

**GOVERNMENT POLYTECHNIC JAIPUR**

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**DEPARTMENT OF MECHANICAL ENGINEERING (2024-2025)**

**LESSON PLAN**

<b>Discipline:</b> Metallurgy	<b>Semester:</b> 3rd	<b>Name of the Teaching faculty:</b> GEETANJALI SETHI, Sr. Lecturer, Mechanical Engg.
<b>Subject:</b> Elementary Mechanical Engineering(T H-1)	<b>No of Days/ Week class allotted:</b> 4	<b>Semester from Date:</b> 01/07/2024 <b>Date:</b> 08/11/2024 <b>To No of weeks:</b> 15
<b>Week</b>	<b>Class Day</b>	<b>Topics</b>
<b>1st</b>	1st	<b>CH-1.0 -Shear Force and Bending Moment</b> Defining shear force and bending moment.
	2nd	Defining various types of loads and beams
	3rd	Construction of shear force and bending moment diagram of cantilever beam with point load
	4th	Construction of shear force and bending moment diagram of cantilever beam with uniformly
<b>2nd</b>	1st	Numericals on above
	2nd	Construction of shear force and bending moment diagram of simple supported beam with point load
	3rd	Construction of shear force and bending moment diagram of simple supported beam with uniformly
	4th	Numericals on above
<b>3rd</b>	1st	Determining stress of loaded beams.
	2nd	Numericals on above
	3rd	<b>CH-2.0 -Machine and Mechanism</b> Defining machine, mechanism kinematics
	4th	Defining link, kinematics pair, kinematics chain.
<b>4th</b>	1st	Illustratation of four – bar linkage
	2nd	Description of different types of of four – bar linkage
	3rd	Describing crank – connecting rod mechanism
	4th	Describing quick return mechanism
	1st	Understanding function of a cam

5th	2nd	Understanding function of follower
	3rd	<b>CH-3.0- Belt, Rope and Chain drives, Brakes and Bearings</b> Defining Belt Drive and its uses
	4trh	Description of types of belt drives
6th	1st	Determining the length of open belt drive
	2nd	Determination of the ratio of tensions and power transmitted by belt drive
	3rd	Discussion advantage of rope and chain drive
	4trh	Illustration of working principle of simple brake
7th	1st	Illustration of working principle of dynamometers
	2nd	Defining and classifying bearings (bush and anti-
	3rd	<b>CH-4.0 Basic Principles of Thermodynamics</b> Defining heat and work and deriving inter –
	4trh	Determination of work done by compression of gases
8th	1st	Determination of work done by expansion of
	2nd	Explanation of properties of steam (sensible, latent heat & dryness fraction)
	3rd	Discussion of use of steam tables.
	4trh	Discussion of use of steam tables.
9th	1st	<b>CH-5.0 Boilers and Turbines</b> Explanation of the functions of the boiler
	2nd	Defining fire tube boiler and description of its function
	3rd	Defining water tube boiler and description of its function
	4trh	Defining turbines and describing their functions
10th	1st	Classification of Turbines
	2nd	Defining impulse Tubine and description of its function
	3rd	Defining reaction Tubine and description of its function

	4trh	Comparison between impulse and reaction turbines
11th	1st	Defining steam condenser and describing their functions
	2nd	Classification of condensers
	3rd	<b>CH-6.0 Internal Combustion Engines</b> Defining and classifying internal combustion (I.C.) engine
	4trh	Explanation of Otto cycle
12th	1st	Explanation of Diesel cycles
	2nd	Explanation of 2 stroke cycle I.C. engine
	3rd	Explanation of 4 stroke cycle I.C. engine, comparison between 2-stroke and 4-stroke cycle
	4trh	Define Indicate power, brake power and mech efficiency
13th	1st	<b>CH-7.0 Refrigeration and Air-Conditioning</b> Defining Refrigeration and Air – conditioning
	2nd	explaining various applications of Refrigeration and Air – conditioning
	3rd	Explanation of simple vapour compression
	4trh	State types of refrigerants
14th	1st	explanation of properties of refrigerants
	2nd	<b>Describing the basic concept of air – conditioning with reference to a room air conditioner</b>
	3rd	<b>8.0 Machine Tools</b> Defining machine tools.
	4trh	Describing different machine tools and their functions (lathe, drill)
15th	1st	Describing different machine tools and their functions (shaper, milling machine grinding machine)
	2nd	Brief idea on CNC milling
	3rd	CNC Turning
	4trh	Revision and Question Discussion

**Learning Resources:**

Sl.No	Title of the Book	Name of Authors	Name of Publisher
1.	Strength of material	R.S.Khurmi	S.Chand Publisher
2.	Engineering Thermodynamics	P.L.Ballaney	Khanna Publisher
3.	Refrigeration and Air Conditioning	R.S.Khurmi	S.Chand Publisher
4.	Theory of Machine	R.S.Khurmi	S.Chand Publisher
5.	Basic Mechanical Engineering	Dr.N.R.Banapurma Mr.V.S.Yaliwal	Vikas Publisher

*Yaliwal*  
29.6.24

Signature of the faculty