Department of Electrical and Electronics Engineering

Lesson Plan & Work-done Diary for AY: 2025-26, ODD Semester

Course with Code: Switchgear and Protection _BEE701				Faculty: Dr.Praveen Kumar M			Semester & Section: 7th	
Class No.	Date planned (DD/MM)	Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered	TLP Executed	Remarks if any deviation
MODULE-1								
1		Course Awareness, Introduction to Power System Protection: Need for protective schemes, Nature and Cause of Faults, Types of Fault, Effects of Faults, Fault Statistics	ICT+ Chalk & Talk					
2		Zones of Protection, Primary and Backup Protection, Essential Qualities of Protection	Chalk & Talk					
3		Performance of Protective Relaying, Classification of Protective Relays	ICT+ Chalk & Talk					
4		Automatic Reclosing	Chalk & Talk					
5		Current Transformers for protection	Chalk & Talk					
6		Voltage Transformers for Protection	Chalk & Talk					
7		Relay Construction and Operating Principles: Introduction, Electromechanical Relays, Static Relays Merits and Demerits of Static Relays	ICT+ Chalk & Talk					
8		Numerical Relays, Comparison between Electromechanical Relays and Numerical Relays.	Chalk & Talk					

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MODULE-2								
9		Overcurrent Protection: Introduction, Time current Characteristics, Current Setting, Time Setting	ICT+ Chalk & Talk					
10		Overcurrent Protective Schemes, Reverse Power or Directional Relay	ICT+ Chalk & Talk					
11		Protection of Parallel Feeders, Protection of Ring Mains	Chalk & Talk					
12		Earth Fault and Phase Fault Protection, Combined Earth Fault and Phase Fault Protective Scheme	Chalk & Talk					
13		Phase Fault Protective Scheme	Chalk & Talk					
14		Directional Earth Fault Relay	ICT+ Chalk & Talk					
15		Static Overcurrent Relays, Numerical Overcurrent Relays	ICT+ Chalk & Talk					
16		**Microprocessor -based Protective Relays:** Introduction, Overcurrent relays, Impedance relay	ICT+ Chalk & Talk					

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MODULE-3								
17		Pilot Relaying Schemes: Introduction, Wire Pilot Protection, Carrier Current Protection	ICT+ Chalk & Talk					
18		Differential Protection: Introduction, Simple Differential Protection, Percentage or Biased Differential Relay	ICT+ Chalk & Talk					
19		Differential Protection of 3 Phase Circuits, Balanced (Opposed) Voltage Differential Protection	Chalk & Talk					
20		**Rotating Machines Protection:** Introduction, Protection of Generators	ICT+ Chalk & Talk					
21		Protection of Generators Continued	Chalk & Talk					
22		Transformer Protection	ICT+ Chalk & Talk					
23		Transformer Protection Continued	Chalk & Talk					
24		Buszone Protection, Frame Leakage Protection	Chalk & Talk					

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MODULE-4								
25		Circuit Breakers: Introduction, Fault Clearing Time of a Circuit Breaker, Arc Voltage, Arc Interruption	Chalk & Talk					
26		Restriking Voltage and Recovery Voltage	Chalk & Talk					
27		Current Chopping, Interruption of Capacitive Current	Chalk & Talk					
28		Classification of Circuit Breakers, Air Break Circuit Breakers, Oil Circuit Breakers	ICT+ Chalk & Talk					
29		Air Blast Circuit Breakers, SF6 Circuit Breakers	ICT+ Chalk & Talk					
30		Vacuum Circuit Breakers High Voltage Direct Current Circuit Breakers	Chalk & Talk					
31		Rating of Circuit Breakers	ICT+ Chalk & Talk					
32		Testing of Circuit Breakers	ICT+ Chalk & Talk					

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MODULE-5								
33		Fuses: Introductions, Definitions, Fuse Characteristics, Types of Fuses	Chalk & Talk					
34		Applications of HRC Fuses, Selection of Fuses	Chalk & Talk					
35		Causes of Overvoltages, Lightning phenomena, Wave Shape of Voltage due to Lightning, Over Voltage due to Lightning	Chalk & Talk					
36		Klydonograph and Magnetic Link	Chalk & Talk					
37		Protection of Transmission Lines against Direct Lightning Strokes	ICT+ Chalk & Talk					
38		Protection of Stations and Sub Stations from Direct Strokes Protection against Travelling Waves	ICT+ Chalk & Talk					
39		Insulation Coordination, Basic Impulse Insulation Level	ICT+ Chalk & Talk					
40		Gas insulated substation/switchgear	ICT+ Chalk & Talk					

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Lab Session No.	**Date planned (DD/MM)**	**Topics to be covered**	**TLP Planned**	**Class No.**	**Date planned (DD/MM)**	Topics to be covered	**TLP Planned**	**Class No.**
	Lab Sessions							
1		IDMT Characteristics of Over current Relay (Electromechanical type)						
2		IDMT Characteristics of Over Voltage Relay (Electromechanical type).	Practical Session					
3		Operating Characteristics of Microprocessor-Based (Numeric) Overcurrent Relay	Practical Session					
4		Operating Characteristics of Microprocessor-Based (Numeric) Over voltage Relay	Practical Session					
5		Operation of Negative Sequence Relay.	Practical Session					
6		Fuse Characteristics	Practical Session					
7		Measurement of Breakdown Strength of Transformer Oil as per IS 1876 :2005	Practical Session					
8		Field Mapping using Electrolytic Tank for any one of the following Models: Capacitor/ Cable	Practical Session					
9		Motor Protection against Faults	Practical Session					
10		Generation Protection: Merz Price Scheme.	Practical Session					

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	Activity	Planned	Actual	Remarks
1	Theory Classes	40		
2	Assignments/Quizzes/ Self study	3		
3	Tutorials/ Extra classes			
4	Internal Assessments	3		
5	ICT based Teaching (% of usage in Curriculum)	50%		
6	Laboratory Session	10 Practical Sessions/ batch		
Planning			**Execution**	
Faculty Signature:			**Faculty Signature:**	
HoD Signature:			**HoD Signature:**	