

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF CIVIL ENGINEERING



LESSON PLAN

SUBJECT: HYDRAULICS & IRRIGATION ENGINEERING (TH 2)

FACULTY: KSHITISH KUMAR SAHOO

ACCADEMIC SESSION: 2022-23(SUMMER)

SEMESTER: 4TH, SEC: B

Sd/-
H O D (Civil Engg.)

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Discipline: Civil Engineering	Semester: 4th / B		Name of the teaching faculty: KSHITISH KUMAR SAHOO
SUBJECT: HYDRAULICS & IRRIGATION ENGINEERING (TH 2)	No. of Days/ per week class allotted: 05 period per week. (Mon-1, Wed-1, Thu-1 & Sat-2 period)		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	15/02/2023	1	PART :A (Hydraulics) 1.HYDROSTATICS: 1.1 Properties of fluid: Density, specific gravity
	16/02/2023	1	1.1 Properties of fluid: surface tension, Capillarity, Viscosity and their uses
2ND	20/02/2023	1	1.2 Pressure head and pressure gauges
	22/02/2023	1	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure
	23/02/2023	1	1.3 expression for total pressure exerted on horizontal and vertical surfaces
	25/02/2023	2	2. KINEMATICS OF FLUID FLOW: 2.1 Basic equation of fluid flow and their applications:
3RD	27/02/2023	1	Rate of discharge
	01/03/2023	1	2.1 Equation of continuity of liquid flow
	02/03/2023	1	2.1 Total energy of a liquid in motion –Potential, kinetic and pressure
	04/03/2023	2	2.1 Bernoulli's theorem and its limitations practical application of Bernoulli's equation.

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4TH	06/03/2023	1	2.2 Flowover notches and weirs: notches, weirs, types of notches and weirs
	09/03/2023	1	2.2 Discharge through different types of notches and weirs –their applications.
	11/03/2023	2	2.3 Types of flow through pipes: Uniform and non-uniform; laminar and turbulent; steady and unsteady
5TH	13/03/2023	1	2.3 Reynolds number and its applications
	15/03/2023	1	2.4 Losses of heads of liquid flowing through pipes: Different types of major and minor losses
	16/03/2023	1	Simple numerical problems on losses due to friction using Darcy's equation
	18/03/2023	2	2.4 Total energy lines and hydraulic gradient line
6TH	20/03/2023	1	2.5 Flow through open channels: Types of channel cross sections-Rectangular trapezoidal and circular,
	22/03/2023	1	2.5 Discharge formula Chezy's and Manning's equation 2.5 Best economical section
	23/03/2023	1	Monthly Class Test-1
	25/03/2023	2	PART- B(Irrigation engineering) 1 HYDROLOGY 1.1 Hydrology cycle 1.2 Rainfall: Types, intensity, hyetograph
7TH	27/03/2023	1	1.3 Estimation of rainfall, rain gauges, its types
	29/03/2023	1	1.4 Concept of catchment area, types, runoff, estimation of flood 1.4 discharge by Dickens and Ryve's formula

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8TH	03/04/2023	1	2. WATER REQUIREMENT OF CROPS: 2.1 Definition of irrigation, Necessity, benefits of irrigation, types of irrigation 2.2 Crop season
	05/04/2023	1	2.3 Duty, delta and base period and their relationship, overlap allowances. Kharif and Rabi crops
	06/04/2023	1	2.4 Gross command area, culturable command area, intensity of irrigation, Irrigable area, Time factor, crop ratio
	08/04/2023	2	3. FLOW IRRIGATION: 3.1 Canal irrigation, types of canals, loss of water in canals 3.2 Perennial irrigation
9TH	10/04/2023	1	3.3 Different components of irrigation canal and their functions
	12/04/2023	1	3.4 Sketches of different canal cross sections
	13/04/2023	1	3.5 Classifications of canals according to their alignment, various types of canal lining-advantages and disadvantages
	15/04/2023	2	4. WATER LOGGING AND DRAINAGE: 4.1 Causes and effect of Water logging, detection, prevention and remedies
10TH	17/04/2023	1	Monthly Class Test-2
	19/04/2023	1	5. DIVERSION HEAD WORK AND REGULATORY STRUCTURE: 5.1 Necessity and objective of diversion head work, weirs and barrages
	20/04/2023	1	5.2 General layout, function different part of barrage 5.3 Silting and scouring

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11TH	24/04/2023	1	5.4 Function of regulatory structures
	26/04/2023	1	6 .CROSS DRAINAGE WORK: 6.1 Function and necessity of Cross drainage works-aqueduct, Siphon, super passage, level crossing
	27/04/2023	1	6.2 Concept of each with help of neat sketch
	29/04/2023	2	INTERNAL ASSESSMENT
12TH	01/05/2023	1	Questions Answers Session
	03/05/2023	1	7. DAMS: 7.1Necessity of storage reservoirs, types of dams
	04/05/2023	1	7.2 Earthen dams: Types description, causes failure and protection measures
	06/05/2023	2	7.3 Gravity dams: Types description, causes failure and protection measures
13TH	08/05/2023	1	7.4 Spill ways-types (with sketches) and necessity
	10/05/2023	1	PART-A 3. PUMPS: 3.1 Types of pumps 3.2 Centrifugal pumps: Basic principles,operation
	11/05/2023	1	3.2 Centrifugal pumps: discharge, horse power and efficiency
	13/05/2023	2	3.3Reciprocating pumps: types, operation, discharge, horse power and efficiency

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14TH	15/05/2023	1	REVISION
	17/05/2023	1	REVISION
	18/05/2023	1	REVISION
	20/05/2023	2	PREVIOUS YEARS QUESTIONS DISCUSSION
15TH	22/05/2023	1	PREVIOUS YEARS QUESTIONS DISCUSSION