## OSTIM TECHNICAL UNIVERSITY FACULTY OF ENGINEERING ELECTRICAL AND ELECTRONICS ENGINEERING

## COURSE SCHEDULE FORM 2023-2024 FALL/SPRING

EEE 301 Electronics I									
Course Unit Name	Course Unit Code	Semester	Lecture Hr	Practice Hr	Lab Hr	Credit	ECTS		
Electronics I	EEE 301	5	3		2	4	5		

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Course Details						
Language of Instruction	English					
Level of Course Unit	Undergraduate					
Program	Electrical and Electronics Engineering					
Mode of Delivery	Face to Face					
Type of Course Unit	Compulsory/Elective					
Objectives of the Course	At the end of this course, the students: - To become familiar with electronic devices and semiconductor theory, - To establish a robust electronic basics, - This course will be rudimentary for the future educational and professional lives of the engineers, - Being introduced to and comprehending electronic device behaviors, the structure of electronic circuits, and their analyzing techniques to students. - To provide students with laboratory studies for practicing the theoretical information and getting familiar with reporting.					
Course Content	<ul> <li>Structure of atom, insulator, semiconductor materials, P and N-type materials, diodes, diode applications, Zener diode, basic voltage regulator circuits.</li> <li>BJT transistors, structures, properties, BJT biasing, and small signal analysis of BJTs.</li> <li>FET types (FET, JFET, MOSFET), structures, properties, biasing FETs, small signal analysis of FETs, gain, input and output impedances.</li> <li>BJT and FET equivalent circuit models.</li> </ul>					
Course Method and Techniques	Lecture, Questions/Answers, Problem-solving, and laboratory work.					
Prerequisites and Corequisities	No					
Course Coordinator	Assoc.Prof.Dr. Ahmet Güngör Pakfiliz					
Name of Lecturer(s)	Assist. Prof. Dr. Şenol Gülgönül Assoc. Prof. Dr. Ahmet Güngör Pakfiliz					
Assistants	Res. Assist. Ahmet Dağ					

Work Placement(s) No	
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## Recommended or Required Reading

Resources:

- Boylestad, Nashelsky; Electronic Devices and Circuit Theory (Main Source)
- Millman, Halkias; Electronic Devices and Circuits
   Karris; Electronic Devices and Amplifier Circuits
- Salivahanan; Electronic Devices and Circuits

Course Category				
Mathematics and Basic Sc	iences :	Education	:	
Engineering	: <b>X</b>	Science	:	
Engineering Design	:	Health	:	
Social Sciences	:	Profession	:	

Weekly	Weekly Detailed Course Contents									
Week No	Topics	Pre-study & Materials								
1	Introduction of Semiconductors and Basic Concepts									
2	Semiconductor Diodes									
3	Bipolar Junction Transistors									
4	BJT Biasing									
5	BJT Biasing									
6	Field-Effect Transistors									
7	Field-Effect Transistors									
8	Midterm									
9	BJT Equivalent Modeling									
10	BJT Equivalent Modeling									
11	BJT and FET Small Signal Analysis									
12	BJT and FET Small Signal Analysis									
13	BJT Frequency Response									
14	BJT Frequency Response									
15	Power Amplifiers									
16	Final									

Course	Learning Outcomes
No	Learning Outcomes
C1	To learn diode types and their characteristics and analyze their circuits.
C2	To learn BJT's basic characteristics and gain an ability to DC analyze BJT circuits.
C3	To gain the ability to AC analyze BJT amplifiers.
C4	To learn the basic characteristics of FET and to gain an ability to DC analyze FET circuits.
C5	To gain the ability to AC analyze FETs.
C6	To apply theoretical information to experiments.

Progra	m Outcomes
No	Outcomes
P01	Reaches the knowledge broadly and in-depth by doing scientific research in the field, evaluating, interpreting, and applying the knowledge.
P02	Has comprehensive knowledge about current techniques and methods applied in engineering and their constraints.
P03	Complements and applies knowledge with scientific methods, using uncertain, limited, or incomplete data; can use information from different disciplines together.
P04	The student knows his/her profession's new and developing applications and examines and learns them when needed.
P05	Defines and formulates problems related to the field, develops methods to solve, and applies innovative solutions.
P06	Develops new and/or original ideas and methods; designs complex systems or processes and develops innovative/alternative solutions in their designs.
P07	Designs and implements theoretical, experimental, and modeling research; examines and solves complex problems encountered in this process.
P08	Can work effectively in disciplinary and multi-disciplinary teams, lead such teams, and develop solutions in complex situations; can work independently and take responsibility.
P09	Communicates verbally and in writing using a foreign language at least at the B2 General Level of the European Language Portfolio.
P10	The student conveys the results of his/her studies systematically and clearly in written or verbal form in national and international environments in that field or outside the field.
P11	Knows the social, environmental, health, safety, and legal aspects of engineering applications, project management, and business life applications and is aware of the constraints they impose on engineering applications.
P12	Observes social, scientific, and ethical values in the stages of data collection, interpretation, announcement, and in all professional activities.

Assessment Methods and Criteria		
In-term studies	Quantity	Percentage
Attendance		
Lab		
Practice		
Fieldwork		
Course-specific internship (if any)		
Quiz/Studio/Criticize		
Homework		
Presentation		
Project		
Report		
Seminar		
Midterm Exam		
Final Exam		
	Total	%100
Contribution of Midterm Studies to Success Grade		
Contribution of End of Semester Studies to Success Grade		
	Total	% 100

Activities	Quantity	Duration (Hr)	<b>Total Work Load</b>	
Weekly Theoretical Course Hrs (Including the exam	14	2	28	
week: 16 x total course hours)	14	Z	20	
Lab	14	2	28	
Practice				
Course-specific internship (if any)				
Fieldwork				
Out-of-class study time	14	3	42	
Presentation/Seminar Preperation				
Project				
Report	12	2	24	
Homework				
Quiz/Studio/Criticize	2	4	8	
Midterm Exam and Preperation for Midterm	1	6	6	
Final Exam and Preperation for Final Exam	1	14	14	
Total Workload			150	
ECTS Credit	( 15	0/30 )=	5	

Contri	Contribution of Course Learning Outcomes to Programme Outcomes											
Contri	Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant											
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12
C1	4	4	4									
C2	4	4	4									
C3	3	4	4	3								
C4	3	4	3	4								
C5	3	4	3	4								
C6	4						4					