

22EEHO105	POWER PLANT ENGINEERING		SEMESTER			
<b>PREREQUISITES</b>		<b>CATEGORY</b>	<b>PEC</b>	<b>Credit</b>		<b>3</b>
Power Systems		<b>Hours/Week</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TH</b>
			<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>Course Objectives:</b>						
The objective of this course is to familiarize with operation of various power plants						
<b>UNIT I</b>	<b>THERMAL POWER PLANT</b>		<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Thermal Stations- layout- main components- boiler- economizer- air preheater- super heater- reheater- condenser- feed heater- cooling powers- FD and ID fans- Coal handling plant-water treatment plant- Ash handling plant- Types of boilers and their characteristics- Steam turbines- and their characteristics- governing system for thermal stations						
<b>UNIT II</b>	<b>HYDRO POWER PLANT</b>		<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Hydro Electric Stations- Selection of site- layout- classification of hydro plants- general arrangement and operation of a hydro-plant- governing system for hydel plant- types of turbines-pumped storage plants.						
<b>UNIT III</b>	<b>NUCLEAR POWER PLANT</b>		<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Nuclear power plants - Principles of nuclear energy -Working of Nuclear Reactors : Boiling Water Reactor (BWR), Pressurized Water Reactor (PWR), CANada Deuterium- Uranium reactor (CANDU), Breeder, Gas Cooled and Liquid Metal Cooled Reactors - location - advantages and disadvantages of nuclear power plants - Reactor control						
<b>UNIT IV</b>	<b>POWER FROM RENEWABLE ENERGY</b>		<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Principle, Construction and working of Solar Thermal, Solar Photo Voltaic (SPV), Wind, Tidal, Geo Thermal, Biogas and Fuel Cell power systems.						
<b>UNIT V</b>	<b>POWER PLANT ECONOMICS AND ENVIRONMENTAL HAZARDS</b>		<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Economics of power generation -Capital & Operating Cost of different power plants. Environmental aspect of power generation- Comparison of site selection criteria, relative merits & demerits of different plants - Pollution control technologies including Waste Disposal Options for Coal and Nuclear Power Plants- safety measures for Nuclear Power plants.						
<b>Total (45L) = 45 Periods</b>						

<b>Text Books:</b>	
1.	Nag. P.K., Power Plant Engineering, 2nd ed., Tata McGraw-Hill, 2002
2.	Domkundwar, S., Power Plant Engineering, Dhanpat Rai & Sons, 1988
3.	El-Wakil, M.M., "Power plant Technology", McGraw-Hill Book Co, 2002
<b>Reference Books:</b>	
1.	Deshpande.M.V, "Elements of Electrical Power station Design", Pitman, New Delhi,Tata McGraw Hill, 2008.
2.	Soni Gupta, Bhatnagar and Chakrabarti, "A text book on Power Systems Engineering", Dhanpat Rai and Sons, New Delhi, 1997.

<b>Course Outcomes:</b>		<b>Bloom's Taxonomy Mapped</b>
Upon completion of this course, the students will be able to:		
CO1	: Recall the construction and principle of working for different power plants.	L1: Remembering
CO2	: Identify the site requirements and component requirements.	L2: Understanding
CO3	: Analyze the concept governors and their control of power plant.	L4: Analysing
CO4	: Assess the power plant and its suitability for the environment.	L3: Applying
CO5	: Interpret the economics involved in design of power plant.	L2: Understanding

<b>COURSE ARTICULATION MATRIX</b>															
<b>COs/ POs</b>	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO 7</b>	<b>PO 8</b>	<b>PO 9</b>	<b>PO 10</b>	<b>PO 11</b>	<b>PO 12</b>	<b>PS O1</b>	<b>PS O2</b>	<b>PS O3</b>
CO1	3	3	2	2	2	1	1	1	1	1	1	1	3	1	1
CO2	1	2	2	2	2	1	1					1	2	1	1
CO3	1	3	2	2	2	1	1					1	2	1	1
CO4	1	1	3	3	2	2	1		1	1		1	2	2	1
CO5	1	1	3	2	2	2	1	1	1	1	1	1	2	2	1
<b>Avg</b>	1.4	2	2.4	2.2	2	1.4	1	1	1	1	1	1	2	1.4	1
3/2/1-indicates strength of correlation (3- High, 2-Medium, 1- Low)															