

SRM University Delhi-NCR, Sonapat								
TEACHING, LEARNING & EVALUATION PLAN								
Academic Session: 2023-24 (Even Semester)								
Course Name: Basic Electrical Engineering								
Course Code: 23EE201								
Faculty Name: Dr. Ranjit Roy								
Unit	Topic & Coverage	Lecture Scheduled	Lecture held	Pedagogy	Activity	Unit Objective	Unit Learning Outcome	Remarks
Unit-I	Introduction to Circuit Concepts: Concepts of network, Active and passive elements, Voltage and current sources, DC series circuits	1	1	Participative	Assignment-I and MST	To introduce the fundamental concepts relevant to DC circuits and network theorems.	To understand the basic concepts of DC circuits and network theorems	
	Concept of linearity and linear network, Unilateral and bilateral elements, R, L and C as linear elements, DC Parallel Circuits	1	1					
	DC Series-Parallel circuits, Internal resistance, Equivalent resistance,	1	1					
	Kirchhoff's current law, Kirchhoff's voltage law, Sign Convention, Network terminology, Nodal analysis	1	1					
	Mesh current method, Numerical Problem	1	1					
	Delta-star transformation, Numerical Problem	1	1					
	Star-delta transformation, Numerical Problem, Source Transformation	1	1					
	Superposition theorem, Numerical Problem	1	1					
	Norton's theorem, Numerical Problem	1	1					
	Maximum Power Transfer Theorem, Numerical Problem	1	1					
	Introduction to AC Voltage & Current, Values of Alternating voltage & current, Average value of Sinusoidal current, Numerical problem, R.M.S value of Sinusoidal current	1	1					

Unit-II	Form factor, Peak Factor, Concept of phase, Phase Difference, AC Circuit containing resistance, Numerical problem	1	1	Participative	Assignment-I and MST	To introduce the fundamental concepts relevant to AC circuits and its analysis.	To apply the concept of AC circuits for analysing any practical circuits.	
	AC Circuit containing inductance, Numerical problem	1	1					
	AC Circuit containing capacitance, Numerical problem, R-L series AC Circuit	1	1					
	Impedance Triangle, Apparent, True, Reactive Powers, Q-factor of a coil, Numerical Problem	1	1					
	R-C series AC circuit, Numerical Problem, R-L-C series AC Circuit, Numerical Problem	1	1					
	Resonance in AC circuits, Series Resonance, Bandwidth of series resonance circuits, Numerical Problem	1	1					
Unit-III	Electromagnetic induction, Faraday's Laws,	1	1	Participative	Assignment-I and MST	To introduce the importance of electromagnetism and transformers in the transmission and distribution of electric power.	To understand electromagnetic induction and its applications in transformers that are used in transmission and distribution systems.	
	Lenz's laws, Numerical Problem, Induced E.M.F, Dynamically induced E.M.F, Statistically induced E.M.F, Self inductance, Numerical Problem,	1	1					
	Coefficient of coupling, Numerical Problem, Energy stored in a magnetic field, Numerical Problem	1	1					
	Transformer: single phase transformer, construction, core, Transformer windings, Comparison of core type and Shell type, working principle,	1	1					
	E.M.F equation, Transformation ratio, Rating of a transformer, Numerical Problems, Losses in a transformer, Numerical Problem	2	2					
	Voltage Regulation, Numerical Problems	1	1					
	Poly-Phase Systems: Introduction, Advantages of 3-phase system, Star connected system,	2	2					

Unit-IV	Balanced 3-phase system, Types of 3-phase loads, Voltages and currents in balanced Y-connected and delta-connected systems, Numerical Problem,	2	2	Participative	Assignment-I and MST	To learn about the poly-phase systems used in Electrical Power system	To understand the concepts of poly-phase circuits and its power measurements techniques	
	Power measurement in 3-phase circuits, Two-wattmeter method, Numerical Problem	2	2					
Unit-V	Concept of renewable energy, various forms of renewable energy, wind energy and its applications	2	2	Participative	Assignment-I and MST	To explain the importance of renewable energy resources in the global power market	To understand the importance of renewable energy resources in the global power market	
	Solar Energy, Solar-thermal energy applications, Solar water heaters, Solar water pumps, Tidal and ocean energy,	2	2					
	Hydro energy, Nuclear energy, Thermal Generation, Nuclear Power Plant	2	2					
	Fuel Cells, Types of fuel Cells, Working Principle, Advantages, Gas Turbine, Advantages and its applications	2	2					
	Distributed Generation, Different Technologies, Cogeneration, Classifications, Steam turbine cogeneration systems, Gas turbine cogeneration systems, Advantages and disadvantages	2	2					

TEXT BOOKS:

1. "Principles of Electrical Engineering", V. Del Toro,; Prentice Hall International
2. "Basic Electrical Engineering", D P Kothari, I.J. Nagarath; Tata McGraw Hill
3. "Basic Electrical Engineering", D C Kulshreshtha, Tata McGraw Hill Edu Private

REFERENCE BOOKS:		
1.	"Electrical and Electronics Technology", Edward Hughes; Pearson	
2.	"Engineering Circuit Analysis", W.H. Hayt & J.E. Kimerly; Mc Graw Hill	
3.	"Basic Electrical Engineering", C L Wadhwa; New Age International	
4.	"Basic Electrical Engineering", T.K. Nagsarkar,M.S. Shukhija; Oxford University Press.	