COURSE PLAN

FIRST: BASIC INFORMATION

College	
College	: Karak College
Department	: Engineering Department.

Course	
Course Title	**:** Circuit Theory
Course Code	: 020406112
Credit Hours	: 3 (2 Theoretical, 1 Practical)
Prerequisite	: 020406111

Instructor	
Name	:
Office No.	:
Tel (Ext)	:
E-mail	:
Office Hours	:

Class Times					

Text Book

Circuit Theory, Al-Balqa Applied University & KOICA, 2022

References

1. Robert Boylestad, "**Introductory Circuit Analysis**" 13th Ed., Pearson, 2013.
2. William Hayt et al., "**Engineering Circuit Analysis**" 9th Ed., McGraw-Hill, 2018.
3. Nilsson, J. W., and S. Riedel, "**Electric Circuits**" 11th ed., Prentice-Hall, 2018.
4. Alexander, C. K., and M. N. Sadiku, "**Fundamentals of Electric Circuits**" McGraw Hill, 2005.

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

This course explains the basic concepts and analysis methods of electronic circuit. Using the basic laws of electricity and analysis method, the analysis of resistance circuit is dealt with first, and the characteristics of R-L, R-C, and R-L-C circuits, which are the basic combination in electronic circuits, are explained.

COURSE OBJECTIVES

The objectives of this course are to enable the student to do the following:

- Read datasheets and explain the operation of electronic components.

- Apply the basic analysis methods for electrical circuits.
- Check and test the operation of electronic components.
- Explain the characteristics of circuits using R, L, and C

COURSE LEARNING OUTCOMES

By the end of the course, the students will be able to:

CLO1. Explain the principle of resistance and conductivity and the effect of heat on them
CLO2. Explain the electronic parts stored in energy and ways to connect them
CLO3. Explain the basic laws of electricity
CLO4. Apply the basic analysis methods for circuit analysis
CLO5. Apply the Kirchhoff's laws (KVL and KCL) for basic resistive circuits
CLO6. Analyze the characteristics of circuits using R, L, and C
CLO7. Examine the calculations of current, voltage, or power associated with a resistive circuit using mesh analysis technique
CLO8. Examine the calculations of current, voltage, or power associated with a resistive circuit using nodal analysis technique
CLO9. Examine the delta and star connection and their conversion
CLO10. Examine the calculations of current, voltage, or power associated with a resistive circuit using superposition, Thevenin, and Norton analysis technique

COURSE SYLLABUS

Week	Topic	Topic details	Related LO	Proposed assignments
1	Resistors, capacitors, and inductors	• Resistivity and conductivity. • Resistance: Metric Units. • Temperature Effects	CLO1	
2	Resistors, capacitors, and inductors	• Superconductors. • Color coding. • Types of Resistors. • Conductance. • Thermistor.	CLO1	
3	Resistors, capacitors, and inductors	• Capacitance. • Types of Capacitors. • Capacitors in Series and Parallel.	CLO2	
4	Resistors, capacitors, and inductors	• Types of inductors. • Inductors in Series and Parallel. • R-L and R-L-C circuits with DC input.	CLO2	
5	Ohm's law	• Ohm's Law. • Plotting ohm's Law. • Applying ohm's law in a DC circuit.	CLO3	
6	Ohm's law	• Power. • Wattmeter.	CLO4	

Week	Topic	Topic details	Related LO	Proposed assignments
		• Applications of ohm's law.		
7	Open and short circuits and Kirchhoff's Law	• Series circuits. • Voltage Source in Series. • Kirchhoff's Voltage Law.	CLO5	
8		**Mid exam**		
9	Open and short circuits and Kirchhoff's Law	• Voltage Divider Rule. • Internal resistance of voltage sources. • Voltage regulation.	CLO5	
10	Open and short circuits and Kirchhoff's Law	• Parallel Circuits. • Kirchhoff's Current Law. • Current Divider Rule.	CLO6	
11	Open and short circuits and Kirchhoff's Law	• Voltage Sources in Parallel. • Open circuits • Short circuits.	CLO6	
12	Circuits analysis	• Current sources. • Current Sources in Parallel. • Current Sources in Series • Source conversions. • Mesh Analysis	CLO7	
13	Circuits analysis	• Branch current analysis. • Nodal Analysis. • Bridge networks.	CLO8	
14	Superposition Theorem	• Star and delta networks. • Superposition Theorem. • Millman's theorem.	CLO9	
15	Thevenin's and Norton's Theorems	• Thevenin's Theorem. • Norton's Theorem. • Maximum power transfer theorem.	CLO10	
16		**Final exam**		

COURSE LEARNING RESOURCES

Teaching will be achieved using available resources including lectures, data show, and materials uploaded on the e-learning system.

ONLINE RESOURCES

{Write some useful websites related to the course and other material that help students to complete the course successfully.}

ASSESSMANT TOOLS

Assessment Tools	%
Projects and Quizzes	20%
MID Exam	30%
Final Exam	50%
Total Marks	100%

THIRD: COURSE RULES

ATTENDANCE RULES

Attendance and participation are extremely important, and the usual University rules will apply. Attendance will be recorded for each class. Absence of 10% will result in a first written warning. Absence of 15% of the course will result in a second warning. Absence of 20% or more will result in forfeiting the course and the student will not be permitted to attend the final examination. Should a student encounter any special circumstances (i.e. medical or personal), he/she is encouraged to discuss this with the instructor and written proof will be required to delete any absences from his/her attendance records.

GRADING SYSTEM
Example:

Grade	points

REMARKS

{The instructor can add any comments and directives such as the attendance policy and topics related to ethics}

COURSE COORDINATOR

Course Coordinator: Eng.mahmoud aljafari	**Department Head:**
Signature: Eng.mahmoud aljafari	**Signature:**
Date:	**Date:**