



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY  
SERGARH-756060, BALASORE (ODISHA)  
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



## LESSON PLAN

**SUBJECT : Th-2(Hydraulic and Irrigation engg)**

**Name Of The Faculty :-** Er. Abhilipsa Das

**Branch :-** Civil Engineering

**Session :-** 2023-24

**Semester :-** 4th

**Examination :-** 2024 (S)

### CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
PART: A (HYDRAULICS & MACHINES )			
1	Hydrostatics	12	12
2	Kinematics Of Fluid Flow	18	18
3	Pumps	5	5
PART: B (IRRIGATION ENGG )			
1	Hydrology	4	4
2	Water Requirement Of Crops	4	4
3	Flow Irrigation	7	7
4	Water Logging And Drainage	2	2
5	Diversion Head Works And Regulatory Structures	8	8
6	Cross Drainage Works :	7	7
7	Dams	8	8
8	Total Period:	75	75

Discipline: CIVIL ENGINEERING	Semester: 4th	Name of the Teaching Faculty: Er.Abhilipsa Das
		SESSION : 2023-24 EXAMINATION : 2024(S)
Week	Class Day	Topics to be Covered
1 <sup>st</sup>	1 <sup>st</sup>	<b>Hydrostatics</b> 1.1 Property of fluid :Density,Sp.Gravity,Surface tension ,Capillarity,Viscosity & their uses
	2 <sup>nd</sup>	<b>Hydrostatics</b> 1.1 Property of fluid :Density,Sp.Gravity,Surface tension ,Capillarity,Viscosity & their uses
	3 <sup>rd</sup>	<b>Hydrostatics</b> 1.1 Property of fluid :Density,Sp.Gravity,Surface tension ,Capillarity,Viscosity & their uses
	4 <sup>th</sup>	<b>1.2 Pressure and its measurements -</b> intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure
	5 <sup>th</sup>	<b>1.2 Pressure and its measurements -</b> intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure
2 <sup>nd</sup>	1 <sup>st</sup>	<b>1.2 Pressure and its measurements -</b> intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure
	2 <sup>nd</sup>	<b>1.2 Pressure and its measurements -</b> intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure
	3 <sup>rd</sup>	<b>1.2 Pressure and its measurements -</b> intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure
	4 <sup>th</sup>	<b>1.3 Pressure exerted on an immersed surface pressure head;</b> Total pressure ,Resultant pressure,Expression for total pressure exerted on horizontal and vertical surface
	5 <sup>th</sup>	<b>1.3 Pressure exerted on an immersed surface pressure head;</b> Total pressure ,Resultant pressure,Expression for total pressure exerted on horizontal and vertical surface
3 <sup>rd</sup>	1 <sup>st</sup>	<b>1.3 Pressure exerted on an immersed surface pressure head;</b> Total pressure ,Resultant pressure,Expression for total pressure exerted on horizontal and vertical surface
	2 <sup>nd</sup>	<b>1.3 Pressure exerted on an immersed surface pressure head;</b> Total pressure ,Resultant pressure,Expression for total pressure exerted on horizontal and vertical surface
	3 <sup>rd</sup>	<b>KINEMATICS OF FLUID FLOW</b> 2.1 Basic equation of fluid flow and their application

3 <sup>rd</sup>	4 <sup>th</sup>	<b>KINEMATICS OF FLUID FLOW</b> 2.1 Basic equation of fluid flow and their application
	5 <sup>th</sup>	<b>KINEMATICS OF FLUID FLOW</b> 2.1 Basic equation of fluid flow and their application
4 <sup>th</sup>	1 <sup>st</sup>	<b>KINEMATICS OF FLUID FLOW</b> 2.1 Basic equation of fluid flow and their application
	2 <sup>nd</sup>	<b>KINEMATICS OF FLUID FLOW</b> 2.1 Basic equation of fluid flow and their application Rate of discharge, equation of continuity of liquid flow
	3 <sup>rd</sup>	<b>KINEMATICS OF FLUID FLOW</b> 2.2 Flow over Notches and Weirs Notches, Weirs, types of notches and weirs
	4 <sup>th</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.2 Flow over Notches and Weirs Discharge through different types of notches and weirs-their application (No Derivation)
	5 <sup>th</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.2 Flow over Notches and Weirs Discharge through different types of notches and weirs-their application (No Derivation)
5 <sup>th</sup>	1 <sup>st</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.2 Flow over Notches and Weirs Discharge through different types of notches and weirs-their application (No Derivation)
	2 <sup>nd</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.3 Types of flow through the pipes uniform and non uniform; laminar and turbulent; steady and unsteady
	3 <sup>rd</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.3 Types of flow through the pipes uniform and non uniform; laminar and turbulent; steady and unsteady
	4 <sup>th</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.3 Types of flow through the pipes uniform and non uniform; laminar and turbulent; steady and unsteady
	5 <sup>th</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.3 Types of flow through the pipes uniform and non uniform; laminar and turbulent; steady and unsteady
6 <sup>th</sup>	1 <sup>st</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.4 Losses of head of a liquid flowing through pipes
	2 <sup>nd</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.4 Losses of head of a liquid flowing through pipes
	3 <sup>rd</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.4 Losses of head of a liquid flowing through pipes Simple numerical problems on losses due to friction using Darcy's equation
	4 <sup>th</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.4 Losses of head of a liquid flowing through pipes Simple numerical problems on losses due to friction using Darcy's equation
	5 <sup>th</sup>	<b>2. KINEMATICS OF FLUID FLOW</b> 2.4 Losses of head of a liquid flowing through pipes Simple numerical problems on losses due to friction using Darcy's equation
7 <sup>th</sup>	1 <sup>st</sup>	<b>3. PUMPS</b> 3.1 Type of pumps

7 <sup>th</sup>	2 <sup>nd</sup>	<b>3. PUMPS</b> 3.2 Centrifugal pump
	3 <sup>rd</sup>	<b>3. PUMPS</b> 3.2 Centrifugal pump
	4 <sup>th</sup>	<b>3. PUMPS</b> 3.3 Reciprocating pumps Types,operation, discharge, horse power & efficiency
	5 <sup>th</sup>	<b>3. PUMPS</b> 3.3 Reciprocating pumps
8 <sup>th</sup>	1 <sup>st</sup>	<b>1.HYDROLOGY</b> 1.1 Hydrology Cycle
	2 <sup>nd</sup>	<b>1.HYDROLOGY</b> 1.2 Rainfall: types, intensity, hyetograph
	3 <sup>rd</sup>	<b>1.HYDROLOGY</b> 1.3 Estimation of rainfall, rain gauges, Its types(concept only),
	4 <sup>th</sup>	<b>1.HYDROLOGY</b> 1.4 Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's
	5 <sup>th</sup>	<b>2. Water Requirement of Crops</b> 2.1 Definition of irrigation, necessity, benefits of irrigation, types of irrigation
9 <sup>th</sup>	1 <sup>st</sup>	<b>2. Water Requirement of Crops</b> 2.2 Crop season
	2 <sup>nd</sup>	<b>2. Water Requirement of Crops</b> 2.3 Duty, Delta and base period their relationship, overlap allowance, kharif and rabi crops
	3 <sup>rd</sup>	<b>2. Water Requirement of Crops</b> 2.4 Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio
	4 <sup>th</sup>	<b>3. FLOW IRRIGATION</b> 3.1 Canal irrigation, types of canals, loss of water in canals
	5 <sup>th</sup>	<b>3. FLOW IRRIGATION</b> 3.2 Perennial irrigation
10 <sup>th</sup>	1 <sup>st</sup>	<b>3. FLOW IRRIGATION</b> 3.3 Different components of irrigation canals and their functions
	2 <sup>nd</sup>	<b>3. FLOW IRRIGATION</b> 3.3 Different components of irrigation canals and their functions
	3 <sup>rd</sup>	<b>3. FLOW IRRIGATION</b> 3.4 Sketches of different canal cross-sections
	4 <sup>th</sup>	<b>3. FLOW IRRIGATION</b> 3.5 Classification of canals according to their alignment, Various types of canal lining –
	5 <sup>th</sup>	<b>3. FLOW IRRIGATION</b> 3.1 Canal irrigation, types of canals, loss of water in canals 3.5 Classification of canals
11 <sup>th</sup>	1 <sup>st</sup>	<b>4. WATER LOGGING AND DRAINAGE</b> 4.1 Causes and effects of water logging, detection, prevention and remedies
	2 <sup>nd</sup>	<b>4. WATER LOGGING AND DRAINAGE</b> 4.1 Causes and effects of water logging, detection, prevention and remedies
	3 <sup>rd</sup>	<b>INTERNAL ASSESMENT.</b>
	4 <sup>th</sup>	<b>INTERNAL ASSESMENT.</b>

<b>11<sup>th</sup></b>	<b>5<sup>th</sup></b>	<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES</b> 5.1 Necessity and objectives of diversion head works, weirs and barrages
<b>12<sup>th</sup></b>	<b>1<sup>st</sup></b>	<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES</b> 5.1 Necessity and objectives of diversion head works, weirs and barrages
	<b>2<sup>nd</sup></b>	<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES</b> 5.2 General layout, functions of different parts of barrage
	<b>3<sup>rd</sup></b>	<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES</b> 5.2 General layout, functions of different parts of barrage
	<b>4<sup>th</sup></b>	<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES</b> 5.3 Silting and scouring
	<b>5<sup>th</sup></b>	<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES</b> 5.3 Silting and scouring
<b>13<sup>th</sup></b>	<b>1<sup>st</sup></b>	<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES</b> 5.4 Functions of regulatory structures
	<b>2<sup>nd</sup></b>	<b>5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES</b> 5.4 Functions of regulatory structures
	<b>3<sup>rd</sup></b>	<b>6. CROSS DRAINAGE WORKS</b> Functions and necessity of Cross drainage works - aqueduct (concept with help of neat
	<b>4<sup>th</sup></b>	<b>6. CROSS DRAINAGE WORKS</b> Functions and necessity of Cross drainage works - aqueduct (concept with help of neat
	<b>5<sup>th</sup></b>	<b>6. CROSS DRAINAGE WORKS</b> Functions and necessity of Cross drainage works - siphon (concept with help of neat
<b>14<sup>th</sup></b>	<b>1<sup>st</sup></b>	<b>6. CROSS DRAINAGE WORKS</b> Functions and necessity of Cross drainage works - siphon (concept with help of neat
	<b>2<sup>nd</sup></b>	<b>6. CROSS DRAINAGE WORKS</b> Functions and necessity of Cross drainage works - superpassage (concept with help of neat sketch)
	<b>3<sup>rd</sup></b>	<b>6. CROSS DRAINAGE WORKS</b> Functions and necessity of Cross drainage works - level crossing (concept with help of neat sketch)
	<b>4<sup>th</sup></b>	<b>6. CROSS DRAINAGE WORKS</b> Functions and necessity of Cross drainage works - level crossing (concept with help of neat sketch)
	<b>5<sup>th</sup></b>	<b>7. DAMS</b> 7.1 Necessity of storage reservoirs, types of dams
<b>15<sup>th</sup></b>	<b>1<sup>st</sup></b>	<b>7. DAMS</b> 7.2 Earthen dams: types, description, causes of failure and protection measures
	<b>2<sup>nd</sup></b>	<b>7. DAMS</b> 7.2 Earthen dams: types, description, causes of failure and protection measures
	<b>3<sup>rd</sup></b>	<b>7. DAMS</b> 7.2 Earthen dams: types, description, causes of failure and protection measures
	<b>4<sup>th</sup></b>	<b>7. DAMS</b> 7.3 Gravity dam- types, description, Causes of failure and protection measures
	<b>5<sup>th</sup></b>	<b>7. DAMS</b> 7.3 Gravity dam- types, description, Causes of failure and protection measures

