

# LESSON PLAN OF 3<sup>rd</sup> SEMESTER(2022-23) CHEMICAL ENGINEERING

DISCIPLINE: CHEMICAL	Semester:-3 <sup>RD</sup>	<u>NAME OF THE TEACHING FACULTY</u>  <b>PRATEEK KUMAR DAS</b>
SUBJECT:  FLUID MECHSNICS	No of days per Week Allotted : 04	SEMESTER: SEPTEMBER TO DECEMBER  No of Weeks:- 15
Week	Class/ Day	Theory/ Practical Topics
1 <sup>st</sup>	1 <sup>st</sup>	Fluid and its classification
	2 <sup>nd</sup>	Properties of fluid and its units
	3 <sup>rd</sup>	Newton's law of viscosity
	4 <sup>th</sup>	Newtonian & Non-Newtonian fluid
2 <sup>nd</sup>	1 <sup>st</sup>	Hydrostatic equilibrium and pressure head
	2 <sup>nd</sup>	Fluid pressure measuring devices
	3 <sup>rd</sup>	Different types of manometers and its applications
	4 <sup>th</sup>	Derivation of manometric equation
3 <sup>rd</sup>	1 <sup>st</sup>	Problems on Manometric Equation
	2 <sup>nd</sup>	Equation of continuity
	3 <sup>rd</sup>	Problems on Continuity Equation
	4 <sup>th</sup>	Types of fluid flow
4 <sup>th</sup>	1 <sup>st</sup>	Laminar and turbulent flow
	2 <sup>nd</sup>	Reynolds's number, critical velocity
	3 <sup>rd</sup>	Mechanism of fluid flow in pipes
	4 <sup>th</sup>	Reynolds' experiment
5 <sup>th</sup>	1 <sup>st</sup>	Bernoulli's theorem, pump work (solve simple problems)
	2 <sup>nd</sup>	Bernoulli's theorem, pump work (solve simple problems)
	3 <sup>rd</sup>	Bernoulli's theorem, pump work (solve simple problems)
	4 <sup>th</sup>	Flow of incompressible fluids in pipe
6 <sup>th</sup>	1 <sup>st</sup>	Flow of incompressible fluids in pipe

	2 <sup>nd</sup>	Flow of incompressible fluids in pipe
	3 <sup>rd</sup>	Friction factor, roughness
	4 <sup>th</sup>	Estimate friction loss in pipes & coils, equivalent length
7 <sup>th</sup>	1 <sup>st</sup>	Fanning's equation (Solve simple problems)
	2 <sup>nd</sup>	Fanning's equation (Solve simple problems)
	3 <sup>rd</sup>	Friction losses through sudden enlargement in pipes
	4 <sup>th</sup>	Friction losses through sudden contraction in pipes
8 <sup>th</sup>	1 <sup>st</sup>	Problems on friction losses through sudden enlargement in pipes
	2 <sup>nd</sup>	Problems on friction losses through sudden contraction in pipes
	3 <sup>rd</sup>	Flow of fluids in non-circular conduits. Water hammer
	4 <sup>th</sup>	Working of flow measuring devices, advantages & disadvantages
9 <sup>th</sup>	1 <sup>st</sup>	Expression for flow measurement through orifice meter
	2 <sup>nd</sup>	Expression for flow measurement through venturi meter
	3 <sup>rd</sup>	Expression for flow measurement through pitot tube
	4 <sup>th</sup>	Working of Rota meter and its calibration
10 <sup>th</sup>	1 <sup>st</sup>	Simple problems on flow measurement
	2 <sup>nd</sup>	Simple problems on flow measurement
	3 <sup>rd</sup>	Simple problems on flow measurement
	4 <sup>th</sup>	Simple problems on flow measurement
11 <sup>th</sup>	1 <sup>st</sup>	Concept of transportation of fluid by pipes and tubes
	2 <sup>nd</sup>	Different pipe fittings and its application
	3 <sup>rd</sup>	Different types of valves and their applications
	4 <sup>th</sup>	Classification of pumps
12 <sup>th</sup>	1 <sup>st</sup>	Construction and working of centrifugal pump
	2 <sup>nd</sup>	Performance characteristics of centrifugal pumps
	3 <sup>rd</sup>	Cavitation, Net positive suction head, Air binding & priming of pump
	4 <sup>th</sup>	Centrifugal pump troubles and remedies
13 <sup>th</sup>	1 <sup>st</sup>	Construction and working of centrifugal pump
	2 <sup>nd</sup>	Performance characteristics of centrifugal pumps

	3 <sup>rd</sup>	Working of Piston pump, plunger pump, gear pump, diaphragm pump
	4 <sup>th</sup>	Pumping device for gas: blower, compressor and vacuum devices
14 <sup>th</sup>	1 <sup>st</sup>	Pressure drop in porous medium
	2 <sup>nd</sup>	Concept of fluidization
	3 <sup>rd</sup>	Types of fluidization
	4 <sup>th</sup>	Minimum fluidization velocity
15 <sup>th</sup>	1 <sup>st</sup>	Fluidized bed pressure drop
	2 <sup>nd</sup>	Principle of pneumatic conveyance
	3 <sup>rd</sup>	Flow through packed bed
	4 <sup>th</sup>	Problems on Fluidization