LESSON PLAN OF 4th SEMESTER(2019-22) CIVIL ENGINEERING

Discipline :- CIVIL ENGG	Semester:- 4th	Name of the Teaching Faculty:- PURNIMA PADHI
Subject:- HYDRAULICS AND IRRIGATION ENGG.(th2)	No of Days per Week Class Allotted :- 05	Semester From:- 19th April 2021 To:- 13th August 2021 No of Weeks:- 17

Week	Class Day	Theory
1st	1st	**PART: A (Hydraulics)** **1.0 HYDROSTATICS:** 1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and their uses
	2nd	1.2 Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure.
	3rd	Relationship between atmospheric pressure, absolute pressure and gauge pressure; pressure head; pressure gauges.
	4th	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
	5th	Numerical
2nd	1st	Numerical
	2nd	**2.0 KINEMATICS OF FLUID FLOW:** 2.1 Basic equation of fluid flow and their application: Rate of discharge, equation of continuity of liquid flow.
	3rd	Total energy of a liquid in motion- potential, kinetic & pressure, Bernoulli's theorem and its limitations.
	4th	Numerical
	5th	Practical applications of Bernoulli's equation.
3rd	1st	Numerical
	2nd	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs.
	3rd	Discharge through different types of notches and weirs-their application.
	4th	Numerical
	5th	2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynolds number and its application.
4th	1st	Numerical
	2nd	2.4 Losses of head of a liquid flowing through pipes: Different types of major and minor losses.
	3rd	Simple numerical problems on losses due to friction using Darcy's equation
	4th	Total energy lines & hydraulic gradient lines (Concept Only).
	5th	2.5 Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal and circular.
5th	1st	Discharge formulae- Chezy's and Manning's equation, Best economical section.
	2nd	Numerical
	3rd	Numerical
	4th	**3.0 PUMPS:** 3.1 Type of pumps
	5th	3.2 Centrifugal pump: basic principles, operation, discharge, horse power & efficiency.
6th	1st	Numerical
	2nd	Numerical
	3rd	3.3 Reciprocating pumps: types, operation, discharge.
	4th	Horse power & efficiency.
	5th	Numerical
7th	1st	Numerical

	2nd	**PART: B (Irrigation Engineering)** **1.0 HYDROLOGY** 1.1 Hydrology Cycle
	3rd	1.2 Rainfall: types, intensity, hyetograph
	4th	1.3 Estimation of rainfall, rain gauges, its types(concept only)
	5th	1.4 Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae
8th	1st	Numerical
	2nd	**2.0 WATER REQUIREMENT OF CROPS** 2.1 Definition of irrigation, necessity, benefits of irrigation, types of irrigation
	3rd	2.2 Crop season
	4th	2.3 Duty, Delta and base period their relationship, overlap allowance, kharif and rabi crops
	5th	Numerical
9th	1st	2.4 Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio.
	2nd	Numerical
	3rd	**3.0 FLOW IRRIGATION** 3.1 Canal irrigation, types of canals, loss of water in canals
	4th	3.2 Perennial irrigation
	5th	3.3 Different components of irrigation canals and their functions
10th	1st	3.4 Sketches of different canal cross-sections
	2nd	3.5 Classification of canals according to their alignment
	3rd	Various types of canal lining – Advantages and disadvantages.
	4th	**4.0 WATER LOGGING AND DRAINAGE :** 4.1 Causes and effects of water logging
	5th	Detection, prevention and remedies
11th	1st	**5.0 DIVERSION HEAD WORKS AND REGULATORY STRUCTURES** 5.1 Necessity and objectives of diversion head works
	2nd	Weirs and barrages
	3rd	5.2 General layout, functions of different parts of barrage
	4th	5.3 Silting and scouring
	5th	Numerical
12th	1st	5.4 Functions of regulatory structures
	2nd	-do-
	3rd	**6.0 CROSS DRAINAGE WORKS :** 6.1 Functions and necessity of Cross drainage works
	4th	Aqueduct, siphon, super passage, level crossing
	5th	6.2 Concept of each with help of neat sketch
13th	1st	-do-
	2nd	**7.0 DAMS** 7.1 Necessity of storage reservoirs, types of dams
	3rd	7.2 Earthen dams: types, description
	4th	-do-
	5th	Causes of failure and protection measures.
14th	1st	7.3 Gravity dam- types, description.
	2nd	Causes of failure and protection measures.
	3rd	-do-
	4th	7.4 Spillways- Types (With Sketch) and necessity.
	5th	-do-
15th	1st	**Revision Class**
	2nd	
	3rd	
	4th	
	5th	
16th	1st	

	2nd	Revision Class
	3rd	
	4th	
	5th	
17th	1st	Revision class
	2nd	
	3rd	
	4th	
	5th	

Signature of the concerned Lecturer

Signature of the H.O.D

Signature of Academic Coordinator

Signature of the Principal
G.P., Puri