



**GOVERNMENT POLYTECHNIC,
NABARANGPUR**

**DEPARTMENT OF MECHANICAL
ENGINEERING**

Discipline: ELECTRICAL ENGG	Semester: 3 RD	Name of the Teaching Faculty :Er. Deepak Ranjan Pattnaik
Subject :ELEMENTS OF MECHANICAL ENGG(EME)	No. of days/per week class allotted: 4	Semester From date: 16.08.2024 To Date: 08.11.2024 No. of Weeks: 12
COURSE OUTCOMES	On completion of the course content the students will be able to: 1. Explain the principle of working of Boilers, Turbines and condensers. 2. State the different types of boilers and Turbines and their uses. 3. Explain the properties of steam. 4. State and explain thermodynamic laws.	
week	Class Day	Theory/Practical Topics
1 st	1 ST	Introduction to thermodynamics ,scope of thermodynamics ,aapproach of thermodynamics
	2 ND	Introduction to thermodynamics ,scope of thermodynamics ,aapproach of thermodynamics
	3 RD	First law of thermodynamics
	4 TH	First law of thermodynamics
2 nd	1 ST	Laws of Perfect gases (statement)
	2 ND	Laws of Perfect gases (statement)
	3 RD	Deteremination of relationship between specific heat at constant pressure (C_p) and specific heat at constant volume(C_v)
	4 TH	Deteremination of relationship between specific heat at constant pressure (C_p) and specific heat at constant volume(C_v)
3 rd	1 ST	Deteremination of relationship between specific heat at constant pressure (C_p) and specific heat at constant volume(C_v)
	2 ND	Properties of Steam
	3 RD	Use of steam tables for solving simple numericals
	4 TH	Use of steam tables for solving simple numericals
4 th	1 ST	Total heat of wet,dry and super heated steam
	2 ND	Total heat of wet,dry and super heated steam
	3 RD	Types of boilers Description of Cochran boiler , Babcock and wilcox boiler
	4 TH	Description of Boiler mountings and accessories
5 th	1 ST	Description of Boiler mountings and accessories
	2 ND	Description of Boiler mountings and accessories
	3 RD	Steam engine, classification
	4 TH	Principles of simple Steam engines Parts of steam engine

6 th	1 ST	Indicator diagram
	2 ND	Indicator diagram ,expression for mean effective pressure
	3 RD	Indicator power, brake power Indicated thermal efficiency ,brake thermal efficiency ,overall efficiency
	4 TH	Numericals
7 th	1 ST	Steam turbine &it's classification
	2 ND	Impulse turbine
	3 RD	Reaction turbine, Difference between impulse & reaction turbine
	4 TH	Condenser &it's classification
8 th	1 ST	Jet condenser & types
	2 ND	Surface condenser &types, Ic engine, classification

	3 RD	Ic engine, classification
	4 TH	Parts of ic engine ,terminology related ic engine 4-stroke,2-strokepetrolengine
9 th	1 ST	Difference between 4-stroke,2-stroke, petrol &diesel engine Properties of fluid
	2 ND	Properties of fluid
	3 RD	Pressure measuring instruments
	4 TH	Pressure measuring instruments Continuity equation,
10 th	1 ST	Types of fluid flow,
	2 ND	Energy of fluids ,Bernoulli's equation
	3 RD	Energy of fluids ,Bernoulli's equation
	4 TH	Hydraulic intensifier
11 th	1 ST	Hydraulic intensifier
	2 ND	Hydraulic lift
	3 RD	Hydraulic lift
	4 TH	Hydraulic accumulator
12 th	1 ST	Hydraulic accumulator
	2 ND	Hydraulic ram
	3 RD	MCQ TEST
	4 TH	MCQ TEST
	3 RD	QUIZ AND ASSIGNMENT
	4 TH	QUIZ AND ASSIGNMENT

LEARNING RESOURCES:

1 Thermal Engineering R.S. Khurmi S.Chand

2 Hydraulics & Hydraulic M/Cs A.R. Basu Dhanpat Rai

Deepak Manojan pattnaik
Sign .Of Faculty concerned 14/08/2024

HOD

Academic coordinator

PRINCIPAL ,GP
NABARANGPUR