

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF CIVIL ENGINEERING



LESSON PLAN

SUBJECT: HYDRAULICS & IRRIGATION ENGINEERING (TH-2)

FACULTY: JASHASWINI BEHERA

ACADEMIC SESSION: 2022-23 (SUMMER)

SEMESTER: 4TH, SEC: A

Sd/-
H O D (Civil Engg.)

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Discipline: Civil Engineering	Semester: 4th		Name of the teaching faculty: JASHASWINI BEHERA
Subject: Hydraulics & Irrigation Engineering	No. of Days/ per week class allotted: 05 periods per week. (Mon-2, Tue-1 and Sat-2 periods)		Semester From Date: 14-02-2023 To Date: 23-05-2023 No. of weeks: 15 weeks
Week	Class Day	No of period available	Theory Topics
1ST	14/02/2023	1P	PART :A (Hydraulics) 1.HYDROSTATICS: 1.1 Properties of fluid: Density, specific gravity
2ND	20/02/2023	2P	1.1 Properties of fluid: surface tension, Capillarity, Viscosity and their uses
	21/02/2023	1P	1.2 Pressure head and pressure gauges
	25/02/2023	2P	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure
3RD	27/02/2023	2P	1.3 expression for total pressure exerted on horizontal and vertical surfaces
	28/02/2023	1P	2. KINEMATICS OF FLUID FLOW: 2.1 Basic equation of fluid flow and their applications: Rate of discharge
	04/03/2023	2P	2.1 Equation of continuity of liquid flow
4TH	06/03/2023	2P	2.1 Total energy of a liquid in motion –Potential, kinetic and pressure
	11/03/2023	2P	2.1 Bernoulli's theorem and its limitations practical application of Bernoulli's equation.
5TH	13/03/2023	2P	2.2 Flow over notches and weirs: notches, weirs, types of notches and weirs
	14/03/2023	1P	2.2 Discharge through different types of notches and weirs –their applications.

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	18/03/2023	2P	2.3 Types of flow through pipes: Uniform and non uniform; laminar and turbulent; steady and unsteady; Reynolds number and its applications
6TH	20/03/2023	2P	2.4 Losses of heads of liquid flowing through pipes: Different types of major and minor losses, Simple numerical problems on losses due to friction using Darcy's equation
	21/03/2023	1P	2.4 Total energy lines and hydraulic gradient lines
	25/03/2023	2P	2.5 Flow through open channels: Types of channel cross sections-Rectangular trapezoidal and circular, Discharge formula Chezy's and Manning's equation
7TH	27/03/2023	2P	2.5 Best economical section PART- B(Irrigation engineering) 1 HYDROLOGY 1.1 Hydrology cycle 1.2 Rainfall: Types, intensity, hyetograph
	28/03/2023	1P	Monthly Class Test-1
8TH	03/04/2023	2P	1.3 Estimation of rainfall, rain gauges, its types 1.4 Concept of catchment area, types, runoff, estimation of flood discharge by Dickens and Ryve's formula
	04/04/2023	1P	2. WATER REQUIREMENT OF CROPS: 2.1 Definition of irrigation, Necessity, benefits of irrigation, types of irrigation
	08/04/2023	2P	2.2 Crop season 2.3 Duty, delta and base period and their relationship, overlap allowances. Kharif and Rabi crops
9TH	10/04/2023	2P	2.4 Gross command area, culturable command area, intensity of irrigation, Irrigable area, Time factor, crop ratio

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			3. FLOW IRRIGATION: 3.1 Canal irrigation, types of canals, loss of water in canals
	11/04/2023	1P	3.2 Perennial irrigation
	15/04/2023	2P	3.3 Different components of irrigation canal and their functions
10TH	17/04/2023	2P	3.4 Sketches of different canal cross sections
	18/04/2023	1P	3.5 Classifications of canals according to their alignment, various types of canal lining-advantages and disadvantages
	22/04/2023	2P	4. WATER LOGGING AND DRAINAGE: 4.1 Causes and effect of Water logging, detection, prevention and remedies
11TH	24/04/2023	2P	5. DIVERSION HEAD WORK AND REGULATORY STRUCTURE: 5.1 Necessity and objective of diversion head work, weirs and barrages
	25/04/2023	1P	Monthly Class Test-2
	29/04/2023	2P	Internal Assessment
12TH	01/05/2023	2P	5.2 General layout, function different part of barrage 5.3 Silting and scouring
	02/05/2023	1P	5.4 Function of regulatory structures
	06/05/2023	2P	6. CROSS DRAINAGE WORK: 6.1 Function and necessity of Cross drainage works-aqueduct, Siphon, super passage, level crossing
13TH	08/05/2023	2P	6.2 Concept of each with help of neat sketch
	09/05/2023	1P	7. DAMS: 7.1 Necessity of storage reservoirs, types of dams

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	13/05/2023	2P	7.2 Earthen dams: Types description, causes failure and protection measures 7.3 Gravity dams: Types description, causes failure and protection measures
14TH	15/05/2023	2P	7.4 Spill ways-types (with sketches) and necessity PART-A 3. PUMPS: 3.1 Types of pumps 3.2 Centrifugal pumps: Basic principles,operation
	16/05/2023	1P	3.2 Centrifugal pumps: discharge, horse power and efficiency
	20/05/2023	2P	3.3 Reciprocating pumps: types, operation, discharge, horse power and efficiency
15TH	22/05/2023	2P	REVISION
	23/05/2023	1P	PREVIOUS YEARS QUESTIONS DISCUSSION