

# MAHAMAYA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCE, NUAPADA

## LESSON PLAN (MONTH: FEBRUARY TO MAY 2023)

NAME OF THE FACULTY: Er.FARIZ BHAI

BRANCH: CIVIL ENGG.

SESSION:2022-23

Subject:- HIDRAULICS AND IRRIGATION ENGG.		Semester:-4TH
Week	Class Day	Theory Topics
1st	1 <sup>st</sup>	PART-A :HYDROSTATICS: 1.1 Properties of fluid: density, specific gravity, surface tension, capillarity, viscosity and their uses
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PART-B: Hydrology 1.1 Hydrology Cycle
	4 <sup>th</sup>	1.2 Rainfall: types, intensity, hyetograph
	5 <sup>th</sup>	1.3 Estimation of rainfall, rain gauges, Its types(concept only),
	6 <sup>th</sup>	
2nd	1 <sup>st</sup>	PART-A :HYDROSTATICS 1.1-CONTD.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PART-B: 1.4 Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae
	4 <sup>th</sup>	Water Requirement of Crops 2.1 Definition of irrigation, necessity, benefits of irrigation, types of irrigation
	5 <sup>th</sup>	contd.
	6 <sup>th</sup>	
3rd	1 <sup>st</sup>	PART-A:1.2 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; pressure head; pressure gauges.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PART-B:2.2 Crop season 2.3 Duty, Delta and base period their relationship, overlap allowance, kharif and rabi crops
	4 <sup>th</sup>	2.4 Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio
	5 <sup>th</sup>	FLOW IRRIGATION 3.1 Canal irrigation, types of canals, loss of water in canals
	6 <sup>th</sup>	
4th	1 <sup>st</sup>	PART-A: 1.2- CONTD.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PART-B:3.2 Perennial irrigation
	4 <sup>th</sup>	
	5 <sup>th</sup>	

5th	6 <sup>th</sup>	
	1 <sup>st</sup>	PART-A:1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PART-B:3.3 Different components of irrigation canals and their functions
	4 <sup>th</sup>	contd.
	5 <sup>th</sup>	3.4 Sketches of different canal cross-sections
6th	6 <sup>th</sup>	
	1 <sup>st</sup>	PART-A: 1.3 -CONTD.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PART-B:3.5 Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages
	4 <sup>th</sup>	contd.
	5 <sup>th</sup>	WATER LOGGING AND DRAINAGE : 4.1 Causes and effects of water logging, detection, prevention and remedies
7th	6 <sup>th</sup>	
	1 <sup>st</sup>	PART-A:KINEMATICS OF FLUID FLOW: 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.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PART-B: 4.1- CONTD.
	4 <sup>th</sup>	DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.1 Necessity and objectives of diversion head works, weirs and barrages
	5 <sup>th</sup>	contd.
8th	6 <sup>th</sup>	
	1 <sup>st</sup>	PART-A: 2.1- CONTD.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	2.2 Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs, Discharge through different types of notches and weirs-their application (No Derivation)
	4 <sup>th</sup>	PART-B: 5.2 General layout, functions of different parts of barrage
	5 <sup>th</sup>	contd.
	6 <sup>th</sup>	
	1 <sup>st</sup>	PART-A: 2.2-CONTD.
	2 <sup>nd</sup>	contd.

9th	3 <sup>rd</sup>	2.3 Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynold's number and its application
	4 <sup>th</sup>	PART-B: 5.3 Silting and scouring
	5 <sup>th</sup>	5.4 Functions of regulatory structures
	6 <sup>th</sup>	
10th	1 <sup>st</sup>	PART-A : 2.3- CONTD.
	2 <sup>nd</sup>	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 (Concept Only).
	3 <sup>rd</sup>	contd.
	4 <sup>th</sup>	PART-B: 5.4 -CONTD.
	5 <sup>th</sup>	CROSS DRAINAGE WORKS : 6.1 Functions and necessity of Cross drainage works - aqueduct, siphon, super passage, level crossing
	6 <sup>th</sup>	
11th	1 <sup>st</sup>	PART-A: 2.4-CONTD.
	2 <sup>nd</sup>	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 <sup>rd</sup>	contd.
	4 <sup>th</sup>	PART-B: 6.1-CONTD.
	5 <sup>th</sup>	contd.
	6 <sup>th</sup>	
12th	1 <sup>st</sup>	PART-A: 2.5-CONTD.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PUMPS: 3.1 Type of pumps
	4 <sup>th</sup>	PART-B: 6.2 Concept of each with help of neat sketch
	5 <sup>th</sup>	contd.
	6 <sup>th</sup>	
13th	1 <sup>st</sup>	PART-A:3.2 Centrifugal pump: basic principles, operation, discharge, horse power & efficiency.
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	contd.
	4 <sup>th</sup>	PART-B: 6.2-CONTD.
	5 <sup>th</sup>	DAMS 7.1 Necessity of storage reservoirs, types of dams
	6 <sup>th</sup>	
14th	1 <sup>st</sup>	PART-A: 3.3 Reciprocating pumps: types, operation, discharge, horse power & efficiency
	2 <sup>nd</sup>	contd.
	3 <sup>rd</sup>	PART-B: 7.2 Earthen dams: types, description, causes of failure and protection measures.
	4 <sup>th</sup>	contd.
	5 <sup>th</sup>	7.3 Gravity dam- types, description, Causes of failure and protection measures.
	6 <sup>th</sup>	

15th

1 <sup>st</sup>	PART-B: 7.3-CONTD.
2 <sup>nd</sup>	contd.
3 <sup>rd</sup>	7.4 Spillways- Types (With Sketch) and necessity.
4 <sup>th</sup>	contd.
5 <sup>th</sup>	contd.
6 <sup>th</sup>	

*Feroz Bhu*

Signature of faculty member

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