

GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN- 2022/23 (SUMMER)

Discipline : CIVIL ENGG.		Semester: 4th Sem	Name of the Teaching Faculty : Padmabhusan Naik			
Subject : H&IE		No. of Days / per week class allotted : 05	Semester From date : 14.02.2023		To Date : 23.05.2023	
MONTH	Week	Day	Unit	Topics		
FEBRUARY	2nd			PART: A (Hydraulics)		
		1st	UNIT-1	1. HYDROSTATICS:		
				Properties of fluid: density, specific gravity, Surface tension,		
	2nd	Capillarity, viscosity and their uses				
	3rd	Question Discussion				
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;					
5th	Pressure head; pressure gauges. Question Discussion					
MARCH	1ST	1st			Question Discussion	
		2nd			Pressure exerted on an immersed surface: Total pressure, resultant pressure, Expression for total pressure exerted on horizontal & vertical surface.	
		3rd		Question Discussion		
		4th		2. KINEMATICS OF FLUID FLOW:		
	2nd			Basic equation of fluid flow and their application: Rate of discharge, equation of continuity of liquid flow,		
	5th			Total energy of a liquid in motion- potential, kinetic & pressure, Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation.		
				Question Discussion		
		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)		
	4th	3rd		UNIT-2	Question Discussion	
					Types of flow through the pipes: uniform and non uniform; laminar and turbulent; Steady and unsteady; Reynold's number and its application	
			Question Discussion			
5th	4th		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,			

APRIL	5th		Total energy lines & hydraulic gradient lines (Concept Only).	
		5th	Question Discussion	
	2nd	1st	UNIT-3	Flow through the Open Channels: Types of channel sections-rectangular, trapezoidal and circular,
				Discharge formulae- Chezy's and Manning's equation,
		2nd		Best economical section.
	3rd		UNIT-3	Question Discussion
				3. PUMPS:
		3rd		Type of pumps
				Centrifugal pump: basic principles,
	3rd		UNIT-3	Operation, discharge, horse power & efficiency.
		4th		Reciprocating pumps: types,
				Operation, discharge, horse power & efficiency
	4th		UNIT-1	Question Discussion
				CLASS TEST-1
		PART: B (Irrigation Engineering)		
		1. Hydrologys:		
5th		Hydrology Cycle		
5th	1st	UNIT-1	Rainfall: types, intensity, hyetograph	
			Estimation of rainfall, rain gauges, Its types(concept only),	
	2nd		Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae	
5th		UNIT-1	Question Discussion	
			2. Water Requirement of Crops:	
	3rd		Definition of irrigation, necessity, benefits of irrigation, types of irrigation	
1st		UNIT-2	Crop season	
	4th		Duty, Delta and base period their relationship, overlap allowance, kharif and rabi crops	
			Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio	
	5th		Question Discussion	
			3. FLOW IRRIGATION :	
2nd	1st	UNIT-3	Canal irrigation, types of canals, loss of water in canals	
			Perennial irrigation	
	2nd		Different components of irrigation canals and their functions	
	3rd		Sketches of different canal cross-sections	
2nd		UNIT-3	Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages	
	4th		Question Discussion	

MAY				4. WATER LOGGING AND DRAINAGE :		
	3rd	1st	UNIT-4	Causes and effects of water logging,		
		2nd		Detection, prevention and remedies		
				Question Discussion		
					5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES:	
	3rd	3rd	UNIT-5	Necessity and objectives of diversion head works, weirs and barrages		
		4th		General layout, functions of different parts of barrage		
		5th		Silt and scouring		
	Functions of regulatory structures					
	Question Discussion					
					CLASS TEST-2	
	4th				6. CROSS DRAINAGE WORKS :	
		1st	UNIT-6	Functions and necessity of Cross drainage works - aqueduct, siphon,		
				Superpassage, level crossing		
		2nd		Concept of each with help of neat sketch		
						Question Discussion
						7. DAMS :
3rd		UNIT-7	Necessity of storage reservoirs, types of dams			
	Earthen dams: types, description, causes of failure and protection measures.					
4th	Gravity dam- types, description, Causes of failure and protection measures.					
	Spillways- Types (With Sketch) and necessity.					
5th		Question Discussion				