



ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 15122XXXX

COURSE TITLE: Logic Design

Semester	Weekly Hours		COURSE				
	Theoretical	Practical	Credits	ECTS	Type	Language	
4	4	0	4	7	Compulsory (X) 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 (Ö) if there is high design content]		General Education	Humanities		
0		4 (Ö)		0	0		
Assessment		THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm		Type	Number	%	Activity Type	Number	%
		Midterm	1	40	Quiz		
		Quiz	3	20	Lab performance		
		Homework			Report		
		Project	1	10	Oral exam		
		Other (Laboratory)			Other (.....)		
Final			1	30			
Makeup exam (Oral/Written)							
Prerequisites							
Brief content of the course		Digital systems, Combinational Circuit Analysis and Design, Combinational Circuits (Decoder, Encoder, Multiplexer, Arithmetic), Hardware Description Language (HDL), Sequential Circuits Analysis and Design					
Objectives of the course		The aim of the course is to introduce combinational and sequential circuit components and to teach analysis and design techniques for combinational and sequential circuits.					
Contribution of the course towards professional education		Students recognize basic elements of digital systems and learn system design using combinational and sequential circuits. And also they know the use of HDL for digital circuit analysis and design.					
Outcomes of the course		Students: 1. recognize elements of digital systems 2. define combinational circuits (logic gates, decoders, encoders, etc.) and can explain their functions. 3. analyze and design combinational circuits 4. defines storage elements (latches and flip-flops) and their functions 5. analyze and design sequential circuits. 6. defines programmable logic devices. 7. use HDL in simulation and design of the digital systems 8. have a background on sequential functional blocks and their usage in controller and datapath structures.					
Textbook of the course		Logic and Computer Design Fundamentals, M.Mano and R.Kime, Prentice Hall, 2004, 4th edition.					
Other reference books		Digital Design Principles and Practice, J.F. Wakerly, Prentice Hall 2001. Digital Design, M. Mano, Prentice Hall 2002.					
Required material for the course							

WEEKLY PLAN OF THE COURSE	
Week	Topics
1	Digital Computers and Information
2	Boolean Algebra and Karnough Maps
3	Logic IC Circuits and Combinational Logic Design
4	Programmable Implementation Technologies
5	Combinational Logic Functions and Circuits
6	Combinational Logic Implementations
7	Arithmetic Functions and Circuits
8	Midterm
9	Combinational Circuits and HDL
10	Sequential Circuits, Latches and Flip-Flops
11	Sequential Circuit Analysis
12	Sequential Circuit Design
13	Sequential Functional Blocks ,Cellular Design of General Purpose Registers incl.Counters
14	Sequential Datapath and Controller Structures
15	Programmable Sequential Circuit Structures
16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronics Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	X			
2	Ability to identify, formulate and solve complex engineering problems in Electrical and Electronics Engineering and related fields, having skills to select and apply appropriate analysis and modelling methods for this purpose.		X		
3	Having skills to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements; ability to apply modern design methods for this purpose.				X
4	Having skills to develop, select and apply modern techniques and tools needed for applications in Electrical and Electronics Engineering, skills to use information technology effectively.		X		
5	Skills to design and conduct tests, collect data, analyze and interpret the results for investigation of problems in Electrical and Electronics Engineering				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. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				X
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				X
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices in business, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and social effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

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

4: High

3: Medium

2: Low

1:None

Name of Instructor(s): Prof. Dr. Salih FADIL

Signature(s):

Date: