



National Institute of Technology Meghalaya
An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Mechanical Engineering	Year of Regulation	2018
Department	Mechanical Engineering	Semester	V

Course Code	Course Name	Credit Structure			Marks Distribution					
		L	T	P	C	INT	MID	END	Total	
ME 371	Power Plant Engg. And Energy Audit.	2	0	0	2	50	50	100	200	
Course Objectives	To introduce present energy scenario, source and energy storage along with the economics of power plant.	Course Outcomes	CO1	Students will be able to explain and classify working principles of different plant components of steam turbine power plant						
			CO2	Students will be able to understand basic working principles and classify diesel and gas turbine plants. Compare with steam turbine power plant.						
	CO3		Students will be able to explain functioning of nuclear power plant and plant components. Recognize safety measures and disposal of nuclear waste.							
	CO4		Students will be able to explain working principles of power plants using renewable energy resources							
	CO5		Students will be able to demonstrate underlying pollution and its effect during power generation in power plants. Illustrate its control rules and measures.							
To explain the working principles, plant layout, plant components of different power plants like steam turbine, diesel, gas turbine, nuclear, hydro-electric, solar thermal, wind turbine and fuel cell plants.										
To explain the environment pollution during power generation and its control measures										

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	3	0	0	0	0	2	2	2	0	0	0	0	2	2	0
2	CO2	3	0	0	0	0	2	2	2	0	0	0	0	2	2	0
3	CO3	3	0	0	0	0	2	3	3	0	0	0	0	2	2	0
4	CO4	3	0	0	0	0	2	3	2	0	0	0	1	2	2	0
5	CO5	0	0	0	0	0	3	3	2	0	0	0	0	2	2	0

SYLLABUS

No.	Content	Hours	COs
I	Introduction Energy scenario, sources of energy, energy storage, pollution and its control.	02	All COs
II	Steam Turbine Power Plants Layout, site selection, major plant components: steam turbines, condensers, cooling tower, boilers, coal handling systems, feed water treatment. Operation and maintenance of steam power plant, safety measures.	06	CO1
III	Diesel and Gas Turbine Plant Layout, applications, types, plant components, gas turbine fuels, lubrication systems, operation and maintenance, comparison with steam turbine power plant, safety measures.	06	CO2
IV	Nuclear Power Plants Plant layout, applications, components of nuclear power plant, types of reactors, safety, disposal of nuclear waste, nuclear power plants in India and world.	05	CO3
V	Other Power Plants: Plant layout, site selection, principles of working and plant components of- hydro-electric, solar thermal & wind turbine power plant and fuel cell power systems.	05	CO4
VI	Pollution and its Control: Air and water pollution by power plants and its control, radioactive contamination, central and state pollution control rules and data, effects of pollutants on human health, acid rain	06	CO5
Total Hours		30	

Essential Readings

1. P.K. Nag, "Power Plant Engineering", 4th ed., 2017, McGraw Hill Education.
2. R.K. Hegde, "Power Plant Engineering", 1sted., 2015, Pearson Education India.
3. S. Domkundwar, S. C. Arora, A. V. Domkundwar, "Power Plant Engineering", 8thed., 2016, Dhanpat Rai and Co. (P) Limited.

Supplementary Readings

1. M. M. El Wakil, "Power plant technology", 1sted. 2010, McGraw Hill Education.