

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA
Department of Electrical Engineering
Lesson Plan

Subject: Basic Electrical Engineering

Credit : 3-1-0

Faculty Member: Dr. Papia Ray

Semester: 2nd Sem B.Tech, ETC(H-Section)

Course Objective: This is the foundation course to all the major branches. This subject will focus upon principles, the techniques to study, analysis and solve the behavior of all types of electrical circuits.

Class No	Topics	No. Of Classes
MODULE- 1		
1	Introduction, General discussion, How to prepare the the topic, What is a circuit, what are circuit parameters, Circuit conditions Types of n/ws, Introduction to DC n/w. Kirchoff's Laws,	10
2	Node and Mesh Analysis Delta-Star Conversion (Assignment-1)	
3	Superposition Theorm	
4	Thevenin's and Norton's Theorm	
5	Transients, Behaviour of R-L, R-C, RLC circuits	
6	Introduction to AC n/ws, Single phase EMF generation, Average value and effective values, j operator, Impedance, power factor, Power in complex, Phasor diagrams	
7	Solution of series & parallel circuit, Resonance in RLC series circuit (Assignment 3)	
8	Introduction to three phase circuit, generation of EMF, Delta-star connection, line and Phase quantities	
9	Solution to 2-phase circuits with balanced loads,	
10	Power in three phase circuit	
MODULE-2		
11	Magnetic circuit, B-H curve, Hysteresis	10
12	Permeability and reluctance, losses	
13	Solution to simple magnetic circuits	
14	Solution to simple magnetic circuits	
15	Discussions. (Assignment-5)	
16	Transformer, Principle of operation, EMF equation	
17	Auto Transformers (Assignment-6)	
18	DC Machines, Operating principle generator and Motor	
19	EMF equation, Method of excitation	
20	Speed equation, Speed control methods of shunt m/c	
MODULE-3		
21	Three-phase Induction Motor: Introduction and Construction	
22	Three phase Induction Motor: Principle of Operation and types	

23	Slip, Torque equation	10
24	Slip-torque Characteristics	
25	Synchronous Machines: Construction & principle of operation of Synchronous generator	
26	Synchronous Machines: Construction & principle of operation of Synchronous motor	
27	EMF equation, Voltage regulation	
28	Applications and starting of Synchronous motor.	
29	Problem solving on Induction and Synchronous Machines	
30	Introduction to single phase induction motor	
MODULE-4		
31	Measuring Instruments- DC PMMC instruments	10
32		
33	Extension of range of ammeter and voltmeter	
34	Moving Iron ammeters and voltmeters (Assignment-8)	
35	Watt meters	
36	Energy meters	
37	Introduction to Power generation- Thermal, Hydel, Nuclear plants	
38	Contd.	
39	Transmission Of Energy (practice Exercise)	
40	Introduction to Electric Heating & Welding.	

TEXT BOOK

- [1]. Edward Hughes (revised by Ian McKenzie Smith). *"Electrical & Electronics Technology"*
Pearson Education Limited. Indian Reprint 2002.

REFERENCE BOOKS

- [2]. H.Cotton, *"Advanced Electrical Technology"*, CBS Publishers, New Delhi, 7th Edition.
[3]. C.L. Wadhwa, *"Electrical Engineering"*, New Age International Publishers.
[4]. D.Kulshreshtha, *"Basic Electrical Engineering"* TMH S. Parker Smith
[5] Problems in Electrical Engineering- : S. Parker Smith
[6] Electrical Technology (Vol-I & II)- : B.L.Theraja
[7] ABC in Electrical Engineering- : Jain & Jain
[8] Basic Electrical engineering- : Schaum Series

Signature of the Faculty

Signature of the H.O.D