

LESSON PLAN

Semester: 6th		Year: 2023-24		Course: B.Tech	
		Sub: Hydrology and Irrigation Engineering		Total Credit:03	
Branch : CE		Sub Code :			
Name of the Faculty:		Bal Gopal Guru			
Designation :		Assistant Professor			
Department :		Civil Engineering			
Session		2024-25			
Recommended Books		Text book:			
		1. Irrigation Engineering and Hydraulic Structures by S. K. Garg, Khanna Publication, New Delhi			
		2. Engineering Hydrology by K Subramanya, McGraw Hill Education, New Delhi			
		Reference Books:			
		1. Irrigation Engg. By B.C. Punmia and Pande, Laxmi Publication, New Delhi			
		2			
Sl. No.	Lecture No.	Topics to be covered			No. of Classes
MODULE-1					
1	Lecture-01	Introduction			8
2	Lecture-02	Hydrologic cycle, World water balance			
3	Lecture-03	Forms, types & measurement of precipitation; Mean precipitation over an area			
4	Lecture-04	Curves of precipitation: Depth-area-duration, Intensity-duration- frequency & Depth-duration-frequency			
5	Lecture-05	Probable maximum precipitation			
6	Lecture-06	Abstractions of precipitation			
7	Lecture-07	Evapotranspiration & its equations			
8	Lecture-08	Problems			
9	Lecture-09	Infiltration: measurement & indices			
MODULE-2					
10	Lecture-10	Major methods for Measurement of stage, velocity & streamflow			14
11	Lecture-11	Stage-discharge relationship: linear & log-log			
12	Lecture-12	Runoff characteristics of streams			
13	Lecture-13	Runoff volume estimation by Curve Number method			
14	Lecture-14	Flow mass curve & reservoir capacity estimation			
15	Lecture-15	Hydrographs: components, affecting factors			
16	Lecture-16	Base flow separation methods			
17	Lecture-17	Unit hydrographs (UHs): derivation, use & limitations			
18	Lecture-18	Problems			
19	Lecture-19	UHs of different durations			
20	Lecture-20	Peak flood estimation by Rational method			
21	Lecture-21	Empirical formulae, enveloping curves			
22	Lecture-22	Gumbel's Method			
23	Lecture-23	Problems			

MODULE-3			
24	Lecture-24	Irrigation: necessity, advantages & disadvantages	14
25	Lecture-25	Water distribution techniques in farms	
26	Lecture-26	Crop water requirement: duty, delta, base period & crop period	
27	Lecture-27	Problems	
28	Lecture-28	Problems	
29	Lecture-29	Irrigation efficiencies; Soil moisture - irrigation frequency relationship	
30	Lecture-30	Problems	
31	Lecture-31	Irrigation channels: classification & alignment	
32	Lecture-32	Distribution system, water losses in irrigation channels	
33	Lecture-33	Stable & regime channel design	
34	Lecture-34	Problems	
35	Lecture-35	Irrigation canal lining: types	
36	Lecture-36	Economics & preliminary design	
37	Lecture-37	Problems	
MODULE-4			
38	Lecture-38	Types of Cross-Drainage (CD) Works	16
39	Lecture-39	Design considerations for CD works	
40	Lecture-40	Diversion Head works: Types of weirs and barrages	
41	Lecture-41	Design of weirs and barrages	
42	Lecture-42	Comparison among Bligh's creep theory	
43	Lecture-43	Lane's weighted creep theory	
44	Lecture-44	Khosla's method of independent variables, Exit gradient	
45	Lecture-45	Canal Falls: Necessity	
46	Lecture-46	Types Of canal fall	
47	Lecture-47	Gravity Dams	
48	Lecture-48	Typical cross section, Various forces acting on gravity dam	
49	Lecture-49	Modes of failure and criteria for structural stability	
50	Lecture-50	High and low gravity dams	
51	Lecture-51	Problems	
52	Lecture-52	Earth Dams: Types, Causes of failure	
53	Lecture-53	Spillways: Brief study of various types	

Signature of Faculty Member

Signature of HOD

PRINCIPAL