

Subject	Electrical Circuits II	Course Code	CT214	Theoretical	3 hrs / wk
Semester	3	Prerequisite	CT113	Practical	3 hrs / wk

Program Learning Component

Review the Sinusoidal Alternating Waveforms			
	Specific Learning Outcomes	Resources	Practical
Week 1	SINUSOIDAL ac VOLTAGE CHARACTERISTICS AND DEFINITIONS. GENERAL FORMAT FOR THE SINUSOIDAL VOLTAGE OR CURRENT. PHASE RELATIONS, AVERAGE VALUE, EFFECTIVE (rms) VALUES ac METERS AND INSTRUMENTS	Power point slide, Whiteboard	Experiments on how to generate the AC signal in voltage and current . Voltage versus current characteristic.
Study The Basic Elements and Phasor			
	Specific Learning Outcomes	Resources	Practical
Week 2	THE DERIVATIVE, RESPONSE OF BASIC R, L, AND C ELEMENTS, FREQUENCY RESPONSE. AVERAGE POWER AND POWER FACTOR, COMPLEX NUMBERS, AND RECTANGULAR FORM. POLAR FORM.	Power point slide, Whiteboard	Experiments on AC circuit using R,L,C and show it by oscilloscope.
Study the Series and Parallel ac Circuits and networks			
	Specific Learning Outcomes	Resources	Practical
Week 3-4	SERIES CONFIGURATION FREQUENCY RESPONSE OF THE R-C CIRCUIT. ADMITTANCE AND SUSCEPTANCE	Power point slide, Whiteboard	Series circuit AC implementation. Parallel circuit AC implementation.

	<p>PARALLEL ac NETWORKS FREQUENCY RESPONSE OF THE PARALLEL R-L NETWORK PHASE MEASUREMENTS LADDER NETWORKS APPLICATIONS</p>		<p>Measure the current, voltage signal and show it></p>
Week 5-6	Study the Methods of Analysis circuits		
	Specific Learning Outcomes	Resources	Practical
	<p>INDEPENDENT VERSUS DEPENDENT SOURCES. SOURCE CONVERSIONS. MESH ANALYSIS, NODAL ANALYSIS, BRIDGE NETWORKS (ac), SUPERPOSITION THEOREM THE 'VENIN'S THEOREM, NORTON'S THEOREM, MAXIMUM POWER TRANSFER THEOREM,</p>	<p>Power point slide, Whiteboard</p>	<p>Implementation of Methods of Analysis circuits in the lab by several experiments.</p>
Week 7-8	Study the power (AC),Resonance		
	Specific Learning Outcomes	Resources	Practical
	<p>RESISTIVE CIRCUIT. APPARENT POWER, INDUCTIVE CIRCUIT AND REACTIVE POWER, CAPACITIVE CIRCUIT, POWER TRIANGLE, TOTAL P, Q, AND S, POWER-FACTOR CORRECTION, EFFECTIVE RESISTANCE. SERIES RESONANT CIRCUIT. QUALITY FACTOR (Q). ZT VERSUS FREQUENCY. SELECTIVITY CURVE FOR PARALLEL RESONANT CIRCUITS. EFFECT OF $Q_1 > 10$</p>	<p>Power point slide, Whiteboard</p>	<p>Experiments applied To measure the effect of parameter (R,L,C) resonance .</p>

Week 9	Study the Transformers		
	Specific Learning Outcomes	Resources	Practical
	MUTUAL INDUCTANCE. IRON-CORE TRANSFORMER. REFLECTED IMPEDANCE AND POWER. FREQUENCY CONSIDERATIONS AIR-CORE TRANSFORMER TYPES OF TRANSFORMERS TAPPED AND MULTIPLE-LOAD TRANSFORMERS. NETWORKS WITH MAGNETICALLY COUPLED COILS.	Power point slide, Whiteboard	Experiments applied on different transformer to study the effect parameter of transformer. Output voltage versus input voltage
Week 10-11	Study the Polyphase Systems		
	Specific Learning Outcomes	Resources	Practical
	THREE-PHASE GENERATOR. Y-CONNECTED GENERATOR. PHASE SEQUENCE. Y-CONNECTED GENERATOR WITH A Y-CONNECTED LOAD. $Y\Delta$ SYSTEM. Δ -CONNECTED GENERATOR. THREE-PHASE SYSTEMS. POWER. THREE-WATTMETER METHOD. TWO-WATTMETER METHOD. UNBALANCED, THREE-PHASE.	Power point slide, Whiteboard	Experiments available in lab about Single phase induction Motor. Three phase induction motor.
Week 12	Study Filters, and Bode Plots		
	Specific Learning Outcomes	Resources	Practical
	R-C LOW-PASS FILTER R-C HIGH-PASS FILTER PASS-BAND FILTERS STOP-BAND FILTERS BODE PLOTS	Power point slide, Whiteboard	Experiments on lab about different types on filter. How to draw the bode plot of circuits.

	SKETCHING THE BODE RESPONSE		
Week 13	Study the Pulse Waveforms and the R-C Response		
	Specific Learning Outcomes	Resources	Practical
	IDEAL VERSUS ACTUAL. PULSE REPETITION RATE. AND DUTY CYCLE AVERAGE VALUE. TRANSIENT R-C NETWORKS. R-C RESPONSE TO SQUARE-WAVE INPUTS. OSCILLOSCOPE ATTENUATOR AND COMPENSATING PROBE.	Power point slide, Whiteboard	Experiments on lab about different pulse wave generated , display these signals on oscilloscope in proper manner.
Week 14	Study System Analysis:An Introduction		
	Specific Learning Outcomes	Resources	Practical
	INTRODUCTION. IMPEDANCE PARAMETERS Z_i , Z_o . VOLTAGE, CURRENT GAINS. CASCADED SYSTEMS. IMPEDANCE , ADMITTANCE PARAMETERS. HYBRID (h) PARAMETERS	Power point slide, Whiteboard	Experiments on lab about different cascaded RLC circuits.