

Discipline (Civil) Engineering	Semester 4th	Name of the Teaching faculty Mrs. Jeevika Behra
Subject Hydrolic and Irrigation Engg.	No of Day/ Per week class allotted 5	Semester from date 12/2/23 to date 23/5/24 No of weeks :- 15
Week	Class day	Theory
	1st	<u>HYDROSTATICS:</u>
1st	2nd	properties of fluid : density , specific gravity , surface tension , capillarity viscosity and their uses .
	3rd	
	4th	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 .
2nd	1st	
	2nd	pressure exerted on an immersed surface : Total pressure , resultant pressure ex. pressure for total pressure exerted on horizontal and

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17	3rd 4th	Vertical surface.
		<u>KINEMATICS OF FLUID FLOW:-</u>
	5th	Basic equation of fluid flow and their application: Rate of discharge, equation of
3rd	1st	Continuity of liquid flow, total energy of a liquid in motion -
	2nd	potential, kinetic & pressure Bernoulli theorem and its
	3rd	limitation. practical application of Bernoulli's equation.
	4th	Flow over Notches and Weirs:
	5th	Notches, Weirs, types of notches and weirs, Discharge through
4th	1st	different types of notches and weirs - their application.
	2nd	TYPES OF FLOW THROUGH THE PIPES: uniform and non-uniform
	3rd	laminar and turbulent steady and unsteady Reynolds' number and its application.
	4th	Losses of head of a liquid flowing through pipes: Different types of major and minor losses. Simple numerical problems on losses due to

	15th	friction using Darcy's equation; Total energy lines & hydraulic gradient lines (Concept Only).
5th	1st	Flow through the open channels: Types of channel sections - 2nd rectangular, trapezoidal and circular, discharge formulae - 3rd chezy's and Manning's equation Best economical section.
	4th	
	5th	PUMPS: Type of pumps
6th	1st	Centrifugal pump: basic principle operation, discharge, horse 2nd power & efficiency.
	3rd	Reciprocating pumps: types, operation 4th discharge, horse power & 5th efficiency.

PART : B

	1st	Hydrology
7th	2nd	Hydrology Cycle
	3rd	Rainfall types, intensity, 4th hyetograph.

	1st	Estimation of rainfall, rain gauges, its type.
2th	1st	Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae.
	2nd	
	3rd	
	4th	Water Requirement of Crops.
	5th	Definition of irrigation, necessity benefits of irrigation, types of irrigation.
9th	1st	Crop season
	2nd	Duty, Delta and base period their relationship, overlap allowance, kharif, and rabi crops.
	3rd	
	4th	Gross command area, culturable command area, Intensity of irrigation, irrigable areas, time factor, crop ratio.
	5th	
10th	1st	FLOW IRRIGATION
	2nd	Canal irrigation, types of canals, loss of water in canals.

perennial irrigation

3rd Different components of irrigation canals and their functions.

4th sketches of different canal cross-sections.

5th classification of canals according to their alignment, various types of canal lining - Advantages and disadvantages.

11th 1st WATER LOGGING AND DRAINAGE

2nd Causes and effects of water logging, detection, prevention and remedies.

3rd DIVERSION HEAD WORKS AND REGULATORY STRUCTURES

4th Necessity and objectives of diversion head works, weirs and barrages

5th General layout, functions of different parts of barrage.

12th	1st	Silting and Scouring
	2nd	Functions of regulatory structures.
	3rd	CROSS DRAINAGE WORK
	4th	Functions and Necessity of cross drainage works -
	5th	aqueduct, Siphon, Super - passage level crossing.
		Concept of each with help of neat sketch.
13th	1st	DAMS
	2nd	Necessity of storage reservoirs types of dams.
	3rd	Earthen dams, types, description causes of failure and protection measures.
	4th	Gravity dam - Types, description causes of failure and protection measures
	5th	Spillways - Types (with sketch) and necessity.

14th

Revision

15th

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