

LESSON PLAN OF 4th SEMESTER CIVIL ENGINEERING

Discipline :- CIVIL	Semester:- 4 th	Name of the Teaching Faculty:- Mrs. Sushree Sasmita Sahoo
Subject:- Hydraulics & Irrigation Engg.	No of Days/per Week Class Allotted :-05	Semester From:-04..02.2025 To:- 17.05.2025 No of Weeks:- 15
Week	Class Day	Theory Topics
1 st	1 st	HYDROSTATICS Properties of fluid: density, specific gravity, surface tension,
	2 nd	capillarity, viscosity and their uses
	3 rd	Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure
	4 th	Relationship between atmospheric pressure
	5 th	absolute pressure and gauge pressure; pressure Head; pressure gauges.
2 nd	1 st	Pressure exerted on an immersed surface: Total pressure
	2 nd	Resultant pressure,
	3 rd	Expression for total pressure exerted on horizontal
	4 th	Example and Numerical Problem
	5 th	Expression for total pressure vertical surface
3 rd	1 st	Example and Numerical Problem
	2 nd	KINEMATICS OF FLUID FLOW: Basic equation of fluid flow and their application Rate of discharge, equation of continuity of liquid
	3 rd	total energy of a liquid in motion- potential, Kinetic & pressure,.
	4 th	Bernoulli's theorem and its limitations
	5 th	Practical applications of Bernoulli's equation
4 th	1 st	Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs
	2 nd	Discharge through different types of notches and weirs-their application
	3 rd	Types of flow through the pipes: uniform and non uniform
	4 th	laminar and turbulent
	5 th	steady and unsteady
5 th	1 st	Reynolds's number and its application
	2 nd	Losses of head of a liquid flowing through pipes: Different types of major and minor losses
	3 rd	Simple numerical problems on losses due to friction using Darcy's equation
	4 th	Total energy lines & hydraulic gradient lines
	5 th	Types of channel sections-rectangular, trapezoidal and circular section
6 th	1 st	Simple Numerical
	2 nd	discharge formulae- Chezy's and Manning's equation
	3 rd	Best economical section.
	4 th	Simple Numerical
	5 th	PUMPS: Type of pumps
7 th	1 st	Centrifugal pump: basic principles, operation, discharge.

	2 nd	horse power & efficiency. Of Centrifugal pump
	3 rd	Reciprocating pumps: types, operation, discharge
	4 th	horse power & efficiency of Reciprocating pump
	5 th	Hydrology : Hydrology Cycle
8 th	1 st	Rainfall: types, intensity, hyetograph
	2 nd	Estimation of rainfall, rain gauges, Its types
	3 rd	Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae
	4 th	Water Requirement of Crops : Definition of irrigation, necessity, benefits of irrigation, types of irrigation
	5 th	Crop season
9 th	1 st	Duty, Delta and base period their relationship, overlap allowance, kharif and rabi crops
	2 nd	Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio
	3 rd	FLOW IRRIGATION: Canal irrigation, types of canals, loss of water in canals
	4 th	Perennial irrigation
	5 th	Different components of irrigation canals and their functions
10 th	1 st	Different components of irrigation canals and their functions
	2 nd	Sketches of different canal cross-sections
	3 rd	Classification of canals according to their alignment
	4 th	Various types of canal lining – Advantages and disadvantages
	5 th	WATER LOGGING AND DRAINAGE : Causes and effects of water logging, detection
11 th	1 st	prevention and remedies
	2 nd	DIVERSION HEAD WORKS AND REGULATORY STRUCTURES Necessity and objectives of diversion head works
	3 rd	weirs and barrages
	4 th	General layout, functions of different parts of barrage
	5 th	functions of different parts of barrage
12 th	1 st	Silting and scouring
	2 nd	Functions of regulatory structures
	3 rd	Functions of regulatory structures
	4 th	CROSS DRAINAGE WORKS: Functions and necessity of Cross drainage works
	5 th	Functions and necessity of Cross drainage works
13 th	1 st	Concept of Aqueduct with help of neat sketch
	2 nd	Concept of Aqueduct with help of neat sketch
	3 rd	Concept of siphon with help of neat sketch reinforcement
	4 th	Concept of siphon with help of neat sketch
	5 th	Concept of super passage with help of neat sketch
14 th	1 st	Concept of Super Passage with help of neat sketch
	2 nd	Concept of Level Crossing with help of neat sketch
	3 rd	Concept of Level Crossing with help of neat sketch
	4 th	DAMS: Necessity of storage reservoirs
	5 th	types of dams
15 th	1 st	Earthen dams: types, description
	2 nd	causes of failure and protection measures of Earthen Dam
	3 rd	Gravity dam- types, description
	4 th	Causes of failure and protection measures.
	5 th	Spillways- Types (With Sketch) and necessity

29/01/2025