LESSON PLAN OF TH-1:Hydraulics & Irrigation Engg FOR THE SESSION 2025-26(Summer-2026) BATCH-2024-27, GOVT. POLYTECHNIC,KANDHAMAL		
Discipline: Civil Engineering	**Semester: 4th**	**Name of the Teaching Faculty: Ashish Nayak, Lect in Civil Engineering,Swastik Pradhan,(Lect. Stage-II in Civil Engg.)**
Subject: TH-1:Hydraulics & Irrigation Engg	**No. of days/ per week class allotted: 3**	**Semester From Date : 22/12/2025 to Date: 18/04/2025** **No. of Weeks: 15**
Week	**Class Day**	**Theory/ Practical Topics**
1ST	1	Physical properties of fluid
	2	Measurement of differential Pressure by different methods
	3	Determination of total pressure and center of pressure
2ND	1	Types of flow
	2	Discharge and its unit, continuity equation of flow
	3	Energy of flowing liquid: potential, kinetic and pressure energy.
3RD	1	Bernoulli's theorem : statement, assumptions, equation.
	2	Major head loss in pipe
	3	Minor losses in pipe:
4TH	1	Flow through pipes in series, pipes in parallel
	2	Hydraulic gradient line and total energy line
	3	Discharge measuring device for pipe flow: Venturi meter
5TH	1	Discharge measurement-using Orifice, Hydraulic Coefficients of Orifice.
	2	Geometrical properties of channel section
	3	Determination of discharge by Chezy's equation and Manning's equation
6TH	1	Discharge measuring devices: Triangular and rectangular Notches
	2	Velocity measurement devices: current meter
	3	Specific energy diagram, Froudes' Number
7TH	1	Concept of pump, Types of pump - centrifugal, reciprocating, submersible.
	2	Reciprocating pump: single acting and double acting
	3	Power of centrifugal pump
8TH	1	
		UNIT –VI Introduction to Hydrology
	1	• Hydrology: Definition and Hydrological cycle, · Rain Gauge: Symons rain gauge, automatic rain gauge,
9TH	2	• Methods of calculating average rainfall: Arithmetic mean, Isohyetal, and Theissen polygon method.
	3	• Runoff, Factors affecting Run off, Computation of run–off.
10TH	1	• Maximum Flood Discharge measurement: Rational and empirical methods, Simple numerical problems.
	2	Yield and Dependable yield of a catchment, determination of dependable yield.

		UNIT –VII Crop water requirement and Reservoir Planning
	3	• Irrigation and its classification.
11TH	1	• Crop Water requirement: Cropping seasons, Crop period, base period, Duty, Delta, CCA, GCA, intensity of irrigation, factors affecting duty, Problems on water requirement and capacity of canal.
	2	• Methods of application of irrigation water and its assessment. · Area capacity curve.
	3	• Silting of reservoir, Rate of silting, factors affecting silting and control measures.
12TH	1	Control levels in reservoir, Simple numerical problems on Fixing Control levels.
		UNIT –VIII Dams and Spillways
	2	• Dams and its classification: Earthen dams and Gravity dams (masonry and concrete).
	3	• Earthen Dams – Components with function, typical cross section, seepage through embankment and foundation and its control.
13TH	1	• Methods of construction of earthen dam, types of failure of earthen dam and preventive measures.
	2	• Gravity Dams – Forces acting on dam, Theoretical and practical profile, typical cross section, drainage gallery, joints in gravity dam, concept of high dam and low dam.
	3	Spillways-Definition, function, location, types and components, Energy dissipaters.
		UNIT –IX Diversion Head Works & Canals
14TH	1	• Weirs – components, parts, types, K.T. weir – components and construction
	2	• Diversion head works – Layout, components and their function.
	3	• Barrages – components and their functions. Difference between weir and Barrage.
15TH	1	• Canals – Classification according to alignment and position in the canal network, Cross section of canal in embankment and cutting, partial embankment and cutting, balancing depth, Canal lining - Purpose, material used and its properties, advantages.
	2	• Cross Drainage works- Aqueduct, siphon aqueduct, super passage, level crossing.
	3	Canal regulators- Head regulator, Cross regulator, Escape, Falls and Outlets

20/12/2025

Govt. Polytechnic Dept. of Civil Kandhamal

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