

C. V. RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN Session (2026-2027)

Discipline: ELECTRICAL ENGINEERING	Semester: 5 TH Semester, Winter/2026	Name of the Faculty: SUBHANKAR DASH ASST.PROF Email ID: subhankar.dash@cvrp.edu.in
Subject Name with code: SWITCHGEAR AND PROTECTION (EEPE303)	No. of Days/week: 03 Total No. of Class (Required): 45	Start Date: 01.07.2026 End Date: 05.11.2026

Week	Class Day	Brief description of the Topic/Chapter to be taught
1st	1st	Unit-I: Basics of Protection – Necessity and Functions of Protective System
	2nd	Normal and Abnormal Conditions in Power System
	3rd	Types of Faults and Their Causes
2nd	1st	Protection Zones and Backup Protection
	2nd	Short Circuit Fault Calculations in Generator–Transformer System
	3rd	Need of Current Limiting Reactors and Their Arrangements
3rd	1st	Unit-II: Interruption Devices – Isolators: Vertical Break, Horizontal Break and Pantograph Type
	2nd	HRC Fuses – Construction, Working, Characteristics and Applications
	3rd	Arc Formation Process and Methods of Arc Extinction
4th	1st	Arc Voltage, Recovery Voltage and Restriking Voltage
	2nd	HT Circuit Breakers – SF ₆ and Vacuum Circuit Breakers
	3rd	LT Circuit Breakers – ACB, MCB, MCCB and ELCB
5th	1st	Working, Construction and Applications of LT Circuit Breakers
	2nd	Selection of LT and HT Circuit Breakers (Ratings)
	3rd	Selection of MCCB for Motors and Gas Insulated Switchgear (GIS)
6th	1st	Unit-III: Protective Relays – Fundamental Quality Requirements

	2nd	Relay Terminology – Pick-up, Reset, Plug Setting and Time Multiplier
	3rd	Electromagnetic Relays – Construction, Principle and Operation
7th	1st	Static Relay – Block Diagram and Working Principle
	2nd	Overcurrent Relay – Time Current Characteristics
	3rd	Microprocessor-Based Overcurrent Relay
8th	1st	Distance Relay – Principle and Definite Distance Relays
	2nd	Directional Relay – Need and Operation
	3rd	Current and Voltage Differential Relay
9th	1st	Question Discussion–I
	2nd	Unit-IV: Protection of Alternator and Transformer – Alternator Faults
	3rd	Differential, Overcurrent, Earth Fault, Overheating and Field Failure Protection
10th	1st	Reverse Power Protection
	2nd	Transformer Faults and Differential Protection
	3rd	Overcurrent, Earth Fault and Overheating Protection
11th	1st	Limitations of Differential Protection
	2nd	Buchholz Relay – Construction and Operation
	3rd	Buchholz Relay – Merits and Demerits
12th	1st	Unit-V: Protection of Motors – Bus-bar and Transmission Line Motor Faults
	2nd	Short Circuit Protection, Overload Protection and Single Phasing Preventer
	3rd	Bus-bar and Transmission Line Faults
13th	1st	Faults on Bus-bars and Transmission Lines
	2nd	Bus-bar Protection – Differential and Fault Bus Protection
	3rd	Transmission Line Protection – Overcurrent Protection
14th	1st	Distance Protection and Pilot Wire Protection
	2nd	Numerical Problems and Case Studies on Protection Schemes
	3rd	Revision–I (Units I, II & III)
15th	1st	Revision–II (Units IV & V)
	2nd	Question Discussion–II
	3rd	Final Doubt Clearing and Important Examination Topics

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Signature of the Faculty

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