

PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN Session-2022-2023

Discipline: CIVIL ENGINEERING Engg. Semester: 4th

Name of the Teaching Faculty: RAJESH KUMAR SAHU

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

Semester From Date : 14.02.2023 To Date : 23.05.2023 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
01	1st	Properties of fluid, Density, specific gravity.
	2nd	Surface Tension, Capillarity.
	3rd	Viscosity and their uses.
	4th	Pressure and its measurement Intensity of pressure
	5th	Atmospheric pressure, Gauge pressure.
02	1st	Absolute pressure, Vacuum pressure
	2nd	Relationship between atmospheric pressure, absolute pressure and gauge pressure
	3rd	Pressure head, pressure gauge
	4th	Pressure exerted on an immersed surface: Total pressure
	5th	Resultant pressure, expression for total pressure exerted on horizontal surface.
03	1st	Expression for total pressure exerted on vertical surface
	2nd	Kinematics of fluid flow: Rate of discharge

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Semester From Date : 14.02.2023 To Date : 23.05.2023 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	3rd	Eqn 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 different types of notches.
	2nd	Discharge through different types of weirs.
	3rd	It's application (No derivation)
	4th	Types of flow through pipe: Uniform and non-uniform flow.

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Semester From Date: 14.02.2023 To Date: 28.05.2023 No. of Weeks: 15

Week	Class Day	Theory /Practical Topics
	5th	Laminar and turbulent flow, steady and unsteady
6	1st	Reynold's no and its applicatm.
	2nd	Losses of head of liquid flowing through pipe ; Different types of major and minor losses.
	3rd	Simple numerical problems on losses due to friction using Darcy's equatim.
	4th	Total energy line, & hydraulic gradient line (concept)
	5th	Flow through open channel - Types of channel Sectim - Rectangular
7	1st	Trapezoidal, Circular
	2nd	Discharge formula: chezy's and Manning's equatim.
	3rd	Best economical sectim, Types of pump:- Best principle
	4th	operatng discharge, horse power, efficiency
	5th	Receprocatng pumps: Types, operatng, discharge, horse power, efficiency
8	1st	Hydrology: Hydrological cycles.

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Semester From Date : 14.02.2023 To Date : 23.05.2023 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	2nd	Rainfall - Types, intensity, hyetograph
	3rd	Estimation of rainfall, Rain gauge
	4th	Rain gauge types, concept of catchment area.
	5th	Types, runoff, estimation of flood discharge by Dicken's & Ryve's formula.
9	1st	Water req. of crops: - definition and irrigation necessity and benefits
	2nd	Types of irrigation: Crop season, Duty, Delta. Base period and their relationship
	3rd	Overlap allowances.
	4th	Kharif and Rabi crops.
	5th	GCA, CIA, intensity of irrigation, irrigation 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 functions

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Semester From Date : 14.02.2023 To Date : 23.05.2023 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	4th	Sketches of different canal cross-section.
	5th	Classification of canals according to their alignment.
11	1st	Various types of canal linings.
	2nd	Advantages & disadvantages of canal lining
	3rd	Water lossing and drainage; - causes and effect of water logging.
	4th	Detection, prevention and remedies.
	5th	Diversim headwork, & regulatory structure Necessity and objectives of diversim head work.
12	1st	weirs & barrage.
	2nd	General layout, function of different parts of barrage.
	3rd	Siltus & scouring.
	4th	function of regulatory structure.
	5th	Cross drainage work, function & necessity.

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Subject: ENGINEERING No. of Days/per week class allotted 05Semester From Date : 14.02.2023 To Date : 23.05.2023 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	Earthem Dams - Types.
	2nd	Descriptm, causes of failure
	3rd	Protectm measurms.
	4th	Gravity dam, Types, Descriptm.
	5th	Causm of failure.
15	1st	Protectm measurms.
	2nd	Spillways.

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Subject: HYDROLOGY AND APPLICATION 2nd SEMESTER No. of Days/per week class allotted 05

Semester From Date : 14.02.2023 To Date : 23.05.2023 No. of Weeks : 15

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

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