

Th-3

# Fluid Mechanics

Name - Suchismita Behera, Lect. (GF)

GOVT. POLYTECHNIC, NAYAGARH

## LESSON PLAN

4<sup>th</sup> SEMESTER MECHANICAL ENGINEERING (2023-24)

SUBJECT- FLUID MECHANICS (TH.3)

(w.e.f 16/01/2024)

TOTAL PERIOD-60

THEORY-4P/WEEK

NAME OF FACULTY: SUCHISMITA BEHERA, Lect. (GF)

SI No.	week	Day	Topics to be covered
1	1 <sup>st</sup>	1 <sup>st</sup> day	Define fluid
		2 <sup>nd</sup> day	Description of fluid properties like Density, Specific weight
		3 <sup>rd</sup> day	Specific gravity, specific volume
		4 <sup>th</sup> day	Solve simple problems
SI No.	week	Day	Topics to be covered
2	2 <sup>nd</sup>	1 <sup>st</sup> day	Definitions and Units of Dynamic viscosity,
		2 <sup>nd</sup> day	Definitions and Units of kinematic viscosity
		3 <sup>rd</sup> day	Surface tension Capillary phenomenon
		4 <sup>th</sup> day	Solve simple problems
SI No.	week	Day	Topics to be covered
3	3 <sup>rd</sup>	1 <sup>st</sup> day	Definitions and units of fluid pressure,
		2 <sup>nd</sup> day	What is pressure intensity and pressure head ?
		3 <sup>rd</sup> day	Statement of Pascal's Law.
		4 <sup>th</sup> day	Concept of atmospheric pressure, gauge pressure, vacuum and absolute pressure
SI No.	week	Day	Topics to be covered
4	4 <sup>th</sup>	1 <sup>st</sup> day	What is Pressure measuring instruments Manometers (Simple)
		2 <sup>nd</sup> day	What is Pressure measuring instruments Manometers (Differential)
		3 <sup>rd</sup> day	Bourdon tube pressure gauge(Simple Numerical)
		4 <sup>th</sup> day	Solve simple problems on Manometer.
SI No.	week	Day	Topics to be covered
5	5 <sup>th</sup>	1 <sup>st</sup> day	Definition of hydrostatic pressure
		2 <sup>nd</sup> day	Total pressure and centre of pressure on immersed bodies(Horizontal Bodies)
		3 <sup>rd</sup> day	Total pressure and centre of pressure on immersed bodies (Vertical Bodies )
		4 <sup>th</sup> day	Solve Simple problems
SI No.	week	Day	Topics to be covered
6	6 <sup>th</sup>	1 <sup>st</sup> day	What is Archimedes principle?
		2 <sup>nd</sup> day	What is concept of buoyancy? (Definition only)
		3 <sup>rd</sup> day	Meta center and meta centric height (Definition only)
		4 <sup>th</sup> day	Concept of floatation
SI No.	week	Day	Topics to be covered

7	7 <sup>th</sup>	1 <sup>st</sup> day	What is fluid flow? Types of fluid flow
		2 <sup>nd</sup> day	What is Continuity equation?
		3 <sup>rd</sup> day	Continuity equation (Statement and proof for one dimensional flow)
		4 <sup>th</sup> day	What is Bernoulli's theorem (Statement and proof)
SI No.	week	Day	Topics to be covered
8	8 <sup>th</sup>	1 <sup>st</sup> day	What is Venturimeter, pitot tube
		2 <sup>nd</sup> day	Applications and limitations of Bernoulli's theorem
		3 <sup>rd</sup> day	Solve simple problems
		4 <sup>th</sup> day	Solve simple problems
SI No.	week	Day	Topics to be covered
9	9 <sup>th</sup>	1 <sup>st</sup> day	Define orifice
		2 <sup>nd</sup> day	Flow through orifice
		3 <sup>rd</sup> day	Orifices coefficient & the relation between the orifice coefficients
		4 <sup>th</sup> day	Classifications of notches & weirs
SI No.	week	Day	Topics to be covered
10	10 <sup>th</sup>	1 <sup>st</sup> day	Discharge over a rectangular notch or weir
		2 <sup>nd</sup> day	Discharge over a triangular notch or weir
		3 <sup>rd</sup> day	Simple problems on above
		4 <sup>th</sup> day	Simple problems on above
SI No.	week	Day	Topics to be covered
11	11 <sup>th</sup>	1 <sup>st</sup> day	Definition of pipe.
		2 <sup>nd</sup> day	Loss of energy in pipes.
		3 <sup>rd</sup> day	Energy loss through pipe due to friction
		4 <sup>th</sup> day	What is Head loss due to friction?
SI No.	week	Day	Topics to be covered
12	12 <sup>th</sup>	1 <sup>st</sup> day	Head loss due to friction: Darcy's and Chezy's formula (Expression only)
		2 <sup>nd</sup> day	Head loss due to friction: Chezy's formula (Expression only)
		3 <sup>rd</sup> day	Solve Problems using Darcy's and Chezy's formula.
		4 <sup>th</sup> day	Solve Problems using Darcy's and Chezy's formula.
SI No.	week	Day	Topics to be covered
13	13 <sup>th</sup>	1 <sup>st</sup> day	What is Hydraulic gradient?
		2 <sup>nd</sup> day	What is total gradient line?
		3 <sup>rd</sup> day	What is jet?

		4 <sup>th</sup> day	What is Impact of jet on fixed flat plates?
SI No.	week	Day	Topics to be covered
14	14 <sup>th</sup>	1 <sup>st</sup> day	What is Impact of jet on moving vertical flat plates?
		2 <sup>nd</sup> day	Derivation of work done on series of vanes and condition for maximum efficiency.
		3 <sup>rd</sup> day	Derivation of work done on series of vanes and condition for maximum efficiency.
		4 <sup>th</sup> day	Numerical Problem solving
SI No..	week	Day	Topics to be covered
15	15 <sup>th</sup>	1 <sup>st</sup> day	Numerical Problem solving
		2 <sup>nd</sup> day	Impact of jet on moving curved vanes,
		3 <sup>rd</sup> day	Illustration using velocity triangles,
		4 <sup>th</sup> day	Derivation of work done, efficiency of jet

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