

ELECTRONIC MATERIALS AND APPLICATIONS

1	Course Title:	ELECTRONIC MATERIALS AND APPLICATIONS	
2	Course Code:	EEM2301	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	3	
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:	-	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Doç. Dr. UMUT AYDEMİR	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	E-posta:umutaydemir@uludag.edu.tr Tel: (224) 275 5262 Adres: Elektronik Mühendisliği Bölümü No:526	
17	Website:		
18	Objective of the Course:	Basic electronic circuit elements in the structure, operation principle, characteristics and parameters, its behavior under stress, models and computer simulations provide the basic information needed about the usage examples.	
19	Contribution of the Course to Professional Development:	Basic electronic circuit elements in the structure, operation principle, characteristics and parameters, its behavior under stress, models and computer simulations provide the basic information needed about the usage examples.	
20	Learning Outcomes:		
		1	Learns semiconductor materials
		2	Learn the structure and working principles of electronic circuit elements
		3	Learn the measurements of electronic circuit elements
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21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	Types of electronic circuit devices, resistors, resistor types, structures, operating principles, characteristics and parameters, application examples.		

2	Capacitors, coils and transformers, types, structure, operation principle, characteristics and parameters, application examples.	
3	The theory of the semiconductor, semiconductor diodes, structure, operation principle, characteristics and parameters, and surface-contact-point-contact diodes, diode applications.	
4	Tunnel diodes, varicaps, structure, operation principle, characteristics and parameters.	
5	Diacs, thyristors, structure, operation principle, characteristics and parameters.	
6	Triacs, structure, operation principle, characteristics and parameters.	
7	Bipolar transistors, structure, operation principle, characteristics and parameters	
8	Midterm + review session	
9	Connection types of bipolar transistors.	
10	FETs, structure, operation principle, characteristics and parameters.	
11	MOSFETs, structure, operation principle, characteristics and parameters.	
12	IGBTs, structure, operation principle, characteristics and parameters.	
13	Light emitting diodes (LEDs), structure, operation principle, characteristics and parameters	
14	Photodetectors, optocouplers, switching elements, structure, operation principle, characteristics and parameters	
22	Textbooks, References and/or Other Materials:	<ol style="list-style-type: none"> 1. E. Musa, Elektronik Devre Elemanları, Uludağ Üniversitesi, Elektronik Mühendisliği Bölümü, Bursa, 2009. 2. D. Leblebici, Seç Yayın Dağıtım, 2001. 3. M. S. Türköz, Elektronik, Birsen Yayınevi, 2004. 4. J. Millman, Microelectronics, McGraw Hill, 1979. 5. R. Boylestad and L. Nashelsky, Electronics Devices and Circuit Theory, Prentice- Hall, 1992.
23	Assesment	
TERM LEARNING ACTIVITIES		NUMBE R
Midterm Exam		1
Quiz		1
Home work-project		0
Final Exam		1
Total		3
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		Exam, report, homework
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	2.00	28.00
Homeworks	14	1.00	14.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	10.00	10.00
Others	0	0.00	0.00
Final Exams	1	12.00	12.00
Total Work Load			120.00
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	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	5	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			