LOGIC CIRCUITS

1	Course Title:	LOGIC CIRCUITS	
2	Course Code:	BMB2005	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	3	
7	ECTS Credits Allocated:	7.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. KEMAL FİDANBOYLU	
15	Course Lecturers:	Kemal Fidanboylu	
16	Contact information of the Course Coordinator:	kfidan@uludag.edu.tr	
17	Website:		
18	Objective of the Course:	Understanding principle of digital circuits and to gain ability to realize the analysis and design combinational and sequential digital circuits and use them in applications	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	To gain ability to apply theoretical and practical information about digital electronics (logic circuits) for modeling and solving engineering problems;
		2	To gain ability to determine, define, formulize and solve complex engineering problems which encountering in digital electronic with selecting proper analysis and modeling method;
		3	To gain ability to design complex system or process which encountering in digital electronic with applying modern modeling methods under realistic circumstance;
		4	To gain ability to develop select and use modern technology and equipment for digital electronic applications with using information technology in efficient way;
		5	To gain ability to interpret results with collecting data and analyzing results for investigating engineering problems about digital electronics;
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21	Course Content:		
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Week	Theoretical		Practice
1	Analog and digital concepts, number systems, binary codes		
2	Boolean algebra, digital logic gates, integrated circuits		
3	Simplifications of Boolean functions: Karnaugh maps, Quine McCluskey method		
4	Analysis and design of combinational logic circuits: Arithmetic circuits		
5	Analysis and design of combinational logic circuits: Comparators circuits, decoders, coders		
6	Analysis and design of combinational logic circuits: Multiplexer, demultiplexer, programmable logic devices		
7	Analysis and design of sequential logic circuits: Mealy, Moore models, flip-flops and applications circuits		
8	Midterm Exam + General review		
9	Analysis and design of sequential logic circuits: Asynchronous counters		
10	Analysis and design of sequential logic circuits: Synchronous counters		
11	Analysis and design of sequential logic circuits: ring counter, Johnson counter, application circuits		
12	Registers and memory		
13	Asynchronous sequential logic circuits		
14	Algorithmic state machines		
22	Textbooks, References and/or Other Materials:		1. Mano, M. Morris, Digital Design, 3nd Ed., Prentice-Hall, 2001. 2. Mano, M. Morris, Sayısal Tasarım, (2. Basımdan çeviri), Literatür Yayıncılık, 2002. 3. Wakerly, J.F., Digital Design Principles&Practices, 3nd Ed., Prentice-Hall, 1999.
23	Assesment		

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

24	**ECTS / WORK LOAD TABLE**

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	4.00	56.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	52.00	52.00
Others	0	0.00	0.00
Final Exams	1	60.00	60.00
Total Work Load			210.00
Total work load/ 30 hr			7.00
ECTS Credit of the Course			7.00

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**