NUMERICAL ELECTRONICS

1	Course Title:	NUMERICAL ELECTRONICS	
2	Course Code:	EMEZ001	
3	Type of Course:	Compulsory	
4	Level of Course:	Short Cycle	
5	Year of Study:	1	
6	Semester:	1	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	2.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	2	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Öğr.Gör. ÖZCAN TEMEL	
15	Course Lecturers:	ÖĞR.GÖR. Özcan TEMEL	
16	Contact information of the Course Coordinator:	ozcant@uludag.edu.tr 2942380	
17	Website:		
18	Objective of the Course:	In this course, the basic logic circuits, logic circuits, and the compound is to gain knowledge and skills to establish arithmetic logic circuits.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	To have an understanding of the basic principles of digital electronics.
		2	To be able to describe the number systems associated with digital logic circuits.
		3	To be able to apprehend working principles of logic circuits.
		4	To be able to identify the principle operation and be able to design combinational logic circuits.
		5	To gain an ability to install and view the operation of combinational logic circuits.
		6	To gain an understanding that the digital electronics is the basis of the microprocessor based systems.
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Definitions on digital waveforms. Binary and hexadecimal number systems and conversions. Representation of signed numbers.	

2	Relation between BCD code and binary and hexadecimal numbers. Gray code and field of application in instrumentation.	Guided problem solving
3	Symbols and truth tables of fundamental logic operations. Waveform drawings.	Guided problem solving
4	Simplification of logic expressions using Boolean rules and laws and circuit drawings.	Experiments on Boolean rules and laws
5	Writing sum of products and product of sums expressions. Constructing truth tables of logic expressions.	Explanations about laboratory rules. Problem solving.
6	Simplification of logic expressions using Karnaugh map. Drawing the designed circuits using NOR logic.	Testing the designed circuits using Karnaugh map.
7	Arithmetic operations with signed numbers and BCD numbers.	Testing the designed circuits.
8	Midterm exam	Completion of incomplete applications.
9	Operating principles and circuit design of adders, examples on field of applications.	Experiments on arithmetic operations using adders.
10	Circuit design of subtractor, code converter and BCD adder using adder IC's.	Experiments on arithmetic operations using adders.
11	Operating principles and circuit design of comparators, examples on field of applications.	Experiments on comparators
12	Operating principles and circuit design of decoders, examples on field of applications.	Experiments on decoders
13	Operating principles and circuit design of encoders, examples on field of applications.	Experiments on encoders
14	Operating principles and circuit design of multiplexers and demultiplexers, examples on field of applications.	Experiments on multiplexers and demultiplexers

22	Textbooks, References and/or Other Materials:	
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	20.00
Quiz	0	0.00
Home work-project	1	20.00
Final Exam	1	60.00
Total	3	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	2.00	28.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	1.50	21.00
Homeworks	1	15.00	15.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	15.00	15.00
Others	0	0.00	0.00
Final Exams	1	15.00	15.00
Total Work Load			137.00
Total work load/ 30 hr			4.07
ECTS Credit of the Course			4.00

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	3	5	2	3	5	5	4	5	2	2	4	3	0	0	0	0
ÖK2	2	4	2	4	4	3	5	3	3	3	3	3	0	0	0	0
ÖK3	3	3	5	4	4	3	4	2	3	4	2	4	0	0	0	0
ÖK4	4	2	4	5	4	3	4	1	3	4	2	4	0	0	0	0
ÖK5	4	4	4	5	5	3	5	3	4	3	4	4	0	0	0	0
ÖK6	4	5	5	5	5	4	2	5	4	1	3	4	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

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