



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



LESSON PLAN

SUBJECT: Th-2 (HYDRAULICS & IRRIGATION ENGINEERING)

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 And Machines)			
1	Hydrostatics	12	12
2	Kinematics Of Fluid Flow	18	18
3	Pumps	5	5
Part: B (Irrigation Engineering)			
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

	Total Period:	75	75
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Discipline: CIVIL ENGINEERING	Semester: 3rd	Name of the Teaching Faculty: Er. SITIKANTHA BARIK
Week	Class Day	Theory / Practical Topics
PART: A (Hydraulics)		
1st	1st	1. HYDROSTATICS Properties of fluid gravity, surface tension, capillarity, viscosity and their uses 1.1 density, specific
	2nd	1. HYDROSTATICS Properties of fluid gravity, surface tension, capillarity, viscosity and their uses 1.1 density, specific
	3rd	1. HYDROSTATICS Properties of fluid gravity, surface tension, capillarity, viscosity and their uses 1.1 density, specific
	4th	1. HYDROSTATICS Pressure and its measurements intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure 1.2
	5th	1. HYDROSTATICS Pressure and its measurements intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure 1.2
2nd	1st	1. HYDROSTATICS Pressure and its measurements relationship between atmospheric pressure, absolute pressure and gauge pressure 1.2
	2nd	1. HYDROSTATICS Pressure and its measurements relationship between atmospheric pressure, absolute pressure and gauge pressure 1.2
	3rd	1. HYDROSTATICS Pressure exerted on an immersed surface pressure head; pressure gauges 1.3

	4th	1. HYDROSTATICS Pressure and its measurements pressure head; pressure gauges	1.2
	5th	1. HYDROSTATICS Pressure exerted on an immersed surface Total pressure, resultant pressure	1.3
3rd	1st	1. HYDROSTATICS Pressure exerted on an immersed surface expression for total pressure exerted on horizontal & vertical surface	1.3
	2nd	1. HYDROSTATICS Pressure exerted on an immersed surface expression for total pressure exerted on horizontal & vertical surface	1.3
	3rd	2. KINEMATICS OF FLUID FLOW 2.1 Basic equation of fluid flow and their application Rate of discharge, equation of continuity of liquid flow	
	4th	2. KINEMATICS OF FLUID FLOW 2.1 Basic equation of fluid flow and their application Total energy of a liquid in motion- potential, kinetic & pressure	
	5th	2. KINEMATICS OF FLUID FLOW 2.1 Basic equation of fluid flow and their application Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation	
4th	1st	2. KINEMATICS OF FLUID FLOW 2.1 Basic equation of fluid flow and their application Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation	
	2nd	2. KINEMATICS OF FLUID FLOW 2.1 Basic equation of fluid flow and their application Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation	
	3rd	2. KINEMATICS OF FLUID FLOW 2.2 Flow over Notches and Weirs Notches, Weirs, types of notches and weirs	
	4th	2. KINEMATICS OF FLUID FLOW 2.2 Flow over Notches and Weirs Discharge through different types of notches and weirs-their application (No Derivation)	
	5th	2. KINEMATICS OF FLUID FLOW 2.2 Flow over Notches and Weirs Discharge through different types of notches and weirs-their application (No	

5 th	1 st	2. KINEMATICS OF FLUID FLOW 2.3 Types of flow through the pipes uniform and non uniform; laminar and turbulent; steady and unsteady	
	2 nd	2. KINEMATICS OF FLUID FLOW 2.3 Types of flow through the pipes Reynold's number and its application	
	3 rd	2. KINEMATICS OF FLUID FLOW 2.3 Types of flow through the pipes Reynold's number and its application	
	4 th	2. KINEMATICS OF FLUID FLOW 2.4 Losses of head of a liquid flowing through pipes Different types of major and minor losses	
	5 th	2. KINEMATICS OF FLUID FLOW 2.4 Losses of head of a liquid flowing through pipes Simple numerical problems on losses due to friction using Darcy's equation	
6 th	1 st	2. KINEMATICS OF FLUID FLOW 2.4 Losses of head of a liquid flowing through pipes Total energy lines & hydraulic gradient lines (Concept Only)	
	2 nd	2. KINEMATICS OF FLUID FLOW 2.5 Flow through the Open Channels Types of channel sections-rectangular, trapezoidal and circular)	
	3 rd	2. KINEMATICS OF FLUID FLOW 2.5 Flow through the Open Channels discharge formulae- Chezy's and Manning's equation	
	4 th	2. KINEMATICS OF FLUID FLOW 2.5 Flow through the Open Channels discharge formulae- Chezy's and Manning's equation	
	5 th	2. KINEMATICS OF FLUID FLOW 2.5 Flow through the Open Channels Best economical section	
7 th	1 st	3. PUMPS pumps	3.1 Type of
	2 nd	3. PUMPS Centrifugal pump principles, operation, discharge, horse power & efficiency	3.2 Basic
	3 rd	3. PUMPS Centrifugal pump principles, operation, discharge, horse power & efficiency	3.2 Basic
	4 th	3. PUMPS Reciprocating pumps operation, discharge, horse power & efficiency	3.3 Types,

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

	5 th	3. FLOW IRRIGATION 3.1 Canal irrigation, types of canals, loss of water in canals 3.5 Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages
11 th	1 st	4. WATER LOGGING AND DRAINAGE 4.1 Causes and effects of water logging, detection, prevention and remedies
	2 nd	4. WATER LOGGING AND DRAINAGE 4.1 Causes and effects of water logging, detection, prevention and remedies
	3 rd	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.1 Necessity and objectives of diversion head works, weirs and barrages
	4 th	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.1 Necessity and objectives of diversion head works, weirs and barrages
	5 th	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.2 General layout, functions of different parts of barrage
12 th	1 st	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.2 General layout, functions of different parts of barrage
	2 nd	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.3 Silting and scouring
	3 rd	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.3 Silting and scouring
	4 th	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.4 Functions of regulatory structures
	5 th	5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.4 Functions of regulatory structures
13 th	1 st	6. CROSS DRAINAGE WORKS Functions and necessity of Cross drainage works - aqueduct (concept with help of neat sketch)
	2 nd	6. CROSS DRAINAGE WORKS Functions and necessity of Cross drainage works - aqueduct (concept with help of neat sketch)
	3 rd	6. CROSS DRAINAGE WORKS Functions and necessity of Cross drainage works - siphon (concept with help of neat sketch)
	4 th	6. CROSS DRAINAGE WORKS Functions and necessity of Cross drainage works - siphon (concept with help of neat sketch)
	5 th	6. CROSS DRAINAGE WORKS Functions and necessity of Cross drainage works - superpassage (concept with help of neat sketch)

14th	1st	6. CROSS DRAINAGE WORKS Functions and necessity of Cross drainage works - level crossing (concept with help of neat sketch)
	2nd	6. CROSS DRAINAGE WORKS Functions and necessity of Cross drainage works - level crossing (concept with help of neat sketch)
	3rd	7. DAMS 7.1 Necessity of storage reservoirs, types of dams
	4th	7. DAMS 7.2 Earthen dams: types, description, causes of failure and protection measures
	5th	7. DAMS 7.2 Earthen dams: types, description, causes of failure and protection measures
15th	1st	7. DAMS 7.2 Earthen dams: types, description, causes of failure and protection measures
	2nd	7. DAMS 7.3 Gravity dam- types, description, Causes of failure and protection measures
	3rd	7. DAMS 7.3 Gravity dam- types, description, Causes of failure and protection measures
	4th	7. DAMS 7.3 Gravity dam- types, description, Causes of failure and protection measures
	5th	7. DAMS 7.4 Spillways- Types (With Sketch) and necessity