LESSON PLAN : TH-2. HYDRAULICS & IRRIGATION ENGINEERING, SESSION -2024-2025 (SUMMER 2024)BATCH-2022-2025(4th Semester)		
Discipline: civil engineering	Semester: 4th	Name of the Teaching Faculty: Gouranga Charan Pradhan,Sr.Lect. In Civil Engg.
Subject: Th.2-HYDRAULICS & IRRIGATION ENGINEERING	No. of days/ per week class allotted: 5	Semester From Date : 16/01/2024 to Date: 26/04/2024. No. of Weeks: 15
Week	Class Day	Theory/ Practical Topics
		PART: A (Hydraulics)
		1 HYDROSTATICS:
1ST	1	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and
	2	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and
	3	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and
	4	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and
	5	1.2 Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge
2ND	1	1.2 Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge
	2	1.2 Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge
	3	1.2 Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge
	4	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure,
	5	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure,
3RD	1	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure,
	2	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure,
		2 KINEMATICS OF FLUID FLOW:
	3	2.1 Basic equation of fluid flow and their application: Rate of discharge, equation of
	4	2.1 Basic equation of fluid flow and their application: Rate of discharge, equation of
	5	2.1 Basic equation of fluid flow and their application: Rate of discharge, equation of
4TH	1	2.1 Basic equation of fluid flow and their application: Rate of discharge, equation of
	2	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge
	3	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge
	4	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge
	5	2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent;
5TH	1	2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent;
	2	2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent;
	3	2.4 Losses of head of a liquid flowing through pipes: Different types of major and minor
	4	2.4 Losses of head of a liquid flowing through pipes: Different types of major and minor
	5	2.4 Losses of head of a liquid flowing through pipes: Different types of major and minor
6TH	1	2.4 Losses of head of a liquid flowing through pipes: Different types of major and minor
	2	2.5 Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal
	3	2.5 Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal
	4	2.5 Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal
	5	2.5 Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal
		3 PUMPS:
7TH	1	3.1 Type of pumps
	2	3.2 Centrifugal pump: basic principles, operation, discharge, horse power & efficiency.
	3	3.2 Centrifugal pump: basic principles, operation, discharge, horse power & efficiency.
	4	3.3 Reciprocating pumps: types, operation, discharge, horse power & efficiency
	5	3.3 Reciprocating pumps: types, operation, discharge, horse power & efficiency
		PART: B (Irrigation Engineering)
		1 Hydrology
8TH	1	1.1 Hydrology Cycle
	2	1.2 Rainfall: types, intensity, hyetograph
	3	1.3 Estimation of rainfall, rain gauges, Its types(concept only),
	4	1.4 Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's
		2 Water Requirement of Crops

	5	2.1 Definition of irrigation, necessity, benefits of irrigation, types of irrigation
9TH	1	2.2 Crop season
	2	2.3 Duty, Delta and base period their relationship, overlap allowance, kharif and rabi
	3	2.4 Gross command area, culturable command area, Intensity of Irrigation, irrigable area,
		3 FLOW IRRIGATION
	4	3.1 Canal irrigation, types of canals, loss of water in canals
	5	3.1 Canal irrigation, types of canals, loss of water in canals
10TH	1	3.2 Perennial irrigation
	2	3.3 Different components of irrigation canals and their functions
	3	3.4 Sketches of different canal cross-sections
	4	3.5 Classification of canals according to their alignment, Various types of canal lining –
	5	3.5 Classification of canals according to their alignment, Various types of canal lining –
		4 WATER LOGGING AND DRAINAGE :
11TH	1	4.1 Causes and effects of water logging, detection, prevention and remedies
	2	4.1 Causes and effects of water logging, detection, prevention and remedies
		5 DIVERSION HEAD WORKS AND REGULATORY STRUCTURES
	3	5.1 Necessity and objectives of diversion head works, weirs and barrages
	4	5.1 Necessity and objectives of diversion head works, weirs and barrages
	5	5.2 General layout, functions of different parts of barrage
12TH	1	5.2 General layout, functions of different parts of barrage
	2	5.3 Silting and scouring
	3	5.3 Silting and scouring
	4	5.4 Functions of regulatory structures
	5	5.4 Functions of regulatory structures
		6 CROSS DRAINAGE WORKS :
13TH	1	6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage,
	2	6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage,
	3	6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage,
	4	6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage,
	5	6.2 Concept of each with help of neat sketch
14TH	1	6.2 Concept of each with help of neat sketch
	2	6.2 Concept of each with help of neat sketch
		7 DAMS
	3	7.1 Necessity of storage reservoirs, types of dams
	4	7.1 Necessity of storage reservoirs, types of dams
	5	7.2 Earthen dams: types, description, causes of failure and protection measures.
15TH	1	7.2 Earthen dams: types, description, causes of failure and protection measures.
	2	7.3 Gravity dam- types, description, Causes of failure and protection measures.
	3	7.3 Gravity dam- types, description, Causes of failure and protection measures.
	4	7.4 Spillways- Types (With Sketch) and necessity.
	5	7.4 Spillways- Types (With Sketch) and necessity.

15/01/2024