

# LESSON PLAN

**SUB: FLUID MECHANICS**

**BRANCH:- MECHANICAL ENGG.**

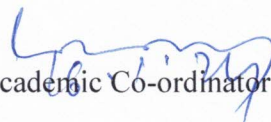
**SEMESTER: 4<sup>th</sup>**

**NAME OF FACULTY: ER. DINABANDHU ROUT**



**GOVERNMENT POLYTECHNIC,  
BHADRAK  
SESSION:2023-24**

  
16.01.24  
Hod ,Mechanical

  
16.01.24  
Academic Co-ordinator

  
16.01.24  
Principal  
Govt. Polytechnic, Bhadrak


Discipline: <u>MECHANICAL</u>	Semester: <u>4th</u>	Name of the Teaching Faculty: <u>DINABANDHU ROUT</u> <u>GE (Mechanical)</u>
Subject: FM	No. of days/per week class allotted: 4	Semester From date: 16.01.2024 To date: 26.04.2024 No of weeks: 15
Week	Class Day	Theory Topics:
1 <sup>st</sup>	1 <sup>st</sup>	<b>Properties of Fluid</b> Define fluid
	2 <sup>nd</sup>	Description of fluid properties like Density, Specific weight, specific gravity, specific volume and solve simple problems.
	3 <sup>rd</sup>	Description of fluid properties like Density, Specific weight, specific gravity, specific volume and solve simple problems.
	4 <sup>th</sup>	Definitions and Units of Dynamic viscosity, kinematic viscosity, surface tension Capillary phenomenon
2 <sup>nd</sup>	1 <sup>st</sup>	Definitions and Units of Dynamic viscosity, kinematic viscosity, surface tension Capillary phenomenon
	2 <sup>nd</sup>	<b>Fluid Pressure and its measurements</b> Definitions and units of fluid pressure, pressure intensity and pressure head.
	3 <sup>rd</sup>	Definitions and units of fluid pressure, pressure intensity and pressure head.
	4 <sup>th</sup>	Definitions and units of fluid pressure, pressure intensity and pressure head.
3 <sup>rd</sup>	1 <sup>st</sup>	Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure
	2 <sup>nd</sup>	Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure
	3 <sup>rd</sup>	Pressure measuring instruments Manometers (Simple and Differential)
	4 <sup>th</sup>	Pressure measuring instruments Manometers (Simple and Differential)
4 <sup>th</sup>	1 <sup>st</sup>	Bourdon tube pressure gauge(Simple Numerical)
	2 <sup>nd</sup>	Solve simple problems on Manometer.
	3 <sup>rd</sup>	Solve simple problems on Manometer.
	4 <sup>th</sup>	<b>Hydrostatics</b> Definition of hydrostatic pressure
5 <sup>th</sup>	1 <sup>st</sup>	Total pressure and centre of pressure on immersed bodies(Horizontal and Vertical Bodies)
	2 <sup>nd</sup>	Total pressure and centre of pressure on immersed bodies(Horizontal and Vertical Bodies)
	3 <sup>rd</sup>	Solve Simple problems.

Dinabandhu Rout

16.01.24  
15th week

	4 <sup>th</sup>	Solve Simple problems.
6 <sup>th</sup>	1 <sup>st</sup>	Archimedes 'principle, concept of buoyancy, meta center and meta centric height (Definition only)
	2 <sup>nd</sup>	Concept of floatation
	3 <sup>rd</sup>	<b>Kinematics of Flow</b> Types of fluid flow
	4 <sup>th</sup>	Continuity equation(Statement and proof for one dimensional flow)
7 <sup>th</sup>	1 <sup>st</sup>	Bernoulli's theorem(Statement and proof) Applications and limitations of Bernoulli's theorem (Venturimeter, pitot tube)
	2 <sup>nd</sup>	Bernoulli's theorem(Statement and proof) Applications and limitations of Bernoulli's theorem (Venturimeter, pitot tube)
	3 <sup>rd</sup>	Solve simple problems
	4 <sup>th</sup>	<b>Orifices, notches &amp; weirs</b> Define orifice
8 <sup>th</sup>	1 <sup>st</sup>	Flow through orifice
	2 <sup>nd</sup>	Orifices coefficient & the relation between the orifice coefficients
	3 <sup>rd</sup>	Orifices coefficient & the relation between the orifice coefficients
	4 <sup>th</sup>	Classifications of notches & weirs
9 <sup>th</sup>	1 <sup>st</sup>	Classifications of notches & weirs
	2 <sup>nd</sup>	Discharge over a rectangular notch or weir
	3 <sup>rd</sup>	Discharge over a rectangular notch or weir
	4 <sup>th</sup>	Discharge over a triangular notch or weir
10 <sup>th</sup>	1 <sup>st</sup>	Discharge over a triangular notch or weir
	2 <sup>nd</sup>	Simple problems on above
	3 <sup>rd</sup>	<b>Flow through pipe</b> Definition of pipe.
	4 <sup>th</sup>	Loss of energy in pipes.
11 <sup>th</sup>	1 <sup>st</sup>	Loss of energy in pipes.
	2 <sup>nd</sup>	Head loss due to friction: Darcy's and Chezy's formula (Expression only)
	3 <sup>rd</sup>	Head loss due to friction: Darcy's and Chezy's formula (Expression only)
	4 <sup>th</sup>	Class Test-I
12 <sup>th</sup>	1 <sup>st</sup>	Solve Problems using Darcy's and Chezy's formula.
	2 <sup>nd</sup>	Solve Problems using Darcy's and Chezy's formula.
	3 <sup>rd</sup>	Hydraulic gradient and total gradient line
	4 <sup>th</sup>	<b>Impact of jets</b> Impact of jet on fixed and moving vertical flat plates
	1 <sup>st</sup>	Impact of jet on fixed and moving vertical flat plates
	2 <sup>nd</sup>	Derivation of work done on series of vanes and condition for maximum efficiency.

13 <sup>th</sup>	3 <sup>rd</sup>	Derivation of work done on series of vanes and condition for maximum efficiency.
	4 <sup>th</sup>	Impact of jet on moving curved vanes, illustration using velocity triangles, derivation of work done, efficiency.
14 <sup>th</sup>	1 <sup>st</sup>	Impact of jet on moving curved vanes, illustration using velocity triangles, derivation of work done, efficiency.
	2 <sup>nd</sup>	Class Test-II
	3 <sup>rd</sup>	Discussion of PYQ
	4 <sup>th</sup>	Discussion of PYQ
15 <sup>th</sup>	1 <sup>st</sup>	Discussion of PYQ
	2 <sup>nd</sup>	Doubt clearing class
	3 <sup>rd</sup>	Doubt clearing class
	4 <sup>th</sup>	Doubt clearing class

  
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 HOD, Mech.