

Lesson Plan

Name of Institute	: Ambala College of Engineering and Applied Research
Name of the Faculty member	: Er. Ajay Kumar
Discipline	: Mechanical Engineering
Semester	: 8 th
Subject	: Power Plant Engineering
Lesson Plan Duration	: 15 weeks (from February 2021 to May 2021)
Work Load	: L-4 T-0

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1 st	Conventional and non-conventional sources of energy
	2 nd	Geothermal power plants, Tidal power plants,
	3 rd	Windmills, Solar power plants, Solar thermal,
	4 th	Solar Photovoltaic: Direct energy conversion systems,
2 nd	1 st	Energy sources in India, Recent developments in power plants.
	2 nd	Hydrology, Rainfall, runoff, hydrographs, flow duration curves,
	3 rd	Site selection for hydro power plants, Classification of hydro power plants,
	4 th	Storage type hydro power plant and its operation, Estimation of power availability,
3 rd	1 st	Selection of water turbines, Combination of hydro power plants with steam plants,
	2 nd	Advantages and disadvantages of hydro power plants.
	3 rd	Numerical Problems
	4 th	Numerical Problems & Assignment -1
4 th	1 st	The Carnot, The ideal Rankine cycle
	2 nd	The Carnot, The ideal Rankine cycle with Numerical problem
	3 rd	Externally irreversible Rankine cycle, Superheat,
	4 th	Reheat, Regeneration, internally irreversible Rankine cycle, open feed water heaters, closed type feed water heaters,1
5 th	1 st	Typical layout of steam power plant, Efficiency and heat rate.
	2 nd	Introduction to steam generators, Steam generator control
	3 rd	Fluidized bed boilers, Modern high pressure boilers
	4 th	Supercritical boilers, Ultra supercritical technology, Advanced Ultra supercritical technology
6 th	1 st	Flue gas de-nitrification and desulphurization, fabric filters and baghouses
	2 nd	Feed water treatment, Deaeration, Internal treatment,
	3 rd	Boiler blowdown, steam purity
	4 th	Coal as fuel, classification of coals,
7 th	1 st	Analysis of coal
	2 nd	Coal handling, Dead and live storage,
	3 rd	Combustion of coal, combustion equipment for coal burning
	4 th	Mechanical stokers, pulverized fuels and burners, Cyclone furnace

8 th	1 st	Low NO _x burners, Ash handling and disposal, Dust collectors.
	2 nd	Heat balance sheet for thermal power plants, environmental aspects of power generations.
	3 rd	Applications of diesel engines in power field
	4 th	Advantages and disadvantages of diesel plants over thermal power plants
9 th	1 st	Schematic arrangement of diesel engine power plant, Different systems of diesel power plant
	2 nd	Performance Characteristics, Supercharging, Layout of Diesel Engine power plant.
	3 rd	Gas turbine cycles, the ideal Brayton cycle, the non-ideal Brayton cycle,e
	4 th	Modification of the Brayton cycle, Gas turbine characteristics,
10 th	1 st	Combined Cycles: combined cycles with heat recovery boiler, The STAG combined-cycle power plant,
	2 nd	Combined cycles with multi-pressure steam, combined cycle for nuclear power plants.
	3 rd	Numerical problems on Gas Turbine
	4 th	Numerical problems on Gas Turbine
11 th	1 st	Basic theory and terminology, Nuclear fission and fusion processes, Fission chain reaction
	2 nd	Moderation, Fertile materials, Nuclear fuels
	3 rd	General components of nuclear reactor, Different types of reactors
	4 th	PWR, BWR, GCR
12 th	1 st	LMFBR, CANDU-PHW
	2 nd	India's nuclear power program
	3 rd	Disposal of nuclear waste and related issues
	4 th	Introduction to economics of power generation Different terms and definitions
13 th	1 st	Different terms and definitions
	2 nd	Cost analysis, Selection of power plant equipment
	3 rd	Factors affecting economics of generation and distribution of power
	4 th	Numerical Problems
14 th	1 st	Numerical Problems
	2 nd	Performance and operating characteristics of power plants
	3 rd	Calculation of power output;
	4 th	Numerical Problems
15 th	1 st	Economic load sharing, Tariff for electrical energy.
	2 nd	Numerical on power output, maximum efficiency
	3 rd	Numerical on power output
	4 th	Numerical Problems & Assignment -4

(Signature of the teacher concerned with date)