				
	Theoretical	Practical	Credits	ECTS	Type	Language	
8	3	2	4	7	Compulsory () Elective (x)	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	20	Quiz		
		Quiz	3	10	Lab performance		
		Homework				Report	
		Project	1	10	Oral exam		
		Other (.....)	6	30	Other (.....)		
Final			1	30			
Makeup exam (Oral/Written)							
Prerequisites		Systems and Signals, Introduction to Microcomputers					
Brief content of the course		Real-Time DSP Processing, DSP Processors, Program Development Tool and DSK, Input and Outputs, Interrupts, ADC, Multichannel Serial Port and Analog Input and Output, Numerical Representations, DSP Fundamentals, FIR and Circular Buffers, IIR Filters, Frame Processing and FFT.					
Objectives of the course		The aim of the course is to teach use of DSP hardware and software in DSP applications.					
Contribution of the course towards professional education		The student knows the DSP hardware and software and uses them in DSP applications efficiently.					
Outcomes of the course		Students: 1. recognize the DSP architecture. 2. know fixed- and floating point number representations, and overflow handling. 3. use DSP hardware and software in DSP applications. 4. can design and implement digital filter with desired characteristics. know how to apply FFT for spectrum analysis.					
Textbook of the course		1. Dale Grover, John Deller, Digital signal processing and the microcontroller, Grover, Prentice Hall, 2015. 2. Rulph Chassaing, Digital Signal Processing and Applications with C6713 and C6416 DSK, John Willey and Sons, Inc., 2005					
Other reference books		Steven A. Tretter, "Communication system design using DSP algorithms: with laboratory experiments for the TMS320C6700", Kluwer Academic Publishers, March 2003.					
Required material for the course		Texas Instruments DSK, Code Compser Studio IDE					

WEEKLY PLAN OF THE COURSE	
Week	Topics
1	Introduction to Real-Time DSP Processing
2	Architecture of DSP Processors
3	Program Development Tools and DSK
4	Input and Outputs
5	Interrupts and Timers
6	Analog Digital Converter (ADC), Multichannel Serial Port and AIC23B
7	DSP Fundamentals
8	Midterm
9	Midterm
10	Numerical Representations and Arithmetic
11	Circular Buffers and FIR Filters
12	IIR Filters
13	Frame Processing and FFT
14	Other DSP Applications
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 complex problems of Electrical and Electronic Engineering	X			
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, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		X		
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		X		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
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. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
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 and innovation, knowledge on sustainable development.				
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: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Signature(s):

Date: