GOVERNMENT CO-ED POLYTECHNIC, RAIPUR
DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN

Session:-
Semester:- **3rd**
Session start date as per University Calendar:-
Course Name:- **Electrical Circuit**
Course Code:-
Name of Subject teacher:-

Unit -1 Principles of Electrical Circuit

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
1.1 Classification Of Electrical Elements: Active & Passive, Unilateral and bilateral, Independent and Dependent Source	1	**1.1** Indentify the commonly used components and materials in an electric circuit. **1.2** Observe Voltage and Current in an incandescent lamp and comment on your observation. **1.3** Measure Voltage and current in a given linear electric circuit.	2	
1.2 Passive Element/Components(R,L and C) : Steady State behavior in DC Circuit	2			
1.3 Simple Series and Parallel Resistive Circuit	1	**1.4** Measure current and voltage in a particular branch of the given electrical circuit using kirchhoff's Current Law. **1.5** Measure voltage Drop in a closed loop of the given electrical circuit using kirchhoff's Voltage Law **1.6** Determine the current and voltage in a given electrical Circuit.	2	
1.4 Ohm's Law, Kirchhoff's Voltage and Current Law	2			
1.5 Numerical	2			
1.6 Source Transformation	1			
1.7 Mesh & Nodal Analysis	2			

Number of periods planned (CI + LI) : 15
Number of periods actually taken :

Unit – 2 Circuit Analysis and Network Theorems				
Class Room Instruction (CI)	**No. of Periods**	**Laboratory Instruction (LI)**	**No. of Periods**	**Remark**
2.1 Star Delta Transformation of Passive Network	1	**2.1** Connect star connected resistance to its equivalent Delta connection and determine the equivalent resistance. **2.2** Connect Delta connected resistance to its equivalent Star connection and determine the equivalent resistance. **2.3** Measure Current through and voltage across a circuit element of a given electric Circuit and verify applying mesh and nodal Analysis.	2	
2.2 Superposition Theorem	1			
2.3 Thevenin's Theorem	1			
2.4 Norton's Theorem	1			
2.5 Maximum Power Transfer Theorem	1			
2.6 Application of Theorem to Solve DC Network	6			
		2.4 Measure current in a branch of the given electrical circuit having two or more input sources using Super position theorem. **2.5** Measure load current in the load resistance using Thevenin's theorem in a given circuit. **2.6** Measure load current in the load resistance using Norton's theorem in a given circuit. **2.7** Determine the maximum power and load resistance for which circuit has maximum power using maximum power transfer theorem.	2	

Number of periods planned (CI + LI) : 15
Number of periods actually taken :

Unit – 3 Single Phase AC Circuit				
Class Room Instruction (CI)	**No. of Periods**	**Laboratory Instruction (LI)**	**No. of Periods**	**Remark**
3.1 Generation of an alternating EMF **3.2** AC circuit quantities: Peak value, RMS Value and Average value of a Sinusoidal voltage waveform	1	**3.1** Measure peak value, RMS value, Period and frequency of a sinusoidal voltage using CRO. **3.2** Observe the behavior of current and voltage wave form in CRO for Resistive load and comment on it. **3.3** Observe the behavior of current and voltage wave form in CRO for R-L Load and comment on it.	2	
3.3 J-operator	1			
3.4 AC Series and parallel circuits, Phasor diagrams and impedance triangle **3.5** Active, reactive, apparent power and power factor in RLC circuit.	7	**3.4** Measure voltage, current, power and power factor in a series RLC circuit and draw phasor diagram. **3.5** Measure voltage, current, power and power factor in a RLC parallel circuit and draw phasor diagram. **3.6** Determine the power and power factor in AC circuit using three ammeter methods.	2	
3.6 Vector representation of an alternating quantity, addition, subtraction, multiplication and division.	2			
Number of periods planned (CI + LI) : 15 **Number of periods actually taken** :				

Unit – 4 Series and Parallel resonance				
Class Room Instruction (CI)	**No. of Periods**	**Laboratory Instruction (LI)**	**No. of Periods**	**Remark**
4.1 Definition of resonance and its importance in electrical circuit	1	**4.1** Determine the current at series resonance. **4.2** Observe the variation of power factor for varying inductance for a series RLC circuit.	1	
4.2 Series and Parallel resonance: Derivation of Resonance frequency and simple numerical.	6			
4.3 Definition: Quality factor, bandwidth and selectivity in series RLC circuit.(No derivations)	1	**4.3** Determine the current at parallel resonance. **4.4** Determine the impedance of a circuit during parallel resonance.	1	
4.4 Effect on current and power factor in series resonance circuit.	2			
Number of periods planned (CI + LI) : 12 **Number of periods actually taken** :				

Unit – 5 Three phase A C circuits				
Class Room Instruction (CI)	**No. of Periods**	**Laboratory Instruction (LI)**	**No. of Periods**	**Remark**
5.1 Generation of three phase voltage	1	**5.1** Measure the line/phase current, line voltage/phase voltage for the given three phase load connected to a three phase source.	1	
5.2 Three phase three wire source and three phase four wire source, Phase sequence and phasor diagram	2			
5.3 Connection of three phase winding in Star/Delta	2	**5.2** Measure neutral displacement voltage of the given three phase unbalanced load connected to a three phase source Measure three phase power for the given star connected load.	1	
5.4 Line and phase electrical quantity relationship: Star/Delta	4			
5.5 Three phase load: Balanced /Unbalanced	1			
5.6 Measurement of power in three phase circuits	4	**5.3** Measure three phase power for the given star/delta connected load.	2	

Number of periods planned (CI + LI) : 18
Number of periods actually taken :

Number of Total periods planned : 75
Number of Total periods actually taken :

Subject Teacher :

HOD
(Department of Electrical Engineering)