

# **Vedang Institute of Technology**

## **LESSON PLAN**

<b>Discipline: Mechanical Engg</b>	<b>Semester : 4th</b>	<b>Name of the Teaching Faculty : Priyanka Barik</b>
<b>Subject : Fluid Mechanics</b>	<b>No. of days/Per weeks Class Allotted Weeks :4</b>	<b>Semester from date : 16/01/2024 to 26/04/2024 No. of Weeks: 15</b>
<b>Weeks</b>	<b>Class Days</b>	<b>Theory</b>
1 <sup>st</sup>	1 <sup>st</sup>	Define fluid, comparison of solid, liquid and gas
	2 <sup>nd</sup>	Description of fluid properties like Density, Specific weight,
	3 <sup>rd</sup>	Numerical based on Density, Specific weight
	4 <sup>th</sup>	Specific gravity, specific volume
2 <sup>nd</sup>	1 <sup>st</sup>	Numerical based on fluid properties
	2 <sup>nd</sup>	Definitions and Units of Dynamic viscosity, kinematic viscosity,
	3 <sup>rd</sup>	Surface tension
	4 <sup>th</sup>	Numerical based on surface tension
3 <sup>rd</sup>	1 <sup>st</sup>	Capillary phenomenon
	2 <sup>nd</sup>	Numerical based on capillarity
	3 <sup>rd</sup>	Definitions and units of fluid pressure
	4 <sup>th</sup>	Pressure intensity and pressure head
4 <sup>th</sup>	1 <sup>st</sup>	Statement of Pascal's Law, applications of Pascal law
	2 <sup>nd</sup>	Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure
	3 <sup>rd</sup>	Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure
	4 <sup>th</sup>	Pressure measuring instruments, classification
5 <sup>th</sup>	1 <sup>st</sup>	Simple Manometers
	2 <sup>nd</sup>	Numerical on Simple Manometers
	3 <sup>rd</sup>	Differential manometer
	4 <sup>th</sup>	Numerical on differential Manometers
6 <sup>th</sup>	1 <sup>st</sup>	Bourdon tube pressure gauge
	2 <sup>nd</sup>	Bourdon tube pressure gauge numerical
	3 <sup>rd</sup>	Definition of hydrostatic pressure , Total pressure and centre of pressure
	4 <sup>th</sup>	Total pressure and centre of pressure
7 <sup>th</sup>	1 <sup>st</sup>	Total pressure and centre of pressure on immersed bodies(Horizontal and Vertical Bodies)
	2 <sup>nd</sup>	Definitions and Units of Dynamic viscosity, kinematic viscosity,
	3 <sup>rd</sup>	Surface tension
	4 <sup>th</sup>	Numerical based on surface tension
8 <sup>th</sup>	1 <sup>st</sup>	Capillary phenomenon
	2 <sup>nd</sup>	Numerical based on capillarity
	3 <sup>rd</sup>	Definitions and units of fluid pressure

	4th	Pressure intensity and pressure head
9 <sup>th</sup>	1st	Statement of Pascal's Law, applications of Pascal law
	2nd	Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure
	3rd	Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure
	4th	Pressure measuring instruments, classification Simple Manometers Numerical on Simple Manometers
10 <sup>th</sup>	1st	Differential manometer
	2nd	Numerical on differential Manometers Bourdon tube pressure gauge
	3rd	Bourdon tube pressure gauge numerical
	4th	Definition of hydrostatic pressure , Total pressure and centre of pressure Total pressure and centre of pressure
11 <sup>th</sup>	1st	Total pressure and centre of pressure on immersed bodies(Horizontal and Vertical Bodies)
	2nd	Orifices coefficient & the relation between the orifice coefficients
	3rd	Problems on Orifices coefficient & the relation between the orifice coefficients
	4th	Classifications of notches & weirs
12 <sup>th</sup>	1st	Discharge over a rectangular notch or weir
	2nd	Numerical on rectangular notch
	3rd	Discharge over a triangular notch or weir
	4th	Numerical on rectangular notch
13 <sup>th</sup>	1st	Definition of pipe
	2nd	Loss of energy in pipes.
	3rd	Type of Head loss
	4th	Head loss due to friction:
14 <sup>th</sup>	1st	Darcy's formula
	2nd	Numerical on Darcy's formula
	3rd	Chezy's formula.
	4th	Numerical on Chezy's formula.
15 <sup>th</sup>	1st	Hydraulic gradient and total gradient line
	2nd	Impact of jet on fixed vertical flat plates
	3rd	Impact of jet on fixed vertical flat plates
	4th	Derivation of work done on series of vanes
<div> Faculty Signature HOD </div>		

<b>Vedang Institute of Technology</b> <b>Lesson Plan</b>		
Discipline: <b>MECHANICAL ENGG.</b>	Semester: <b>4<sup>th</sup></b>	Name of the Teaching Faculty: <b>Amruta Panda</b>
Subject: <b>Manufacturing Technology</b>	No. of Days/ Per Week Class Allotted: <b>04</b>	Semester Starts: 16/01/2024 Semester Ends: 26/04/2024 No. of Weeks: <b>15 Week</b>
<b>Week</b>	<b>Class Day</b>	<b>Topics</b>
<b>1<sup>ST</sup></b>	1 <sup>st</sup>	Introduction to tool materials
	2 <sup>nd</sup>	Composition of various tool materials
	3 <sup>rd</sup>	Physical properties& uses of such tool materials
	4 <sup>th</sup>	Physical properties& uses of such tool materials
<b>2<sup>ND</sup></b>	1 <sup>st</sup>	Cutting action of various and tools such as Chisel, hacksaw blade, dies and reamer
	2 <sup>nd</sup>	Cutting action of various and tools such as Chisel, hacksaw blade, dies and reamer
	3 <sup>rd</sup>	Turning tool geometry and purpose of tool angle
	4 <sup>th</sup>	Machining process parameters (Speed, feed and depth of cut)
<b>3<sup>RD</sup></b>	1 <sup>st</sup>	Coolants and lubricants in Machining and Purpose
	2 <sup>nd</sup>	Construction and working of lathe and CNC lathe
	3 <sup>rd</sup>	Major components of lathe and their function
	4 <sup>th</sup>	Operations carried out in a lathe (Turning, thread cutting, taper turning, internal machining, parting off, facing, knurling)
<b>4<sup>TH</sup></b>	1 <sup>st</sup>	Operations carried out in a lathe (Turning, thread cutting, taper turning, internal machining, parting off, facing, knurling)
	2 <sup>nd</sup>	Safety measures during machining
	3 <sup>rd</sup>	Capstan Lathe Difference with respect to engine lathe
	4 <sup>th</sup>	Major components and their function, Multiple tool holders
<b>5<sup>TH</sup></b>	1 <sup>st</sup>	Turret Lathe Difference with respect to capstan lathe
	2 <sup>nd</sup>	Major components and their function
	3 <sup>rd</sup>	Major components and their function
	4 <sup>th</sup>	Shaper Potential application areas of a shaper machine
<b>6<sup>TH</sup></b>	1 <sup>st</sup>	Major components and their function
	2 <sup>nd</sup>	Tooling layout for preparation of a hexagonal bolt & bush
	3 <sup>rd</sup>	Application area of a planer and its difference with respect to shaper
	4 <sup>th</sup>	Clamping of Work through sketch
<b>7<sup>TH</sup></b>	1 <sup>st</sup>	Major components and their functions
	2 <sup>nd</sup>	Working of tool and tool support
	3 <sup>rd</sup>	Working of tool and tool support
	4 <sup>th</sup>	Clamping of work through sketch
<b>8<sup>TH</sup></b>	1 <sup>st</sup>	Types of milling machine and operations performed by them and also same for CNC milling machine
	2 <sup>nd</sup>	Explain work holding attachment

	3 <sup>rd</sup>	Explain work holding attachment
	4 <sup>th</sup>	Construction & working of simple dividing head, universal dividing head
<b>9<sup>TH</sup></b>	1 <sup>st</sup>	Construction & working of simple dividing head, universal dividing head
	2 <sup>nd</sup>	Procedure of simple and compound indexing
	3 <sup>rd</sup>	Illustration of different indexing methods
	4 <sup>th</sup>	Illustration of different indexing methods
<b>10<sup>TH</sup></b>	1 <sup>st</sup>	Major components and their function of a slotter
	2 <sup>nd</sup>	Major components and their function of a slotter
	3 <sup>rd</sup>	Construction and working of slotter machine
	4 <sup>th</sup>	Construction and working of slotter machine
<b>11<sup>TH</sup></b>	1 <sup>st</sup>	Tools used in slotter
	2 <sup>nd</sup>	Explain work holding attachment
	3 <sup>rd</sup>	Significance of grinding operations
	4 <sup>th</sup>	Manufacturing of grinding wheels
<b>12<sup>TH</sup></b>	1 <sup>st</sup>	Criteria for selecting of grinding wheels
	2 <sup>nd</sup>	Specification of grinding wheels with example Working of: Cylindrical Grinder, Surface Grinder, Centerless Grinder
	3 <sup>rd</sup>	Classification of drilling machines
	4 <sup>th</sup>	Working of Bench drilling machine Pillar drilling machine
<b>13<sup>TH</sup></b>	1 <sup>st</sup>	Working of Bench drilling machine Pillar drilling machine
	2 <sup>nd</sup>	Basic Principle of Boring Different between Boring and drilling
	3 <sup>rd</sup>	Basic Principle of Boring Different between Boring and drilling
	4 <sup>th</sup>	Types of Broaching (pull type, push type) Advantages of Broaching and applications
<b>14<sup>TH</sup></b>	1 <sup>st</sup>	Types of Broaching (pull type, push type) Advantages of Broaching and applications
	2 <sup>nd</sup>	Definition of Surface finish
	3 <sup>rd</sup>	Description of lapping& explain their specific cutting.
	4 <sup>th</sup>	Description of lapping& explain their specific cutting.
<b>15<sup>TH</sup></b>	1 <sup>st</sup>	Revision & Doubt Clear
	2 <sup>nd</sup>	Revision & Doubt Clear
	3 <sup>rd</sup>	Question Discussion
	4 <sup>th</sup>	Question Discussion
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**Vedang Institute of Technology**  
**Lesson Plan**

<b>Discipline : Mechanical Engineering</b>	<b>Semester : 4th</b>	<b>Name of the Teaching Faculty: SAMARESH PRATAP MOHANTY</b>
<b>Subject : Theory of Machine</b>	<b>No. of days/Per weeks Class Allotted Weeks 4</b>	<b>Semester from date : 16.01.2024 to 26.04.2024</b>  <b>No of Weeks : 15</b>
<b>Weeks</b>	<b>Class day</b>	<b>Theory</b>
1st	1st	Link ,kinematic chain
	2nd	mechanism, machine
	3rd	Inversion
	4th	four bar link mechanism
2 <sup>nd</sup>	1st	inversion
	2nd	Lower pair
	3rd	higher pair
	4th	Cam
3 <sup>rd</sup>	1st	followers
	2nd	Numerical
	3rd	Friction between nut and screw for square thread, screw jack
	4th	Bearing and its classification, Description of roller, needle roller& ball bearings.
4 <sup>th</sup>	1st	Torque transmission in flat pivot& conical pivot bearings.
	2nd	Flat collar bearing of single and multiple types.
	3rd	Torque transmission for single and multiple clutches
	4th	Torque transmission for single and multiple clutches
5 <sup>th</sup>	1st	Working of simple frictional brakes.
	2nd	Working of simple frictional brakes.
	3rd	Working of Absorption type of dynamometer
	4th	Working of Absorption type of dynamometer
6 <sup>th</sup>	1st	Concept of power transmission
	2nd	Type of drives, belt, gear and chain drive.
	3rd	Computation of velocity ratio, length of belts (open and cross)with and without slip.
	4th	Ratio of belt tensions, centrifugal tension and initial tension.
7 <sup>th</sup>	1st	Power transmitted by the belt.
	2nd	Determine belt thickness
	3rd	V-belts and V-belts pulleys.
	4th	Concept of crowning of pulleys.
8 <sup>th</sup>	1st	Gear drives and its terminology.
	2nd	Gear trains, working principle of simple, compound, reverted and epicyclic gear
	3rd	Function of governor
	4th	Classification of governor
9 <sup>th</sup>	1st	Working of Watt, Porter
	2nd	Proel and Hartnell governors.
	3rd	Conceptual explanation of sensitivity
	4th	stability and isochronisms.
10 <sup>th</sup>	1st	Function of flywheel
	2nd	Comparison between flywheel &governor.
	3rd	Fluctuation of energy

	4th	coefficient of fluctuation of speed.
11 <sup>th</sup>	1st	Concept of static and dynamic balancing.
	2nd	Concept of static and dynamic balancing.
	3rd	Static balancing of rotating parts.
	4th	Static balancing of rotating parts.
12 <sup>th</sup>	1st	Principles of balancing of reciprocating parts.
	2nd	Principles of balancing of reciprocating parts.
	3rd	Causes and effect of unbalance.
	4th	Causes and effect of unbalance.
13 <sup>th</sup>	1st	Difference between static and dynamic balancing
	2nd	Difference between static and dynamic balancing
	3rd	Introduction to Vibration
	4th	Amplitude, time period, frequency, cycle
14 <sup>th</sup>	1st	Classification of vibration.
	2nd	Classification of vibration.
	3rd	Basic concept of natural
	4th	forced & damped vibration
15 <sup>th</sup>	1st	Torsional Vibration
	2nd	Longitudinal vibration.
	3rd	Causes & remedies of vibration.
	4th	Causes & remedies of vibration.
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## Vedang Institute of Technology

### Lesson Plan

<b><u>Discipline</u></b> Mechanical Engineering	<b>Semester</b> 4th	<b>Name of the Teachnig Faculty</b> Soumya Ranjan Nayak
<b><u>Subject</u></b> Thermal Engineering-II	<b>No.of days/Per weeks Class Alloted Weeks</b>  4P/W	<b>Semester from date</b> 16/01/2024 to 26/04/2024  <b>No. of Weeks - 15</b>
<b>Weeks</b>	<b>Class Period</b>	<b>Theory</b>
1st	1st	Mechanical efficiency, Indicated thermal efficiency, Relative Efficiency, brake thermal efficiency overall efficiency Mean effective pressure & specific fuel consumption
	2nd	Mechanical efficiency, Indicated thermal efficiency, Relative Efficiency, brake thermal efficiency overall efficiency Mean effective pressure & specific fuel consumption
	3rd	Mechanical efficiency, Indicated thermal efficiency, Relative Efficiency, brake thermal efficiency overall efficiency Mean effective pressure & specific fuel consumption
	4th	Define air-fuel ratio & calorific value of fuel
2nd	1st	Define air-fuel ratio & calorific value of fuel
	2nd	Workout problems to determine efficiencies & specific fuel consumption
	3rd	Workout problems to determine efficiencies & specific fuel consumption
	4th	Problem Solving
3rd	1st	Functions of compressor & industrial use of compressor air
	2nd	Functions of compressor & industrial use of compressor air
	3rd	Classification of air compressor & principle of operation
	4th	Classification of air compressor & principle of operation
4th	1st	Parts and working principle of reciprocating Air compressor.
	2nd	Terminology of reciprocating compressor such as bore, stroke, pressure ratio free air delivered & Volumetric efficiency.
	3rd	Terminology of reciprocating compressor such as bore, stroke, pressure ratio free air delivered & Volumetric efficiency.
	4th	Work done of single stage & two stage compressor with and without clearance.
5th	1st	Work done of single stage & two stage compressor with and without clearance.
	2nd	Problems solving
	3rd	Problems solving
	4th	Difference between gas & vapours.
6th	1st	Formation of steam.
	2nd	Representation on P-V, T-S, H-S, & T-H diagram
	3rd	Representation on P-V, T-S, H-S, & T-H diagram
	4th	Definition & Properties of Steam.

7th	1st	Definition & Properties of Steam.
	2nd	Use of steam table & mollier chart for finding unknown properties
	3rd	Use of steam table & mollier chart for finding unknown properties
	4th	Non flow & flow process of vapour
8th	1st	Non flow & flow process of vapour
	2nd	P-V, T-S & H-S, diagram, Determine the Changes in properties
	3rd	Problems solved
	4th	Steam Generation Classification & types of Boiler
9th	1st	Classification & types of Boiler
	2nd	Important terms for Boiler Comparison between fire tube & Water tube Boiler
	3rd	Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler)
	4th	Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler)
10th	1st	Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler)
	2nd	Boiler Draught (Forced, Induced & Balanced)
	3rd	Boiler Draught (Forced, Induced & Balanced)
	4th	Boiler Moutings & Accessories
11th	1st	Boiler Moutings & Accessories
	2nd	Boiler Moutings & Accessories
	3rd	Problems solved
	4th	Steam Power Cycle Carnot cycle with vapour
12th	1st	Derivation of work & efficiency of the cycle
	2nd	Rankine cycle – Representation in P-V, T-S & h-s diagram
	3rd	Derivation of Work Efficiency
	4th	Effect of Various end conditions in Rankine cycle
13th	1st	Reheat cycle & regenerative Cycle
	2nd	Problem solved on Carnot vapour Cycle & Rankine Cycle
	3rd	Problem solved on Carnot vapour Cycle & Rankine Cycle
	4th	Heat Transfer Modes of Heat Transfer (Conduction, Convection, Radiation)
14th	1st	Fourier law of heat conduction and thermal conductivity (k).
	2nd	Newton's laws of cooling
	3rd	Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law)
	4th	Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law)
15th	1st	Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility
	2nd	Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility
	3rd	Revision & Doubt Clearance
	4th	Revision & Doubt Clearance



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