

VEER SURENDRASAI UNIVERSITY OF TECHNOLOGY, ODISHA

Semester: 8th
Session: May 2017

LESSON PLAN

Subject: High Voltage Engineering
Theory

Branch/Course: **ELECTRICAL ENGINEERING(B.Tech)** Name of the Faculty: Mrs Debidasi Mohanty

Period	Module/Number	Topic to be covered	Remarks/Sign of Faculty
1		Scope of High Voltage Engineering	
2	1	Conduction and breakdown in gases	
3	1	Ionization processes: primary and secondary ionization	
4	1	Townsend current growth equation.	
5	1	Current growth in the presence of secondary processes	
6	1	Townsend's criterion for breakdown of gaseous dielectric	
7	1	Experimental determination of ionization coefficients	
8	1	Breakdown in electronegative gases	
9	1	Time lags for breakdown, streamer theory of breakdown in gases,	
10	1	Paschen's law, Breakdown in non-uniform field and corona discharges, Post breakdown phenomena and applications	
11	1	Practical considerations in using gases for insulation purposes.	
12	1	Assignment-1, MCQ discussion.	
13	2	Introduction to Conduction and breakdown in liquid dielectrics	
14	2	Pure liquids and commercial liquids	
15	2	Conduction and breakdown in pure liquids.	
16	2	Breakdown in solid dielectrics: Introduction	
17	2	Intrinsic breakdown, electrochemical breakdown	
18	2	Electromechanical breakdown, Thermal breakdown.	
19	2	Breakdown of solid dielectrics in practice,	
20	2	Assignment-2, MCQ discussion	
21	2	Requirement for generation of high voltage and currents.	
22	2	Generation of high D.C. voltages, Voltage Doubler, Cockroft Walton Voltage Multiplier, Van de Graaff Generator	
23	3	Generation of high alternating voltages, Tesla Coil, Cascade Transformer	
24	3	Generation of Impulse voltages.. Marx Generator, Wave shaping Circuit	
25	3	Tripping and control of impulse generators.	
26	3	Generation of Impulse currents	
27	3	Measurements of high DC voltages and currents:	
28	3	Sphere gap as a measuring device	
29	3	Measurement of high A.C. and impulse voltages.	
30	3	Peak Reading AC Voltmeter, Measurement of high D.C. A.C. and impulse currents,	
31	3	Cathode ray oscillographs for impulse voltages and currents measurements	
32	3	Assignment-3, MCQ discussion	
33	4	Non-destructive testing of materials and electrical apparatus	
34	4	Measurement of D.C. resistivity. Measurement of dielectric constant and loss factor. Partial discharge measurements	
35	4	Testing of insulators and bushings	
36	4	Testing of isolators and circuit breakers, cables.	
37	4	Testing of transformers, surge diverter	
38	4	Radio Interference measurements.	
39		Discussion of Last two years end Semester Questions	
40		MCQ Discussion	