



Lesson planning for the semester started w. e. f. 01/01/2018

Name of the institute: JMIETI, Radaur

Name of Teacher with Designation: Deepak Ashri, AP

Department: Mechanical Engg.

Subject: Power Plant Engg. ME-404 N

Objective of the Course:

1. To introduce about the different sources of energy, hydrology & Hydro power generation.
2. To analyze the steam power cycles, steam generators, fuels & different handling systems in power plants.
3. To understand the concept of combined cycles of power generation & diesel engine power plants.
4. To know about the nuclear energy & the energy & economics of power generation.

Month	Class (ME)	Title	Test/ Assignment
January	L1	Conventional and non-conventional sources of energy	
January	L2	Geothermal power plants, Tidal power plants	
January	L3	Windmills, Solar power plants, solar thermal	
January	L4	Solar Photovoltaic: Direct energy conversion systems	
January	L5	Energy sources in India, Recent developments in power plants	
January	L6	Hydroelectric Power Plant: Hydrology, Rainfall, runoff, hydrographs	
January	L7	flow duration curves, Site selection for hydro power plants	Assignment1
January	L8	Classification of hydro power plants, Storage type hydro power plant and its operation	
January	L9	Estimation of power availability, Selection of water turbines	
January	L10	Combination of hydro power plants with steam plants	
January	L11	Advantages and disadvantages of hydro power plants	
January	L12	Analysis of Steam Cycle: The Carnot, The ideal Rankine cycle	Sessional1
February	L13	Externally irreversible Rankine cycle, Superheat	
February	L14	Reheat, Regeneration, internally irreversible Rankine cycle	
February	L15	open feed water heaters, closed type feed water heaters	
February	L16	Typical layout of steam power plant, Efficiency and heat rate	
February	L17	Steam Generators: Introduction to steam generators	Assignment 2
February	L18	Steam generator control, Fluidized bed boilers	
February	L19	Modern high pressure boilers, Supercritical boilers	
February	L20	Ultra supercritical technology, Advanced Ultra supercritical technology	
February	L21	Flue gas de-nitrification and desulphurization	

February	L22	Fabric filters and bag houses, feed water treatment	Sessional 2
February	L23	Deaeration, Internal treatment, boiler blow down, steam purity	
February	L24	Fuel and Combustion: Coal as fuel, classification of coals, analysis of coal	
February	L25	Coal handling, Dead and live storage, Combustion of coal	
February	L26	Combustion equipment for coal burning, mechanical stokers	
February	L27	pulverized fuels and burners, Cyclone furnace, Low NO _x burners	
March	L28	Ash handling and disposal, Dust collectors.	
March	L29	Heat balance sheet for thermal power plants, environmental aspects of power generations	
March	L30	Diesel Engine Power Plants: Applications of diesel engines in power field	
March	L31	Advantages and disadvantages of diesel plants over thermal power plants	Assignment 3
March	L32	Schematic arrangement of diesel engine power plant, Different systems of diesel power	
March	L33	Performance Characteristics, Supercharging, Layout of Diesel Engine power plant.	
March	L34	Gas Turbine and Combined Cycles: Gas turbine cycles, the ideal Brayton cycle	Sessional 3
March	L35	the non-ideal Brayton cycle, Modification of the Brayton cycle, Gas turbine characteristics	
March	L36	Combined Cycles: combined cycles with heat recovery boiler	
March	L37	The STAG combined-cycle power plant, combined cycles with multi-pressure steam	
April	L38	Combined cycle for nuclear power plants	
April	L39	Nuclear Power Plants: Basic theory and terminology, Nuclear fission and fusion processes,	
April	L40	Fission chain reaction, Moderation, Fertile materials, Nuclear fuels	
April	L41	General components of nuclear reactor, Different types of reactors: PWR, BWR, GCR, LMFBR, CANDU-PHW	
April	L42	India's nuclear power program, Disposal of nuclear waste and related issue	
April	L43	Economics of Power Generation: Introduction to economics of power generation	
April	L44	Performance and operating characteristics of power plants	

Outcome of Course:

1. **Student will be able to understand the fundamentals of power plant cycles & energy sources.**
2. **Student will be able to understand the basic cycles brayton cycles, rankine cycle for various thermodynamics process**

3. **Student will be able to understand the Nuclear energy & the economics of power generation.**
4. **Student will be able to understand the steam power cycles & steam generators.**

(Sign. of HOD)

(Sign. of Teacher Concerned with date)