

## GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN- 2020-21 (SUMMER)

Discipline : CIVIL ENGG.		Semester: 4th Sem	Name of the Teaching Faculty : Padmabhusan Naik	
Subject : H&IE (C210)		No. of Days / per week class allotted : 05	Semester From date : 25.01.2021 To Date : 30.04.2021	
MONTH	Week	Day	Unit	Topics
JANUARY	3rd			<b>PART: A (Hydraulics)</b>
		2nd		<b>1. HYDROSTATICS:</b>
				<b>Properties of fluid:</b> density, specific gravity, Surface tension,
		3rd		Capillarity, viscosity and their uses
		4th		Question Discussion
		5th		<b>Pressure and its measurements:</b> intensity of pressure, atmospheric pressure, gauge pressure, Absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure and gauge pressure;
	4th	1st		<b>Subash Ch. Bose Jayanti</b>
		2nd		Pressure head; pressure gauges.
		3rd		Question Discussion
		4th		<b>Republic Day</b>
		5th		<b>Pressure exerted on an immersed surface:</b> Total pressure, resultant pressure, Expression for total pressure exerted on horizontal & vertical surface.
	5th	1st		Question Discussion
		2nd		<b>2. KINEMATICS OF FLUID FLOW:</b>
		3rd		<b>Basic equation of fluid flow and their application:</b> Rate of discharge, equation of continuity of liquid flow, Total energy of a liquid in motion- potential, kinetic & pressure, Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation.
	2nd	1st		Question Discussion
2nd			<b>Flow over Notches and Weirs:</b> Notches, Weirs, types of notches and weirs, Discharge through different types of notches and weirs-their application (No Derivation)	
3rd			Question Discussion	
4th			<b>Types of flow through the pipes:</b> uniform and non uniform; laminar and turbulent; Steady and unsteady; Reynold's number and its application	
5th			<b>Basanti Panchami</b>	
3rd	1st		Question Discussion	
	2nd		<b>Losses of head of a liquid flowing through pipes:</b> Different types of major and minor losses.	
	3rd	<b>UNIT-2</b>		
	4th			
		5th		

FEBRUARY	4th	1st		Simple numerical problems on losses due to friction using Darcy's equation,	
		2nd		Total energy lines & hydraulic gradient lines (Concept Only).	
		3rd		Question Discussion	
		4th		<b>Flow through the Open Channels:</b> Types of channel sections-rectangular, trapezoidal and circular,	
		5th		Discharge formulae- Chezy's and Manning's equation, Best economical section. Question Discussion	
	5th	1st	UNIT-3		<b>3. PUMPS:</b> Type of pumps Centrifugal pump: basic principles, Operation, discharge, horse power & efficiency.
		2nd			Reciprocating pumps: types, Operation, discharge, horse power & efficiency Question Discussion
		3rd			<b>CLASS TEST-1</b>
		4th	UNIT-1		<b>PART: B (Irrigation Engineering)</b> <b>1. Hydrologys:</b> Hydrology Cycle Rainfall: types, intensity, hyetograph
	5th			Estimation of rainfall, rain gauges, Its types(concept only), Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae Question Discussion	
	MARCH	1st	5th		
		2nd	1st	UNIT-2	
2nd					
3rd					
4th					
5th					
3rd		1st			Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio Question Discussion
		2nd			
		3rd			<b>Internal Assessment</b>
		4th			<b>3. FLOW IRRIGATION :</b> Canal irrigation, types of canals, loss of water in canals Perennial irrigation

<b>M</b>	<b>4th</b>	5th	<b>UNIT-3</b>	Different components of irrigation canals and their functions
		1st		Sketches of different canal cross-sections
		2nd		Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages
		3rd	Question Discussion	
		4th	<b>UNIT-4</b>	<b>4. WATER LOGGING AND DRAINAGE :</b>
	5th	Causes and effects of water logging, Detection, prevention and remedies Question Discussion		
	<b>5th</b>	1st	<b>UNIT-5</b>	<b>Dola Purnima</b>
		2nd		<b>Holi</b>
		3rd		<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES:</b>
		4th		Necessity and objectives of diversion head works, weirs and barrages
5th		General layout, functions of different parts of barrage		
<b>APRIL</b>	<b>1st</b>	1st	<b>UNIT-5</b>	<b>Good Friday</b>
		2nd		<b>Utkal Divas</b>
		3rd		Silting and scouring
		4th		Functions of regulatory structures
		5th		Question Discussion
	<b>2nd</b>	1st	<b>UNIT-6</b>	<b>CLASS TEST-2</b>
		2nd		<b>6. CROSS DRAINAGE WORKS :</b>
		3rd		Functions and necessity of Cross drainage works - aqueduct, siphon, Superpassage, level crossing
		4th		<b>Id-UI-Fitre</b>
		5th		Concept of each with help of neat sketch
	<b>3rd</b>	1st	<b>UNIT-7</b>	Question Discussion
		2nd		<b>7. DAMS :</b>
		3rd		Necessity of storage reservoirs, types of dams
		4th		<b>Ram Navami</b>
		5th		Earthen dams: types, description, causes of failure and protection measures. Gravity dam- types, description, Causes of failure and protection measures.
	<b>4th</b>	1st	<b>UNIT-7</b>	Spillways- Types (With Sketch) and necessity.
		2nd		Question Discussion
		3rd		Semester Questions Discussion
		4th		Semester Questions Discussion
5th		Semester Questions Discussion		