

Lesson Plan

Programme- Diploma in Civil Engg.	Semester-4th	Faculty Name- Amit Kumar Sahu Prabhanjan Gouda
Subject- Hydraulics & Irrigation Engineering(Th -2)	No. of Days/week class allotted-05 Total no. of Class-75	Session-Summer-2022
Week No.	Class Day	Topics
1st	1st	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and their uses
	2nd	
	3rd	
	4th	
	5th	
2nd	1st	Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure; relationship between atmospheric pressure
	2nd	
	3rd	
	4th	
	5th	
3rd	1st	Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on an immersed surface. Total pressure exerted on horizontal & vertical surface. Basic equation of fluid flow and their application. Rate of discharge, equation of continuity of liquid flow. Pressure exerted on horizontal & vertical surface. capillarity, viscosity and their uses
	2nd	
	3rd	
	4th	
	5th	
4th	1st	total energy of a liquid in motion- potential, kinetic & pressure, Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation.
	2nd	
	3rd	
	4th	
	5th	
5th	1st	Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge through different types of notches and weirs-their application (No Derivation) Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynold's number and its application
	2nd	
	3rd	
	4th	
	5th	
6th	1st	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.
	2nd	
	3rd	
	4th	
	5th	
7th	1st	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
	2nd	
	3rd	
	4th	
	5th	

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8th	1st	Hydrology 1.1 Hydrology Cycle 1.2 Rainfall: types, intensity, hyetograph 1.3 Estimation of rainfall, rain gauges, Its types(concept only), 1.4 Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae 2 Water Requirement of Crops 2.1 Definition of irrigation, necessity, benefits of irrigation, types of irrigation
	2nd	
	3rd	
	4th	
	5th	
9th	1st	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 3 FLOW IRRIGATION 3.1 Canal irrigation, types of canals, loss of water in canals 3.2 Perennial irrigation
	2nd	
	3rd	
	4th	
	5th	
10th	1st	Different components of irrigation canals and their functions 3.4 Sketches of different canal crosssections 3.5 Classification of canals according to their alignment, Various types of canal lining –Advantages and disadvantages
	2nd	
	3rd	
	4th	
	5th	
11th	1st	WATER LOGGING AND DRAINAGE : 4.1 Causes and effects of water logging, detection, prevention and remedies 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
	2nd	
	3rd	
	4th	
	5th	
12th	1st	Silting and scouring 5.4 Functions of regulatory structures CROSS DRAINAGE WORKS :6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage, level crossing
	2nd	
	3rd	
	4th	
	5th	
13th	1st	Concept of each with help of neat sketch 7 DAMS 7.1 Necessity of storage reservoirs, types of dams 7.2 Earthen dams: types, description, causes of failure and protection measures
	2nd	
	3rd	
	4th	
	5th	
14th	1st	Gravity dam- types, description, Causes of failure and protection measures. 7.4 Spillways-Types (With Sketch) and necessity
	2nd	
	3rd	
	4th	
	5th	
15th	1st	Revision
	2nd	
	3rd	
	4th	
	5th	

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