

LESSON PLAN

Program Name	Electrical Engineering
Course Title	Switchgear and Protection
Course Code	EEPC301
Semester	5 th.
Course Teacher Name	Er. Vivek Sheel Verma

Evaluation Scheme

Sr. No.	Subject Code	Subject	Study Scheme			Total Study Hours	Credits	Evaluation Scheme								Total Marks
			Th	Pr	DCS			Internal Assessment			External Assessment					
								Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	EEPC301	SG & P	3	-	2	5	3	40	-	40	60	3	-	-	60	100

References Books/ Study Material:

1. Mehta V. K ;Rohit Mehta, Principles of Power System, S .Chand and Co., New Delhi.,
2. Rao.Sunil S., Switchgear and Protection, Khanna Publishers, New Delhi
- 3.Singh, R. P., Switchgear and Power System Protection, PHI Learning, New Delhi
4. Gupta. J. B.. Switchgear and Protection, S. K. Kataria and Sons, New Delhi

Course Outcomes (Cos)

CO-1	Identify various types of faults in power system.
CO-2	Select suitable switchgears for different applications.
CO-3	Test the performance of different protective relays
CO- 4	Maintain protection systems of alternators and transformers.
CO- 5	Maintain protection schemes for motors and transmission lines.
CO- 6	Maintain protection schemes for power system against over voltages.

Teaching Plan

Unit No	No. of Lect. Planed	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
1	1	Basics of Protection Necessity.functions of protective system	07-08-2026		
	2	Necessity.functions of protective system	10-08-2026		
	3	Normal and abnormal conditions	11-08-2026		
	4	Types of faults and their causes.	12-08-2026		
	5	Protection zones and backup protection	13-08-2026		
	6	Revision	14-08-2026		
2	7	Circuit Interruption Device	17-08-2026		
	8	Isolators - Vertical break,	18-08-2026		
	9	Horizontal break and Pantograph type	19-08-2026		
	10	HRC fuses – Construction, working,	20-08-2026		
	11	characteristics and applications.	21-08-2026		
	12	Circuit Breakers	24-08-2026		
	13	Arc formation process, methods of arc extinction (High resistance and Low resistance),	26-08-2026		
	14	Arc voltage, Recovery voltage	27-08-2026		

	15	Re-striking voltage, RRRV	28-08-2026		
	16	HT circuit breakers: Sulphur-hexa Fluoride (SF6)	30-08-2026		
	17	Vacuum circuit breaker - (Working, construction, specifications and applications).	01-09-2026		
	18	L.T. circuit breaker: Air circuit breakers (ACB),	02-09-2026		
	19	Miniature circuit breakers (MCB), Moulded case circuit breakers (MCCB)	03-09-2026		
	20	Earth leakage circuit breaker (ELCB)) - Working and applications	07-09-2026		
	21	Revision	08-09-2026		
	22	. Brief introduction to gas insulated switchgear.	09-09-2026		
	23	Protective Relay	10-09-2026		
	24	Fundamental quality requirements: Selectivity, Speed, Sensitivity, Reliability, Simplicity, Economy.	11-09-2026		
3	25	CT-1	14-09-2026		
	26	Basic relay terminology - Protective relay, Relay time, Pick up, Reset current, current setting, Plug setting multiplier, Time setting multiplier.	15-09-2026		
	27	Numericals	16-09-2026		
	28	Protective relays: Classification, principle of working, construction and operation of Electromagnetic attraction (Attracted armature type	17-09-2026		
	29	Solenoid type relay	18-09-2026		
	30	Watt-hour meter type only) relays.	21-09-2026		
	31	Electromagnetic Induction relays: Over current relays:	22-09-2026		
	32	-do-	23-09-2026		
	33	Block diagram, working of Distance relaying	24-09-2026		
	34	- Principle, operation of Definite distance relays.	25-09-2026		
	35	Revision	28-09-2026		
	36	Directional relay: Need and operation.	29-09-2026		
	37	Operation of current and voltage differential relay.	30-09-2026		
	38	Brief introduction to Thermal Relay.	01-10-2026		
	39	Brief introduction to Static relay	05-10-2026		
	40	Microprocessor based relays and their applications.	06-10-2026		
	41	Revision	07-10-2026		
	42	-DO-	08-10-2026		
	43	Protection of Alternator and Transformer Alternator Protection	09-10-2026		
4	44	Faults, Differential protection over current, earth fault, overheating and field failure protection.	12-10-2026		
	45	Reverse power protection	13-10-2026		
	46	Transformer Protection Different Faults (brief introduction)	14-10-2026		

	47	Differential, over current	15-10-2026		
	48	earth fault, over heating protection, Limitations of differential protection.	16-10-2026		
	49	CT-2	19-10-2026		
	50	Buchholz relay: Construction, operation, merits and demerits.	21-10-2026		
	51	Revision	22-10-2026		
	52	Revision	23-10-2026		
5	53	Protection of Motors, Bus-bar and Transmission Line Motor	27-10-2026		
	54	Faults, Short circuit protection,	28-10-2026		
	55	Overload protection, Single phase preventer.	29-10-2026		
	56	Faults on Bus bar	30-10-2026		
	57	-DO-	10-11-2026		
	58	Faults on Transmission lines	11-11-2026		
	59	-DO-	12-11-2026		
	60	Bus bar protection	13-11-2026		
	61	Differential and Fault bus protection	16-11-2026		
	62	HT	17-11-2026		
	63	Transmission line protection schemes	18-11-2026		
	64	Overcurrent relay	19-11-2026		
	65	Distance relay	20-11-2026		
	66	Pilot Wire Protection	23-11-2026		
	67	Bus bar protection:	25-11-2026		
	68	Revision of Chapter 1	26-11-2026		
	69	Revision of Chapter 2	27-11-2026		
	70	Revision of Chapter 3	28-11-2026		
	71	Revision of Chapter 4	25-11-2026		

Home Assignments

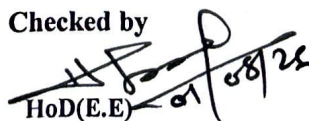
Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	1,2	08-09-2026		
2	3,4	23-10-2026		

Class /House Test

Name of Test	Syllabus Covered in Tests (Unit/Chapter Wise)	Proposed date	Actual Date	Remarks
Class Test-I	12-09-2026	As per HPTSB Academic Calendar Schedule		
Class Test-II	16-10-2026			
House Test	02-11-2026			


 Prepared by
 (Vineet Sheel Verma)

Recommended for approval

Checked by

 HoD(E.E)

Approved by

 Principal
 ABVGIT Pragatinagar

