2023
TP-153

Course Specification
(Bachelor)

Course Title:	Electric Circuit Analysis
Course Code:	EE1222
Program:	Electrical Engineering
Department:	Electrical Engineering
College:	College of Engineering
Institution:	Imam Mohammad Ibn Saud Islamic University
Version:	V5
Last Revision Date:	01-01-2025

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (4th level, 2nd year)					
4. Course general Description:					
Three phase analysis, RLC circuits, Mutual inductance, Two port networks, Laplace transform, Circuit analysis in the S-domain, Frequency selective circuits.					
5. Pre-requirements for this course (if any)**:**					
EE 1221					
6. Co-requisites for this course (if any)**:**					
--					
7. Course Main Objective(s):					
1. To understand the basic concepts and techniques dealing with analysis of circuits such as three-phase circuits, two-port circuits, frequency selective circuits. 2. To understand different types of filters 3. To understand the concept of mutual inductance and transformers. 4. To understand the transient response of first and second order circuits.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning	-	-
3	Hybrid • Traditional classroom • E-learning	-	-
4	Distance learning	-	-

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	-
3.	**Field**	-
4.	**Tutorial**	15
5.	**Others (specify)**	-
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
K1	Analyze Balanced Three-phase Circuits	1.1	PPT presentations Group discussions during class Solve problems	Quizzes Midterm exam Final exam
K1	Formulate the transient voltage and current RLC circuits	1.3	PPT presentations Group discussions during class Solve problems	Quizzes Midterm exam Final exam
K1	Simplify electrical networks using the two-port technique.	1.2	PPT presentations Group discussions during class Solve problems	Quizzes Midterm exam Final exam
K1	Design and Analyze basic filters	1.2	PPT presentations Group discussions during class Solve problems	Quizzes Midterm exam Final exam
2.0	**Skills**			
S1	Calculate the effect of mutual inductance	2.1	PPT presentations Group discussions during class Solve problems	Quizzes Midterm exam Final exam
S1	Solve problems in the S-domain	2.2	PPT presentations Group discussions during class Solve problems	Quizzes Midterm exam Final exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility**			
V1	Demonstrate a good ability to prove mathematical results	3.1	PPT presentations Group discussions during class Solve problems	Quizzes Midterm exam Final exam
V2	Demonstrate ethical behavior among peers, and be punctual	4.3	Active participation during the course	Lecture attendance

C. Course Content

No	List of Topics	Contact Hours
1	Balanced three phases analysis	10
2	Natural and step response of RLC circuits	10
3	The Laplace transform in circuit analysis	12
4	Introduction to frequency selective analysis	8
5	Mutual inductance	8
6	Two-port analysis	12
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	First Midterm Exam	At the start of the 6th week	20
2.	Second Midterm Exam	At the 12th week	20
3.	Quizzes	At the end of each topic	7
4.	Homework	At the end of each topic	10
5.	Attendance	Every lecture	3
6.	Final Exam	At the end of the semester as per the university schedule	40

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	1. Electric Circuits, by James Nilsson and Susan Riedel, Pearson, 10th edition, 2014
Supportive References	Fundamentals of Electric Circuits, by Alexander & Sadiku. McGraw-Hill Education; 6th edition, 2016
Electronic Materials	Online resources supplied by the instructor
Other Learning Materials	PSpice simulator

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	One classroom: fits up to 25 students with white board.
Technology equipment (projector, smart board, software)	A laptop computer connected to a projector to display PowerPoint presentations
Other equipment (depending on the nature of the specialty)	N/A

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Students**	**Indirect**
Effectiveness of Students assessment	**Students**	**Indirect**
Quality of learning resources	**Relevant Focus Group**	**Indirect**
The extent to which CLOs have been achieved	**Dept. Quality Committee**	**Direct**
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	