OSTİM TECHNICAL UNIVERSITY
INSTITUTE OF SCIENCES
COMPUTER ENGINEERING
COURSE SYLLABUS
2022-2023 FALL

EEE201 Electrical Circuits-I

Course Name	Code	Semester	Theory (hour/week)	Application (hour/week)	Lab (hour/week)	Credits	ECTS
Electrical Circuits-I	EEE201	Fall	4	0	0	4	4

Course Language	English
Course Type	Compulsory
Course Level	Undergraduate
Mode of Delivery	In class lectures
Course Lecturer(s)	Dr. Hüseyin KÖSE
Teaching Methods and Techniques of the Course	Lectures, Homeworks

Course Objectives

The goal of this course to develop an understanding of the elements of electric circuits and the fundamental laws, general techniques such as nodal and mesh analysis, Thevenin and Norton equivalent circuits used in analyzing electric circuits, and develop phasor techniques for AC steady state analysis of circuits. Study on energy storage elements will help students to understand the transient and the steady-state response of RLC circuits. The course also aims to introduce elementary electronic circuits such as operational amplifiers and their circuit models.

Learning Outcomes

Having successfully completed this course, students will be able to:
LO-1: Interpret the basic circuit concepts, such as voltage, current, power, energy, etc.
LO-2: Use node and mesh analyses methods for the analysis of linear time invariant circuits.
LO-3: Analyze circuits by utilizing Thevenin's and Norton's theorems.
LO-4: Analyze circuits with operational amplifiers.
LO-5: Interpret the operation of capacitors and inductors; and analyze both transient and steady-state response of first order circuits.
LO-6: Analyze second order circuits.
LO-7: Identify the concept of phasor; and apply it for the AC steady-state analysis of circuits.

Course Description

Lumped circuits: Kirchoff`s laws, basic lumped elements, circuit graphs, circuit equations, linear and nonlinear resistive circuits, first and second order dynamic circuits. Introduction to operational amplifier circuits.

Subjects and Related Preparation Studies	
Week	**Subjects**
1	Introduction to Electrical Circuits
2	Resistive Circuits; Sources; measurement equipments
3	Linearity; Nodal Analysis
4	Nodal Analysis; Mesh Analysis
5	Mesh Analysis
6	Thevenin's and Norton's theorems;
7	Thevenin's and Norton's theorems; Power Transfer; Superposition
8	Op-Amps
10	Analysis of resistive Op-Amp circuits
11	Energy-Storage Elements, Inductors, Capacitors
12	RC circuits and behaviours, First order circuits
13	RL circuits and behaviours, First order circuits
14	RLC circuits and behaviours, Second order circuits
15	Sinusoidal Steady-State Analysis
16	Final Exam

Course Notes/Textbooks

1. Textbook: Electric Circuits, Global Edition, 11th Edition, (Pearson) Susan Riedel, James W. Nilsson-2019
2. Fundamentals of Electric Circuits, (McGraw Hill)

Evaluation System		
Semester Activities	**Number**	**Weighting**
Participation		
Laboratory		
Application		
Field Work		
Portfolio		
Quizzes / Studio Critiques		
Homework / Assignments		
Presentation		
Project		
Report		
Seminar		
Midterm	1	30%
Midterm2	1	30%
Final	1	40%
	Sum	**100 %**
Weighting of Semester Activities on the Final Grade		60 %
Weighting of End-of-Semester Activities on the Final Grade		40 %
	Sum	**100 %**

Course Category	
Core Courses	x
Major Area Courses	x
Supportive Courses	
Media and Management Skills Courses	
Transferable Skill Courses	x

Course Learning Outcomes and Program Qualifications Relationship						
No	**Program Competencies/Outcomes**	**Contribution Level**				
		1	**2**	**3**	**4**	**5**
1	Ability to apply knowledge of mathematics, science, and engineering					x
2	Ability to design and conduct experiments and to analyze and interpret experimental results.				x	
3	Ability to design a system, component, and process according to specified requirements.					x
4	Ability to work in teams in interdisciplinary areas.		x			
5	Ability to identify, formulate and solve engineering problems.					x
6	Identifies, defines, formulates and solves complex network problems; chooses and applies analysis and modeling methods suitable for this purpose.				x	
7	Develops, selects and uses modern techniques and tools necessary for the analysis and solution of complex problems encountered in Electrical and Electronics Engineering applications; uses required technologies effectively.			x		

ECTS / Workload Table			
Semester Activities	**Number**	**Duration (Hours)**	**Workload**
Theoretical Course Hours (Including exam week: 16 x total hours)	16	4	64
Laboratory			
Application			
Portfolio			
Field Work			
Study Hours Out of Class			
Presentation			
Project			
Reports			
Homework/Assignments			
Quizzes / Studio Critiques			
Midterms	2	20	40
Final Exam	1	20	20
Total	**(ECTS 124/25 = 4.96)**		**124**