

LESSON PLAN

(Academic Session: August- December, 2026)



Program Name	Electrical Engineering
Course Title	Introduction to Electrical Generation System
Course Code	EEPC-201
Semester	3 rd
Course Teacher Name	Ved Prakash Verma
Evaluation Scheme	

S N	Subject Code	Subject	Study Scheme			Total Study Hours	Cre dits	Evaluation Scheme								Total Marks
								Internal Assessment			External Assessment					
			Th	Pr	DCS			Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	EEPC-201	IEGS	3	-	1	4	3	40	-	40	60	3	-	-	60	100

References Books/ Study Material

1. P. K. Nag, *Power Plant Engineering*, McGraw Hill Education – Units I, II & V (Conventional, Hydro Power Plants, Power Plant Economics & Grid).
2. Gilbert M. Masters, *Renewable and Efficient Electric Power Systems*, John Wiley & Sons – Units III & IV (Solar, Wind, Biomass, Micro-Hydro & Grid Integration).
3. Godfrey Boyle (Ed.), *Renewable Energy: Power for a Sustainable Future*, Oxford University Press – Units III & IV (Renewable Energy Technologies and Applications).
4. B. R. Gupta, *Generation of Electrical Energy*, S. Chand Publishing – Units I, II & V (Power Generation, Thermal, Hydro, Nuclear & Power Plant Performance)

Course Outcomes (Cos)

COs	Course Outcome	Level
1	Describe the working principles of conventional power plants and their components	L2: Understand
2	Describe the construction and operation of renewable energy power plants	L2: Understand
3	Compare different power generation systems and their applications.	L4: Analyze
4	Calculate power plant performance and load factors.	L3: Apply
5	Analyze power system operation and grid disturbances	L4: Analyze

Teaching/Lecture Plan

Unit No	No. of Lect. Planed	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
I	1	Basic Principles of power generation	03.08.2026		
	2	Thermal power Plants in India	04.08.2026		
	3	Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Coal, Gas/diesel, nuclear fuels-fusion and fission action	05.08.2026		
	4	Layout and working of a typical Coal-based thermal power plant	07.08.2026		
	5	Boiler Types: Coal fired boilers, fire tube and water tube	10.08.2026		
	6	Layout & working of Gas-based Power Plant	11.08.2026		
	7	Layout & working of Diesel Based Power Plant	12.08.2026		
	8	Gas/diesel based combustion engines	14.08.2026		
	9	Layout & Working of Nuclear Power Plant	17.08.2026		

	10	Types of nuclear reactors	18.08.2026		
	11	Disposal of nuclear waste and nuclear shielding	19.08.2026		
II	12	Energy conversion process of hydro power plant	21.08.2026		
	13	Potential locations of micro-hydro power plants in Himachal	24.08.2026		
	14	Locations of different types of large and micro-hydro power plants in Himachal.	25.08.2026		
	15	Layout & Working of Hydro-Power Plant	26.08.2026		
	16	Classification of HPP According to heads: High, medium and low head	28.08.2026		
	17	Construction & Working of High head Pelton turbine	01.09.2026		
	18	Construction & Working of High head Medium head Francis turbine	02.09.2026		
	19	Construction & Working of Low head Kaplan turbine.	05.09.2026		
	20	Different types of micro- hydro turbines for different heads: Pelton, Francis and Kaplan turbines	07.09.2026		
	21	-do-	09.09.2026		
	22	Safe Practices for hydro power plants	11.09.2026		
III	23	Solar Map of India: Global solar power radiation	14.09.2026		
	24	Concentrated Solar Power (CSP) plants	15.09.2026		
	25	Construction and working of Power Tower and Parabolic Trough	16.09.2026		
	26	Construction and working of Parabolic Dish & Fresnel Reflectors	18.09.2026		
	27	Solar Photovoltaic (PV) power plant: layout, construction, working	21.09.2026		
	28	-do-	22.09.2026		
	29	Layout of a Bio-chemical based (e.g. biogas) power plant	23.09.2026		
	30	Layout of a Thermo-chemical based (e.g. Municipal waste) power plant	25.09.2026		
	31	Layout of an Agro-chemical based (e.g. bio-diesel) power plant	28.09.2026		
	32	Features of the solid, liquid and gas biomasses as fuel for biomass power plant.	29.09.2026		
IV	33	Wind Map of India: Wind power density in watts per square.	30.09.2026		
	34	Layout of Horizontal axis large wind power plant: Geared wind power plant	05.10.2026		
	35	Direct-drive wind power plant.	06.09.2026		
	36	Salient Features of electric generators used in large wind power plants: Constant Speed Electric Generators: Squirrel Cage Induction Generators (SCIG)	07.10.2026		
	37	-do-	09.10.2026		
	38	Salient Features of electric generators used in large wind power plants: Constant Speed Electric Generators: Wound Rotor Induction Generator (WRIG) Variable Speed Electric Generators:	12.10.2026		
	39	Salient Features of electric generators used in large wind power plants: Doubly-fed	13.10.2026		

		induction generator (DFIG) and wound rotor synchronous generator (WRSG)			
	40	Salient Features of electric generators used in large wind power plants: permanent magnet synchronous generator (PMSG)	16.10.2026		
V	41	Related terms: connected load, firm power, cold reserve, hot reserve, spinning reserve.	19.10.2026		
	42	Base load and peak load plants;	21.10.2026		
	43	Load curve, load duration curve, integrated duration curve Cost of generation:	23.10.2026		
	44	Average demand, maximum demand, demand factor, plant capacity factor, plant use factor,.	27.10.2026		
	45	diversity factor, load factor and plant load factor	28.10.2026		
	46	Numerical based on these factors	30.10.2026		
	47	Choice of size and number of generator units, combined operation of power station.	02.11.2026		
	48	Causes of Grid failure, black-out and brown-out	03.11.2026		
	49	Impact of Grid failure, black-out and brown-out	04.11.2026		
	50	Reasons of Grid system fault: State grid, national grid	06.11.2026		
	51	Black-out; sample blackouts at national and international level	16.11.2026		
	52	Revision	17.11.2026		
	53	-do-	18.11.2026		
	54	-do-	20.11.2026		
	55	-do-	23.11.2026		
	56	-do-	25.11.2026		
	57	-do-	27.11.2026		

Note: The planned lectures do not include 2 days for the Class Test, 3 days for House Tests, and 3 days for the Diwali vacation.

Home Assignments

Assignment No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-I,II	29.08.2026		
2	Unit-II, IV & V	12.10.2026		

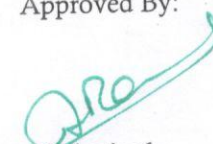
Class /House Test

Name of Test	Syllabus Covered in Tests (Unit/Chapter Wise)	Proposed date	Actual Date	Remarks
Class Test-I	Unit-1&2	As per HPTSB Academic Calendar Schedule		
Class Test-II	Unit-3& 4			
House Test	80% of whole syllabus			

Signature of Course Teacher with Name


Ved Prakash
HOD(Elect.Engg)

Approved By:


Principal
ABVGIET, P/Nagar