

Lesson Plan

Programme: Diploma in Civil Engineering

Semester: 4th Semester

Session-Summer-2026

Course: Hydraulics & Irrigation Engineering(Th-1)

Total Classes: 45 | Periods per Week: 3


Faculty: Sri Amit Kumar Sahu, Smt. Bijayalaxmi Hembram


Class No.	Unit	Unit Title	Exact Sub-topic	Teaching Method	Teaching Aids
1	I	Pressure Measurement & Hydrostatics	Introduction to hydraulics, fluid, fluid mechanics, ideal & real fluid	Lecture / Numerical	BB, PPT, Charts
2	I	Pressure Measurement & Hydrostatics	Physical properties of fluids: density, specific volume, specific gravity	Lecture / Numerical	BB, PPT, Charts
3	I	Pressure Measurement & Hydrostatics	Surface tension, capillarity and viscosity, Newton's law of viscosity	Lecture / Numerical	BB, PPT, Charts
4	I	Pressure Measurement & Hydrostatics	Types of pressure, pressure head, Pascal's law and applications	Lecture / Numerical	BB, PPT, Charts
5	I	Pressure Measurement & Hydrostatics	Measurement of pressure and differential pressure	Lecture / Numerical	BB, PPT, Charts
6	I	Pressure Measurement & Hydrostatics	Hydrostatic pressure variation, pressure diagram, center of pressure	Lecture / Numerical	BB, PPT, Charts
7	II	Fluid Flow Parameters	Types of fluid flow and Reynolds number	Lecture / Numerical	BB, PPT, Charts
8	II	Fluid Flow Parameters	Discharge, continuity equation	Lecture / Numerical	BB, PPT, Charts
9	II	Fluid Flow Parameters	Energy of flowing liquid	Lecture / Numerical	BB, PPT, Charts
10	II	Fluid Flow Parameters	Bernoulli's theorem: statement and assumptions	Lecture / Numerical	BB, PPT, Charts
11	II	Fluid Flow Parameters	Applications and numerical problems	Lecture / Numerical	BB, PPT, Charts
12	III	Flow Through Pipes	Major losses: frictional loss, Darcy-Weisbach equation	Lecture / Numerical	BB, PPT, Charts
13	III	Flow Through Pipes	Minor losses: entry, exit, contraction, expansion	Lecture / Numerical	BB, PPT, Charts
14	III	Flow Through Pipes	Flow through pipes in series	Lecture / Numerical	BB, PPT, Charts



15	III	Flow Through Pipes	Flow through pipes in parallel, equivalent pipe	Lecture / Numerical	BB, PPT, Charts
16	III	Flow Through Pipes	Hydraulic gradient line and energy line	Lecture / Numerical	BB, PPT, Charts
17	III	Flow Through Pipes	Venturi meter: construction and working	Lecture / Numerical	BB, PPT, Charts
18	III	Flow Through Pipes	Orifice flow and hydraulic coefficients	Lecture / Numerical	BB, PPT, Charts
19	III	Flow Through Pipes	Numerical problems on pipe flow	Lecture / Numerical	BB, PPT, Charts
20	IV	Open Channel Flow	Channel geometry: wetted area, perimeter, hydraulic radius	Lecture / Numerical	BB, PPT, Charts
21	IV	Open Channel Flow	Chezy's equation	Lecture / Numerical	BB, PPT, Charts
22	IV	Open Channel Flow	Manning's equation and numerical problems	Lecture / Numerical	BB, PPT, Charts
23	IV	Open Channel Flow	Most economical channel section	Lecture / Numerical	BB, PPT, Charts
24	IV	Open Channel Flow	Notches, velocity measurement, specific energy & Froude number	Lecture / Numerical	BB, PPT, Charts
25	V	Hydraulic Pumps	Introduction and classification of pumps	Lecture / Numerical	BB, PPT, Charts
26	V	Hydraulic Pumps	Centrifugal pump: components and working	Lecture / Numerical	BB, PPT, Charts
27	V	Hydraulic Pumps	Reciprocating pump: single & double acting	Lecture / Numerical	BB, PPT, Charts
28	V	Hydraulic Pumps	Heads, manometric head and power of pump	Lecture / Numerical	BB, PPT, Charts
29	V	Hydraulic Pumps	Selection and choice of pumps	Lecture / Numerical	BB, PPT, Charts
30	VI	Hydrology	Hydrology and hydrological cycle	Lecture / Numerical	BB, PPT, Charts
31	VI	Hydrology	Rain gauges and rainfall measurement	Lecture / Numerical	BB, PPT, Charts
32	VI	Hydrology	Average rainfall calculation methods	Lecture / Numerical	BB, PPT, Charts
33	VI	Hydrology	Runoff and factors affecting runoff	Lecture / Numerical	BB, PPT, Charts
34	VI	Hydrology	Flood discharge and dependable yield	Lecture / Numerical	BB, PPT, Charts
35	VII	Irrigation & Reservoir Planning	Irrigation and classification	Lecture / Numerical	BB, PPT, Charts
36	VII	Irrigation & Reservoir Planning	Crop water requirement and duty-delta relationship	Lecture / Numerical	BB, PPT, Charts
37	VII	Irrigation &	Methods of	Lecture /	BB, PPT,

		Reservoir Planning	irrigation and assessment	Numerical	Charts
38	VII	Irrigation & Reservoir Planning	Reservoir silting and control levels	Lecture / Numerical	BB, PPT, Charts
39	VIII	Dams & Spillways	Classification and components of dams	Lecture / Numerical	BB, PPT, Charts
40	VIII	Dams & Spillways	Earthen dams: construction and failures	Lecture / Numerical	BB, PPT, Charts
41	VIII	Dams & Spillways	Gravity dams: forces and profiles	Lecture / Numerical	BB, PPT, Charts
42	VIII	Dams & Spillways	Spillways and energy dissipaters	Lecture / Numerical	BB, PPT, Charts
43	IX	Diversion Head Works & Canals	Weirs, barrages and diversion head works	Lecture / Numerical	BB, PPT, Charts
44	IX	Diversion Head Works & Canals	Canals: classification, lining and cross drainage works	Lecture / Numerical	BB, PPT, Charts
45	IX	Diversion Head Works & Canals	Canal regulators, falls and outlets	Lecture / Numerical	BB, PPT, Charts


 Bijayalaxmi Henbora
 Lecturer


 Anurag Kumar
 Lecturer