

LESSON PLAN (2022-23)

Discipline: civil engineering	Sem.: 4 TH	Name of teaching faculty: Binod jena (PTGF)
Sub: H&IE	No. of days/ per week class allotted:5	Sem. From date: 14/02/2023 To date: No. of weeks: 15
Week	Class Day	Topics
HYDROSTATICS		
1 st	1 ST	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and their uses
	2 ND	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and their uses
	3 RD	1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and their uses
	4 TH	1.2 Pressure and its measurements
	5 th	1.2 Pressure and its measurements
2 nd	1 st	1.2 Pressure and its measurements
	2 nd	1.2 Pressure and its measurements
	3 rd	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
	4 th	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
	5 th	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
3 rd	1 st	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
	2 nd	1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
	2. KINEMATICS OF FLUID FLOW	
	3 rd	2.1 Basic equation of fluid flow and their application: Rate of discharge equation of continuity of liquid flow,

[Handwritten signature]
14/02/23

Principal
Govt. Polytechnic
Malkangiri, (Odisha)

[Handwritten signature]
14/02/2023

LESSON PLAN (2022-23)

	4 th	2.1 Basic equation of fluid flow and their application: 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
	5 th	2.1 Basic equation of fluid flow and their application: total energy of a liquid in motion- potential, kinetic & pressure,
4 th	1 st	2.1 Basic equation of fluid flow and their application: Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation
	2 nd	2.1 Basic equation of fluid flow and their application: Practical applications of Bernoulli's equation
	3 rd	2.1 Basic equation of fluid flow and their application: Practical applications of Bernoulli's equation
	4 th	2.1 Basic equation of fluid flow and their application: Practical applications of Bernoulli's equation
	5 th	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge through different types of notches and weirs-their application
5 th	1 st	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge through different types of notches and weirs-their application
	2 nd	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge through different types of notches and weirs-their application
	3 rd	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge through different types of notches and weirs-their application
	4 th	2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynold's number and its application
	5 th	2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynold's number and its application
6 th	1 st	2.4 Losses of head of a liquid flowing through pipes: Different types of major and minor losses. Simple numerical problems on losses due to friction

[Handwritten signature]

Principal
Govt. Polytechnic
Malkangiri, (Odisha)

[Handwritten signature]
08/02/2023

LESSON PLAN (2022-23)

		using Darcy's equation, Total energy lines & hydraulic gradient lines
	2 nd	2.4 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
	3 rd	2.4 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
	4 th	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.
	5 th	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.
3.PUMPS:		
7 th	1st	3.1 Type of pumps
	2 nd	3.2 Centrifugal pump: basic principles, operation, discharge, horse power & efficiency
	3 rd	3.2 Centrifugal pump: basic principles, operation, discharge, horse power & efficiency
	4 th	3.3 Reciprocating pumps: types, operation, discharge, horse power & efficiency
	5 th	3.3 Reciprocating pumps: types, operation, discharge, horse power & efficiency
PART: B (Irrigation Engineering)		
1. Hydrology		
8 th	1 st	1.1 Hydrology Cycle 1.2 Rainfall: types, intensity, hyetograph
	2 nd	1.3 Estimation of rainfall, rain gauges, Its types
	3 rd	1.3 Estimation of rainfall, rain gauges, Its types
	4 th	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		
	5 th	2.1 Definition of irrigation, necessity, benefits of irrigation, types of irrigation

[Handwritten signature]
8/2/23

[Handwritten signature]
08/02/2023

LESSON PLAN (2022-23)

9 th	1 st	2.2 Crop season
	2 nd	2.3 Duty, Delta and base period their relationship, overlap allowance, kharif and rabi crops
	3 rd	Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio
3. FLOW IRRIGATION		
	4 th	3.1 Canal irrigation, types of canals, loss of water in canals
	5 th	3.2 Perennial irrigation 3.3 Different components of irrigation canals and their functions
10 th	1 st	3.3 Different components of irrigation canals and their functions
	2 nd	3.4 Sketches of different canal cross-sections
	3 rd	3.5 Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages
	4 th	3.5 Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages
	5 th	3.5 Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages
11 th	4. WATER LOGGING AND DRAINAGE	
	1 st	4.1 Causes and effects of water logging, detection, prevention and remedies
	2 nd	4.1 Causes and effects of water logging, detection, prevention and remedies
	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES	
	3 rd	5.1 Necessity and objectives of diversion head works, weirs and barrages
	4 th	5.2 General layout, functions of different parts of barrage
	5 th	5.2 General layout, functions of different parts of barrage
12 th	1 st	5.2 General layout, functions of different parts of barrage
	2 nd	5.2 General layout, functions of different parts of barrage
	3 rd	5.3 Silting and scouring
	4 th	5.4 Functions of regulatory structures
	5 th	5.4 Functions of regulatory structures
13 th	6. CROSS DRAINAGE WORKS	
	1 st	6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage, level crossing
	2 nd	6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage, level crossing
	3 rd	6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage, level crossing

[Handwritten signature]

[Handwritten signature]
08/02/2023

LESSON PLAN (2022-23)

	4 th	6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super-passage, level crossing
	5 th	6.2 Concept of each with help of neat sketch
14 th	1 st	6.2 Concept of each with help of neat sketch
	2 nd	6.2 Concept of each with help of neat sketch
	7. DAMS	
	3 rd	7.1 Necessity of storage reservoirs, types of dams
	4 th	7.2 Earthen dams: types, description, causes of failure and protection measures.
	5 th	7.2 Earthen dams: types, description, causes of failure and protection measures.
15 th	1 st	7.3 Gravity dam- types, description, Causes of failure and protection measures
	2 nd	7.3 Gravity dam- types, description, Causes of failure and protection measures
	3 rd	7.4 Spillways- Types (With Sketch) and necessity
	4 th	7.4 Spillways- Types (With Sketch) and necessity
	5 th	7.4 Spillways- Types (With Sketch) and necessity

[Handwritten signature]
8/2/23

[Handwritten signature]
08/02/2023

[Handwritten signature]
Principal
Govt. Polytechnic
Mehsana, (Gujarat)