

PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN Session-2024-2025

Semester: 4th Discipline: CIVIL ENGINEERING Engg.

Subject: HYDRAULIC AND IRRIGATION ENGINEERING

Name of the Teaching Faculty: RAJESH KUMAR SAHU

Subject: HYDRAULIC AND IRRIGATION ENR 614 No. of Days/per week class allotted : 05

Semester From Date : 04-02-2025 To Date: 17-05-2025 No. of Weeks : 15

Week	Class Day	Theory / Practical Topics
1	1 st	Properties of fluid, Density, Specific gravity
	2 nd	Surface tension, Capillarity
	3 rd	viscosity & their uses
	4 th	Pressure and its measurements, Intensity of pressure
	5 th	Atmospheric pressure Gauge pressure
2	1 st	Absolute pressure, vacuum pressure
	2 nd	Relationship between absolute pressure, atmospheric pressure, gauge pressure
	3 rd	pressure head, pressure gauges
	4 th	Pressure exerted on immersed surface: Total pressure
	5 th	Resultant pressure, Expression for total pressure exerted on horizontal surface
3	1 st	Expression for total pressure exerted on vertical surface
	2 nd	Kinematics of fluid flow: Rate of discharge,

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Week	Class Day	Theory / Practical Topics
	3rd	Eq ⁿ of continuity of liquid flow
	4th	Total energy of a liquid in motion
	5th	Potential, kinetic & pressure
4	1st	Bernoulli's theorem
	2nd	Bernoulli's theorem Limitation
	3rd	Practical application of Bernoulli's equation
	4th	Flow over notches and weirs, notches, weirs
	5th	Types of notches & weirs
5	1st	Discharge through diff. types of notches.
	2nd	Discharge through diff types of weirs
	3rd	It's application (two descriptions)
	4th	Types of flow through pipe: Uniform & non uniform flow

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Semester From Date : 04-02-25 To Date: 17-05-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	5th	Laminar & turbulent flow , steady & unsteady
6	1st	Reynold's no & its application
	2nd	Losses of head of liq. flowing through pipes Diff types of major & minor losses
	3rd	Simple numerical problem on losses due to friction using Darcy's equation.
	4th	Total energy line, Hydraulic gradient line (concept)
	5th	Flow through open channel - Types of channel Section. Rectangular
7	1st	Trapezoidal, circular
	2nd	Discharge formula, chezy's & Manning's equation
	3rd	Best economical section , Types of pumps: Basic principles
	4th	operation discharge, horse power, efficiency
	5th	Reciprocating pump: Types, operations, discharge, horse power, efficiency
8	1st	Hydrology, Hydrological cycle

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Week	Class Day	Theory /Practical Topics
	2nd	Rainfall - Types, Intensity, hyetograph
	3rd	Estimation of Rainfall, Raringauges
	4th	Raringauges types, Concept of catchment area
	5th	Types, runoff, estimation of flood discharge by Dicken's & Ryves Formula.
9	1st	water req. of crops: Def ⁿ of Irrigation, necessity, Benefits
	2nd	Types of irrigation: Crop season, Duty, Delta. Baseperiod & their relationship
	3rd	Overlap allowances
	4th	Kharif & Rabi crops
	5th	GA, CA, Intensity of Irrigation, Irrigable area, Time factor, Crop ratio
10	1st	Flow Irrigation: canal irrigation, Types of canals
	2nd	Loss of water in canals, perennial Irrigation
	3rd	Components of irrigation canals & their function

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Week	Class Day	Theory/Practical Topics
	4th	Sketches of different canal cross section
	5th	classification of canal according to their alignment.
11	1st	Various types of canal lining
	2nd	Advantages & Disadvantages of canal lining
	3rd	Water logging & drainage: causes and effect of water logging
	4th	Detection, prevention & Remedies
	5th	Diversions head work & regulatory structure Necessity & objective of diversions head work
12	1st	weirs & Barrages
	2nd	General layout, function of diff parts of barrage
	3rd	Silting and scouring
	4th	Function of regulatory structure
	5th	Cross drainage work, function & necessity.

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Semester From Date : 4-2-25 To Date: 17-05-25 No. of Weeks : 15

Week	Class Day	Theory/Practical Topics
13	1st	Aqueduct & siphon
	2nd	Super passage, level crossing
	3rd	concept with neat sketch
	4th	Necessity of storage reservoir
	5th	Types of dams
14	1st	EARTHEN DAMS- Types
	2nd	Descriptions, cause & failures
	3rd	Protection measures
	4th	Gravity dam, Types & Description
	5th	Causes of failure
15	1st	Protection measures
	2nd	Spillways

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Semester From Date : 04-02-25

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No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	3 rd	Types of spillways
	4 th	Sketches of spillways, various types
	5 th	Spillway necessity.

Rajesh Kumar Bhatnagar
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