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:	
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:	Öğr. Gör. Dr. İsmail TEKİN E-posta:itekin@uludag.edu.tr Tel: (224) 294 2030 Adres: Elektrik - Elektronik Mühendisliği Bölümü, Ofis No:316
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:	The ability to analyze and solve a problem with available data
20	Learning Outcomes:	

	1	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 BICMOS circuits and learn analyzing of BICMOS circuits
	7	Have an understanding of solid state 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 resistive load	
7	Midterm	
8	NMOS inverter and NMOS digital integrated circuits.	
9	CMOS inverter and CMOS digital integrated circuits.	
10	Fundamental properties and analyzing of BICMOS circuits.	
11	Interfacing of logic families.	
12	Comparison of logic families.	
13	Semiconductor memories.	
14	Final Exam	

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.
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		Measurement and evaluation are carried out according to the principles of Bursa Uludağ University Associate and Undergraduate Education Regulation.

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	3.00	42.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	16.00	16.00
Others	0	0.00	0.00
Final Exams	1	20.00	20.00
Total Work Load			136.00
Total work load/ 30 hr			4.00
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	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	0	0	0	0	0	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**