ASIAN SCHOOL OF TECHNOLOGY, BHUBANESWAR

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

Discipline: Civil engineering	Semester : 3rd	No. of periods available: 51	Name of Teaching Faculty: Bisnupriya Jena
Subject: Hydraulic and Irrigation Engineering	No. of Days/ per week class allotted : 4 periods per week		No. of weeks : 13
Week	Class Day		Topics to be covered
1st	1st	1	Introduction
	2nd	1	Properties of fluid: density, specific gravity, surface tension
	3rd	1	Capillarity, viscosity and their uses
	4th	1	Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure
2nd	5th	1	Absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure
	6th	1	Gauge pressure; pressure head; pressure gauges.
	7th	1	Assignment evaluation
	8th	1	Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface
3rd	9th	1	KINEMATICS OF FLUID FLOW: 2.1

			Basic equation of fluid flow and their application: Rate of discharge,
	10th	1	Equation of continuity of liquid flow, total energy of a liquid in motion
	11th	1	Potential, kinetic & pressure, Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation.
	12th	1	Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs
4th	13th	1	Discharge through different types of notches and weirs-their application
	14th	1	Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynold's number and its application
	15th	1	Losses of head of a liquid flowing through pipes: Different types of major and minor losses
	16th	1	Simple numerical problems on losses due to friction using Darcy's equation
5th	17th	1	Total energy lines & hydraulic gradient lines
	18th	1	Flow through the Open Channels: Types

			of channel sections- rectangular,
	19th	1	trapezoidal and circular, discharge formulae- Chezy's and Manning's equation
	20th	1	Best economical section.
6th	21st	1	Type of pumps, Centrifugal pump: basic principles, operation, discharge
	22nd	1	horse power & efficiency
	23rd	1	Reciprocating pumps: types, operation, discharge,
	24th	1	Hydrology Cycle , Rainfall: types intensity, hyetograph Estimation of rainfall, rain gauges, Its types(
7th	25th	1	Concept of catchment area, types, run-off, Estimation of flood discharge by Dicken's and Ryve's formulae
	26th	1	Definition of irrigation, necessity, benefits of irrigation, types of irrigation
	27th	1	Crop season ,Duty, Delta and base period Relationship, overlap allowance, kharif and rabi crops Gross command area, culturable command area,
	28th	1	Intensity of Irrigation, Time factor, crop ratio, Irrigable area
8th	29th	1	Canal irrigation, types of canals,
	30th	1	loss of water in canals
	31st	1	Sketches of

			different canal cross-sections Classification of canals according to their alignment Various types of canal lining Advantages and disadvantages
	32nd	1	WATER LOGGING AND DRAINAGE : Causes and effects of water logging, detection
9th	33rd	1	Prevention and remedies
	34th	1	DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.1 Necessity and objectives
	35th	1	Weirs and barrages, General layout, functions of different parts of barrage
	36th	1	Silting and scouring , Functions of regulatory structures
10th	37th	1	Functions and necessity of Cross drainage works
	38th	1	Aqueduct, siphon
	39th	1	Super passage, level crossing
	40	1	Concept of each with help of neat sketch
11th	41st	1	Quiz Test
	42nd	1	Doubt clearing
	43rd	1	*Different types of reservoir*
	44th	1	Necessity of storage reservoirs
12th	45th	1	Types of dams
	46th	1	Earthen dams: types, description
	47th	1	Causes of failure

	48th	1	Protection measures
13th	49th	1	Causes of failure
	50th	1	Protection measures
	51st	1	Spillways- Types (With Sketch)
	52nd	1	Necessity of spill way