

DIGITAL ELECTRONIC CIRCUITS

1	Course Title:	DIGITAL ELECTRONIC CIRCUITS
2	Course Code:	EEM4315
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	7
7	ECTS Credits Allocated:	4.00
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:	Öğr.Gör.Dr. İSMAİL TEKİN
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	E-posta:itekin@uludag.edu.tr Tel: (224) 294 2030 Adres: Uludağ Üniversitesi Mühendislik Mimarlık Fakültesi 1. Kat, No:112
17	Website:	
18	Objective of the Course:	This course is designed to introduce engineering students to the basic structure and analysis of digital integrated circuits.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	
	1	Students should: Have an understanding of fundamental properties of digital integrated circuits.
	2	Understand switching properties of diodes and transistors.
	3	Become familiar with TTL circuits and learn analyzing of TTL circuits.
	4	Become familiar with CMOS circuits and learn analyzing of CMOS circuits.
	5	Have an understanding of difference between TTL and CMOS circuits.
	6	Become familiar with interfacing of logic families.
	7	Become familiar with BICMOS circuits and learn analyzing of BICMOS circuits.
	8	Become familiar with semiconductor memories.
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Fundamental properties of digital integrated circuits.	

2	Switching of diodes and transistors.	
3	Fundamental properties and analyzing of TTL circuits.	
4	Fundamental properties and analyzing of STTL circuits.	
5	Fundamental properties and analyzing of ECL circuits.	
6	Fundamental properties of MOSFET and using MOSFET as a resistor.	
7	NMOS inverter	
8	Midterm + review session	
9	NMOS digital integrated circuits.	
10	CMOS inverter and CMOS digital integrated circuits.	
11	Fundamental properties and analyzing of BICMOS circuits.	
12	Interfacing of logic families	
13	Comparison of logic families.	
14	Semiconductor memories.	

22	Textbooks, References and/or Other Materials:	1. Thomas A. Demassa, Zack Ciccone, "Digital Integrated Circuits", John Wiley & Sons, 1996. 2. John E. Ayers, "Digital Integrated Circuits: Analysis and Design", CRC Press, 2 edition, 2009. 3. Lecture notes
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Activites		Number	Duration (hour)	Total Work Load (hour)
TERM LEARNING ACTIVITIES				
Theoretical	14	3.00	42.00	
Practicals/Labs	0	0.00	0.00	
Self-study and preperation	0	3.00	42.00	
Homeworks	0	0.00	0.00	
Final Exam	1	0.00	0.00	
Projects	0	0.00	0.00	
Field Studies	0	0.00	0.00	
Contribution of Mid Term (Year) Learning Activities to Success Grade	40	40.00	40.00	
Others	0	0.00	0.00	
Contribution of Final Exam to Success Grade	60	41.00	41.00	
Total Work Load				165.00
Total work load of Evaluation Techniques Used in the Course				5.50
ECTS Credit of the Course				4.00

24	ECTS / WORK LOAD TABLE															
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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	0	1	1	0	0	0	0	0	4	0	0	0	0	0	0	0
ÖK2	0	2	4	0	0	0	0	0	1	0	0	0	0	0	0	0
ÖK3	0	4	4	0	0	0	0	0	3	0	0	0	0	0	0	0
ÖK4	0	4	4	0	0	0	0	0	3	0	0	0	0	0	0	0

ÖK5	0	4	4	0	0	0	0	0	3	0	0	0	0	0	0	0
ÖK6	0	5	5	0	0	0	0	0	4	0	0	0	0	0	0	0
ÖK7	0	5	5	0	0	0	0	0	5	0	0	0	0	0	0	0
ÖK8	0	3	4	0	0	0	0	0	4	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			