

LESSON PLAN FOR WINTER SESSION (2022-23)

PROGRAMME : CIVIL ENGINEERING		NAME OF THE FACULTY: HARAPRIYA BADANAYAK	
COURSE NAME : HYDRAULICS & IRRIGATION ENGINEERING		SESSION : 2022-23	
COURSE CODE : TH.2		DATE : 14/02/23 To 23/05/23	
SEMESTER : 4TH			
PERIODS/WEEK: 5			
TOTAL PERIODS:72			

WEEK	PERIODS	UNIT	TOPICS
Feb. 3rd Week	1	Part-A 1	HYDROSTATICS: 1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and their uses
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	4	Part-B 1	HYDROLOGY 1.1 Hydrology Cycle 1.2 Rainfall: types, intensity, hyetograph 1.3 Estimation of rainfall, rain gauges, Its types(concept only)
	5		
Feb. 4th Week	1	Part-B 1	1.4 Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulaeHydrology 1.1 Hydrology Cycle 1.2 Rainfall: types, intensity, hyetograph
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	3	Part-A 1	1.2 Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure and gauge pressure; pressure head; pressure gauges.
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March. 1st Week	1	Part-A 1	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
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March. 2nd Week	1	Part-B 1	Water Requirement of Crops 2.1 Definition of irrigation, necessity, benefits of irrigation, types of irrigation 2.2 Crop season 2.3 Duty, Delta and base period their relationship, overlap allowance, kharif and rabi crops 2.4 Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio
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March. 3rd Week	1	Part-A 2	KINEMATICS OF FLUID FLOW: 2.1 Basic equation of fluid flow and their application: Rate of discharge, equation of continuity of liquid flow, total energy of a liquid in motion- potential, kinetic & pressure, Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation.
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March. 4th Week	1	Part-A 2	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge through different types of notches and weirs-their application (No Derivation) 2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynold's number and its application 2.4 Losses of head of a liquid flowing through pipes: Different types of major and minor losses. Simple numerical problems on losses due to friction using Darcy's equation, Total energy lines & hydraulic gradient lines (Concept Only). 2.5 Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal and circular, discharge formulae- Chezy's and Manning's equation, Best economical section.
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April. 1st Week	1	Part-A 2	2.5 Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal and circular, discharge formulae- Chezy's and Manning's equation, Best economical section.
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April. 2nd Week	1	Part-B 3	FLOW IRRIGATION 3.1 Canal irrigation, types of canals, loss of water in canals 3.2 Perennial irrigation 3.3 Different components of irrigation canals and their functions 3.4 Sketches of different canal cross-sections 3.5 Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages.
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	1		Monthly Test

April. 3rd Week	2	Part-A 3	PUMPS: 3.1 Type of pumps 3.2 Centrifugal pump: basic principles, operation, discharge, horse power & efficiency. 3.3 Reciprocating pumps: types, operation, discharge, horse power & efficiency
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April. 4th Week	5	Part-B 4	WATER LOGGING AND DRAINAGE : 4.1 Causes and effects of water logging, detection, prevention and remedies
	1	Part-B 5	DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.1 Necessity and objectives of diversion head works, weirs and barrages 5.2 General layout, functions of different parts of barrage 5.3 Silting and scouring 5.4 Functions of regulatory structures
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May. 1st Week	5	Part-B 6	CROSS DRAINAGE WORKS : 6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super passage, level crossing 6.2 Concept of each with help of neat sketch
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May. 2nd Week	5	Part-B 7	DAMS 7.1 Necessity of storage reservoirs, types of dams 7.2 Earthen dams: types, description, causes of failure and protection measures. 7.3 Gravity dam- types, description, Causes of failure and protection measures.
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May. 3rd Week	5	Part-B 7	Monthly Test 7.4 Spillways- Types (With Sketch) and necessity.
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May. 4th Week	5		Previous year question Paper discussion.
	1		Previous year question Paper discussion.
May. 4th Week	2		Doubt Clearing Class
	1		Doubt Clearing Class

13/02/2023

Concern faculty HOD
Signature Civil engineering

Syhr
13.2.23

Academic Coordinator
GP Nabarangpur

Principal
GP Nabarangpur
13/2/23