

1	Course Code and Name	BTE2132 - Electrical Fundamentals and Circuit Analysis II Lab
2	Semester and Year Taught	Semester 1, Year 2
3	Program Level/Category	Degree/Program Core
4	Unit	2 Credits
5	Prerequisite Course	None
6	Contact Hours	Lecture: 0 hours X 14 weeks Tutorial/ Practical: 1 hour X 3 weeks Laboratory: 4 hours X 10 weeks
7	Course Synopsis	This course provides the basic concepts and engineering methods of AC circuits. The contents include applications of Mesh and Nodal analysis, Superposition and Source Transformation Theorems, Thevenin and Norton Theorem. Resonant circuit, Filters, Bridges and Balanced 3-phase circuits are also covered.
8	Course Outcomes	By the end of semester, students should be able to: CO1 Construct AC circuits and validate circuit analysis theorems [P] CO2 Assemble schematic circuits in actual circuit and interpret the experimental results into report [P] CO3 Work in a team and communicate effectively. [A:TW1]
9	Learning References	1. A. Robbins and W. Miller, Lab Manual to Accompany Circuit Analysis-Theory and Practice, 5th ed., DELMAR CENGAGE Learning, Fifth Edition, 2013. 2. A. Robbins and W. Miller, Circuit Analysis-Theory and Practice, 5th ed., DELMAR CENGAGE Learning, Fifth Edition, 2013.

Relationships between Program Outcomes (PO) with Course Outcomes (CO)

Domains	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		C	C	C	P	P	A	A	A	A	A	A	A
CO1	Construct AC circuits and validate circuit analysis theorems [P: PS1]					×							
CO2	Assemble schematic circuits in actual circuit and interpret the experimental results into report [P: PS2]					×							
CO3	Work in a team and communicate effectively. [A:TW1]						×						

P: PS1-Practical Skill, P:PS2-Lab Report, A:LS1-Leadership, A:TW1-Teamworking, A:CS1-Oral, A:CS2-Written, A:CS3-Group Discussion, A:CS4-Presentation, A:ES1-Engineers & Society, A:E1-Ethics, A:PM1-Project Management, A:ENS1-Environmental & Sustainability, A:LL1-Information Management, A:LL2-Independent Learning, A:LL3-Curiosity, A:ENT1-Entrepreneurship

Assessment Methods

Learning Domains	Distribution (%)		CO1	CO2	CO3
Psychomotor	Lab Report	20 %	×	×	
	Practical Skill	60 %	×	×	
Affective	Teamwork	10 %			×
	Attendance	10 %			×
	Total	100 %			

Week	Chapter	Activity	Topic Outcomes (TO)	CO	PO	Level in Bloom's Taxonomy	Delivery Methods	SLT		
								Contact Hour	Learning Hour	Total SLT
1		Introduction to Circuit Analysis II Lab	Introduction to Circuit Analysis II Lab	CO1	PO5	P	Lab	4	1	5
2	1	Lab 1: Power in AC Circuits	Calculate real, reactive and apparent power based on AC circuit measurements	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
3	2	Lab 2: Thevenin's and Norton's Theorems (AC)	Learn to calculate the Thevenin impedance of a circuit using the measured values of Thevenin voltage and Norton current.	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
4		Practical Test 1		CO1	PO5	P	<i>Test 1</i>	1	2	3
5	3	Lab 3: Series Resonance	Learn to calculate the resonant frequency of a series/parallel resonant circuit.	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
6	3	Lab 4: Parallel Resonance	Learn to measure the bandwidth of a series/parallel resonant circuit.	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
7		Practical Test 2		CO1	PO5	P	<i>Test 2</i>	1	2	3
8	4	Lab 5: RC and RL Low-Pass Filter Circuits	Learn to calculate and measure the cutoff frequency of the low-pass and high-pass filters.	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
9	4	Lab 6: RC and RL High-Pass Filter Circuits	Learn to develop the transfer function for the low-pass filter, high-pass filter and the band-pass filter.	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
10	4	Lab 7: Band-Pass Filter	Learn to sketch the Bode plots of the low-pass, high-pass and band-pass filters.	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
11	5	Lab 8: The Iron-Core Transformer	- Identify reflected Impedance concept - Evaluate Power Transformer ratings	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
12	5	Lab 8: The Iron-Core Transformer	- Identify reflected Impedance concept - Evaluate Power Transformer ratings	CO2 CO3	PO5 PO6	P A	Lab <i>Lab report</i>	4	2 2	8
13		Revision/Replacement lab								
14		Final Practical Test		CO1	PO5	P	<i>Test 3</i>	1	3	4
TOTAL SLT								43	44	87

Prepared by	Checked by	Approved by
Sulastri Binti Abdul Manap Position: Lecturer Date:	Sulastri Binti Abdul Manap Position: Head of Program (BTE) Date:	Associate Professor Ir. Adnan Bin Zulkiple Position: Deputy Dean (Academic & Students Affair) Date: