

**Lesson Plan**

Name of the Faculty : Mr. Pardeep  
Discipline : Mechanical Engineering  
Semester : 7<sup>th</sup>  
Subject : Power Plant Engineering (ME- 407-F)  
Lesson Plan Duration : 15 Weeks (from Aug., 2020 to Nov., 2020)  
\*\* Work Load (Lecture) per week (in hours): Lectures-02, Practicals-00

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Introduction: Energy resources and their availability		No Practicals
	2 <sup>nd</sup>	types of power plants, selection of the plants,		
2 <sup>nd</sup>	3 <sup>rd</sup>	review of basic thermodynamic cycles used in power plants		
	4 <sup>th</sup>	Hydro Electric Power Plants: Rainfall and run-off measurements		
3 <sup>rd</sup>	5 <sup>th</sup>	plotting of various curves for estimating stream flow and size of reservoir		

	6 <sup>th</sup>	power plants design, construction and operation of different components of hydro-electric power plants		
4 <sup>th</sup>	7 <sup>th</sup>	site selection, comparison with other types of power plants		
	8 <sup>th</sup>	super critical pressure steam stations, site selection, coal storage, preparation, coal handling systems,		
5 <sup>th</sup>	9 <sup>th</sup>	feeding and burning of pulverized fuel, ash handling systems, dust collection-mechanical dust collector and electrostatic precipitator		
	10 <sup>th</sup>	Combined Cycles: Constant pressure gas turbine power plants,		
6 <sup>th</sup>	11 <sup>th</sup>	Arrangements of combined plants (steam & gas turbine power plants),		
	12 <sup>th</sup>	re-powering systems with gas production from coal, using PFBC systems, with organic fluids,		
7 <sup>th</sup>	13 <sup>th</sup>	parameters affecting thermodynamic efficiency of combined cycles. Problems		
	14 <sup>th</sup>	Nuclear Power Plants: Principles of nuclear energy, basic nuclear reactions		

8 <sup>th</sup>	15 <sup>th</sup>	nuclear reactors-PWR, BWR, CANDU		
	16 <sup>th</sup>	Sodium graphite, fast breeder, homogeneous; gas cooled		
9 <sup>th</sup>	17 <sup>th</sup>	Advantages and limitations, nuclear power station, waste disposal.		
	18 <sup>th</sup>	tariffs methods of electrical energy		
10 <sup>th</sup>	19 <sup>th</sup>	performance & operating characteristics of power plants-incremental rate theory		
	20 <sup>th</sup>	Input output curves, efficiency, heat rate, economic load sharing, Problems.		
11 <sup>th</sup>	21 <sup>th</sup>	Non-Conventional Power Generation: Solar radiation estimation		
	22 <sup>nd</sup>	solar energy collectors, low, medium & high temperature power plants		
12 <sup>th</sup>	23 <sup>nd</sup>	OTEC, wind power plants, tidal power plants, geothermal power plants		
	24 <sup>nd</sup>	Direct Energy Conversion Systems: Fuel cell,		
13 <sup>th</sup>	25 <sup>nd</sup>	MHD power generation-principle, open & closed cycles systems		
	26 <sup>nd</sup>	Thermoelectric power generation, thermionic power generation		
14 <sup>th</sup>	27 <sup>nd</sup>	Revision		
	28 <sup>nd</sup>	Revision		
15 <sup>th</sup>	29 <sup>nd</sup>	Revision		
	30 <sup>nd</sup>	Revision		