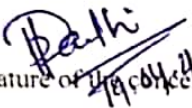


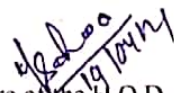
## LESSON PLAN OF 4<sup>th</sup> SEMESTER(2019-22) CIVIL ENGINEERING

Discipline :- <b>CIVIL ENGG</b>	Semester:- <b>4<sup>th</sup></b>	Name of the Teaching Faculty:- <b>PURNIMA PADHI</b>
Subject:- <b>HYDRAULICS AND IRRIGATION ENGG.(th2)</b>	No of Days per Week Class Allotted :- <b>05</b>	Semester From:- <b>19<sup>th</sup> April 2021</b> To:- <b>13<sup>th</sup> August 2021</b>  No of Weeks:- <b>17</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory</b>
<b>1<sup>st</sup></b>	<b>1<sup>st</sup></b>	<b>PART: A (Hydraulics)</b>
		<b>1.0 HYDROSTATICS:</b>
	<b>2<sup>nd</sup></b>	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and their uses
	<b>3<sup>rd</sup></b>	1.2 Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure.
	<b>4<sup>th</sup></b>	Relationship between atmospheric pressure, absolute pressure and gauge pressure; pressure head; pressure gauges.
<b>2<sup>nd</sup></b>	<b>5<sup>th</sup></b>	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
	<b>1<sup>st</sup></b>	Numerical
	<b>2<sup>nd</sup></b>	<b>2.0 KINEMATICS OF FLUID FLOW:</b>
	<b>3<sup>rd</sup></b>	2.1 Basic equation of fluid flow and their application: Rate of discharge, equation of continuity of liquid flow.
	<b>4<sup>th</sup></b>	Total energy of a liquid in motion- potential, kinetic & pressure, Bernoulli's theorem and its limitations.
<b>3<sup>rd</sup></b>	<b>5<sup>th</sup></b>	Numerical
	<b>1<sup>st</sup></b>	Practical applications of Bernoulli's equation.
	<b>2<sup>nd</sup></b>	<b>2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs.</b>
	<b>3<sup>rd</sup></b>	Discharge through different types of notches and weirs-their application.
	<b>4<sup>th</sup></b>	Numerical
<b>4<sup>th</sup></b>	<b>5<sup>th</sup></b>	2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynolds number and its application.
	<b>1<sup>st</sup></b>	Numerical
	<b>2<sup>nd</sup></b>	2.4 Losses of head of a liquid flowing through pipes: Different types of major and minor losses.
	<b>3<sup>rd</sup></b>	Simple numerical problems on losses due to friction using Darcy's equation
	<b>4<sup>th</sup></b>	Total energy lines & hydraulic gradient lines (Concept Only).
<b>5<sup>th</sup></b>	<b>5<sup>th</sup></b>	2.5 Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal and circular.
	<b>1<sup>st</sup></b>	Discharge formulae- Chezy's and Manning's equation, Best economical section.
	<b>2<sup>nd</sup></b>	Numerical
	<b>3<sup>rd</sup></b>	Numerical
	<b>4<sup>th</sup></b>	<b>3.0 PUMPS:</b>
<b>6<sup>th</sup></b>	<b>5<sup>th</sup></b>	3.1 Type of pumps
	<b>1<sup>st</sup></b>	3.2 Centrifugal pump: basic principles, operation, discharge, horse power & efficiency.
	<b>2<sup>nd</sup></b>	Numerical
	<b>3<sup>rd</sup></b>	3.3 Reciprocating pumps: types, operation, discharge.
	<b>4<sup>th</sup></b>	Horse power & efficiency.
<b>7<sup>th</sup></b>	<b>5<sup>th</sup></b>	Numerical
	<b>1<sup>st</sup></b>	Numerical

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

	2 <sup>nd</sup>	Revision Class
	3 <sup>rd</sup>	
	4 <sup>th</sup>	
	5 <sup>th</sup>	
	1 <sup>st</sup>	
17 <sup>th</sup>	2 <sup>nd</sup>	Revision class
	3 <sup>rd</sup>	
	4 <sup>th</sup>	
	5 <sup>th</sup>	
	1 <sup>st</sup>	

Signature of  concerned Lecturer

Signature of the H.O.D 

Signature of Academic Coordinator 

Signature of the Principal  
G.P. Puri 