UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA

LESSON PLAN

SUBJECT- FLUID MECHANICS

PREPARED BY- SUBASINI JENA

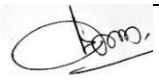
DEPARTMENT OF CHEMICAL ENGINEERING

WEEK	Topics covered
WEEK 1	Basic concept of Fluid
	Classification of Fluids
	Properties of fluid and its units
	Newton's law of viscosity, Newtonian & Non-Newtonian fluid
WEEK 2	Hydrostatic equilibrium and pressure head
	Fluid pressure measuring devices
	Different types of manometers and its applications
WEEK 3	Different types of manometers and its applications
	Derivation of monomeric equation
	Solve simple problems on using monomeric equation
WEEK 4	Equation of continuity
	Solve simple problems on using continuity equation
	Types of flow: laminar and turbulent flow
	Reynolds's number, critical velocity
WEEK 5	Solve simple problems on using Reynolds's number
	Mechanism of fluid flow in pipes,
	Reynolds' experiment
	Bernoulli's theorem, pump work
WEEK 6	Derivation of Bernoulli's theorem
	Solve simple problems on using Bernoulli's theorem
	Solve simple problems on using Bernoulli's theorem
	Flow of incompressible fluids in pipe
WEEK 7	Friction factor, roughness and estimate friction lossin pipes & coils, equivalent length

	Fanning's equation
	Solve simple problems on using Fanning's equation
WEEK 8	Friction losses through sudden enlargement andcontraction in pipes
	Flow of fluids in non-circular conduits.
	Water hammer
WEEK 9	Working of flow measuring devices, advantages &disadvantages
	Construction and Working principle of orificemeter
	Expression for flow measurement through orificemeter,
WEEK 10	Simple problems on flow measurement throughorifice meter
	Construction and Working principle of Venturimeter
	Expression for flow measurement through Venturimeter
WEEK 11	Simple problems on flow measurement throughVenturi meter
	Expression for flow measurement through Pitottube
	Simple problems on flow measurement throughPitot tube
WEEK 12	Working of Rota meter
	Calibration of Rota meter
	Simple problems on flow measurement
	Concept of transportation of fluid by pipes andtubes
WEEK 13	Different pipe fittings and its application
	Different types of valves and their applications
	Classification of pumps
WEEK 14	Construction and working of reciprocating
	Construction and working of centrifugal pumps
	Performance characteristics of reciprocatingand centrifugal pumps.
	Cavitation, Net positive suction head,
WEEK 15	Air binding & priming of pump
	Centrifugal pump troubles and remedies
	Working of Piston pump, plunger pump, gearpump, diaphragm pump
	Pumping device for gas: blower, compressorand vacuum devices
WEEK 16	Concept of Fluidization and Application
	Types of fluidization
	Minimum fluidization velocity
	Derive Minimum fluidization velocity
WEEK 17	Pressure drop in porous medium
	Fluidized bed pressure drop
	Principle of pneumatic conveyance
	Flow through packed bed.

BOOKS FOR REFERENCE:

- Chemical Technology by C Dryden, Tata Mc Grawhill Publication
- Chemical Process Industries by N Shreeve, Tata Mc Grawhill Publication

	Prepared by	**Approved by**
Signature		
Name	**SUBASINI JENA**	**B.K.GANTAYAT**
Designation	**Lecturer**	**HOD,Chemical.**
SESSION	SESSION-2023-24	