

GOVERNMENT POLYTECHNIC JAJPUR

A/P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha-755019

Website: <https://www.gpjajpur.org> E-mail: principalgpjajpur@yahoo.co.in Contact: 9437155107**DEPARTMENT OF CIVIL
ENGINEERING LESSON PLAN**

Discipline: Civil Engg	Semester: 4th	<i>Name of the Teaching faculty: SHUBHASHREE PRIYADARSHINI DAS</i>
Subject: Hydraulic & Irrigation Engg. Th-2	No of Days/Week class allotted: 5 days	Semester from Date: 16.01.2024 To Date: 26.04.2024 No of weeks: 15
<i>Week</i>	<i>Class Day</i>	<i>Topics</i>
<i>1st</i>	1st	Theory Topics
	2nd	HYDROSTATICS definition
	3rd	Use of hydrostatic
	4th	Branches of hydrostatics
	5th	Properties of fluid
<i>2nd</i>	1st	Density
	2nd	Types of Density
	3rd	Specific gravity
	4th	types of specific gravity
	5th	Numerical problems density
<i>3rd</i>	1st	Numerical problems specific gravity
	2nd	Surface tension ,capillarity
	3rd	Numerical problems on surface tension
	4th	Numerical problems on capillarity
	5th	viscosity
<i>4th</i>	1st	Their uses
	2nd	Pressure and its measurements:
	3rd	Intensity of pressure
	4th	Atmospheric pressure ,gauge pressure
	5th	Absolute pressure and vacuum pressure
<i>5th</i>	1st	relationship between atmospheric pressure, absolute pressure and gauge pressure
	2nd	Pressure exerted on an immersed surface :Total pressure, resultant pressure
	3rd	Expression for total pressure exerted on horizontal & vertical surface
	4th	Numerical problems on total pressure exerted on horizontal & vertical surface
	5th	KINEMATICS OF FLUID FLOW:
<i>6th</i>	1st	Rate of discharge ,equation of continuity of liquid flow
	2nd	Total energy of a liquid in motion-potential, kinetic & pressure,
	3rd	Bernoulli's theorem and its limitations

	4th	Practical application .Flow over Notches and Weirs
	5th	Notches, Weirs, types of notches and weirs
7th	1st	Discharge through different types of notches and weirs-their application
	2nd	Types of flow through the pipes :uniform and non-uniform; laminar and turbulent; steady and unsteady;
	3rd	Reynold's number and its application Losses of head of a liquid flowing through pipes
	4th	Losses of head of a liquid flowing through pipes: Different types of major and minor losses.,
	5th	Simple numerical problems on losses due to friction using Darcy's equation Flow through the Open Channels
8th	1st	Total energy lines &hydraulic gradient lines discharge formulae-
	2nd	Chezy's and Manning's equation, best economical section
	3rd	PUMPS :Type of pumps
	4th	Centrifugal pump :basic principles,operation,discharge
	5th	Types of channel sections-rectangular, trapezoidal and circular horse power & efficiency
9th	1st	Reciprocating pumps:types
	2nd	operation,discharge,horsepower&efficiency
	3rd	Hydrology,Hydrology Cycle
	4th	Rainfall:types,intensity,hyetograph
	5th	Estimation of rainfall
10th	1st	rain gauges,Its types
	2nd	Concept of catchment area,types,run-off
	3rd	estimation of flood discharge by Dicken's and Ryve's formulae
	4th	Water Requirement of Crops,
		Definition of irrigation,necessity, benefits of irrigation
11th	1st	types of irrigation,Crop season
	2nd	Duty,Delta and base period their relationship
	3rd	overlap allowance,kharif and rabi crops,Gross command area, culturable command area
	4th	Intensity of Irrigation,irrigable area,time factor,crop ratio
	5th	FLOW IRRIGATION:Canal irrigation,types of canals
12th	1st	loss of water in canals,Perennial irrigation
	2nd	Different components of irrigation canals and their functions
	3rd	Sketches of different canal cross-sections 3.5 Classification of canals according to their alignment
	4th	Various types of canal lining –Advantages and disadvantages
	5th	WATER LOGGING AND DRAINAGE
13th	1st	Causes and effects of water logging detection prevention and remedies
	2nd	DIVERSION HEADWORKS AND REGULATORY STRUCTURES
	3rd	Necessity and objectives of diversion headworks
	4th	weirs and barrages
	5th	General layout,function of different parts of barrage

14th	1st	Functionsofregulatorystructures
	2nd	CROSSDRAINAGEWORKS
	3rd	Functions andnecessityofCrossdrainageworks
	4th	aqueduct,siphon, superpassage,levelcrossing
	5th	Conceptofeachwithhelpofneatsketch
15th	1st	DAMSNecessityofstoragereservoirs
	2nd	typesofdamsEarthendams:types,description
	3rd	causesoffailureandprotectionmeasures
	4th	Gravitydam-types,description
	5th	Spillways Types(WithSketch)andnecessity
16th	1st	PREVIOUSYEARQUESTIONS &ANS PRACTICE.

LearningResources:

SlNo.	AuthorName	NameoftheBook
1	Modi&Seth	FluidMechanics&Hydraulicmachines
2	D.R.Biswal	Hydraulics&FluidMechanics
3	R.K.Rajput	ATextBookofFluidMechanics&Hydraulicmachines

SHUBHASHREE.P.DAS
FACULTYSIGNATURE