# GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN- 2024-25 (SUMMER)

| Discipline : CIVIL ENGG. | Semester: 4th Sem | | Name of the Teaching Faculty : Padmabhusan Naik |
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| Subject : H&IE | No. of Days / per week class allotted : 05 | | Semester From date : 04.02.2025 To Date : 17.05.2025 |

| MONTH | Week | Day | Unit | Topics |
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| FEBRUARY | 2nd | | | **PART: A (Hydraulics)** |
| | | 1st | UNIT-1 | **1. HYDROSTATICS:** |
| | | | | **Properties of fluid:** density, specific gravity, |
| | | 2nd | | Surface tension, |
| | | 3rd | | Capillarity, viscosity and their uses |
| | | 4th | | Question Discussion |
| | | 5th | | **Pressure and its measurements:** intensity of pressure, atmospheric pressure, gauge pressure, |
| | 3rd | 1st | | Absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure and gauge pressure; |
| | | 2nd | | Pressure head; pressure gauges. |
| | | 3rd | | Question Discussion |
| | | 4th | | **Pressure exerted on an immersed surface:** Total pressure, resultant pressure, |
| | | 5th | | Expression for total pressure exerted on horizontal & vertical surface. |
| | 4th | 1st | | Question Discussion |
| | | 2nd | | **2. KINEMATICS OF FLUID FLOW:** |
| | | | | **Basic equation of fluid flow and their application:** Rate of discharge, equation of continuity of liquid flow, |
| | | 3rd | | Total energy of a liquid in motion- potential, kinetic & pressure, |
| | | 4th | | Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation. |
| | | | | Question Discussion |
| | | 5th | | **Flow over Notches and Weirs:** Notches, Weirs, types of notches and weirs, |
| | 5th | 1st | | Discharge through different types of notches and weirs-their application (No Derivation) |
| | | 2nd | | Question Discussion |
| | | 3rd | | **Maha Shivaratri** |
| | | 4th | | **Types of flow through the pipes:** uniform and non uniform; laminar and turbulent; |
| | | 5th | | Steady and unsteady; Reynold's number and its application |
| | 2nd | 1st | UNIT-2 | Question Discussion |
| | | 2nd | | **Losses of head of a liquid flowing through pipes:** Different types of major and minor losses. |
| | | 3rd | | **Panchayatiraj Dibas** |
| | | 4th | | Simple numerical problems on losses due to friction using Darcy's equation, |
| | | 5th | | Total energy lines & hydraulic gradient lines (Concept Only). |
| | | 1st | | Question Discussion |

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| MARCH | 3rd | 2nd | | **Flow through the Open Channels:** Types of channel sections-rectangular, trapezoidal and circular, |
| | | 3rd | | Discharge formulae- Chezy's and Manning's equation, |
| | | 4th | | Best economical section. |
| | | 5th | | **Dola Purnima** |
| | 4th | 1st | | Question Discussion |
| | | 2nd | UNIT-3 | **3. PUMPS:** |
| | | | | Type of pumps |
| | | 3rd | | Centrifugal pump: basic principles, |
| | | | | Operation, discharge, horse power & efficiency. |
| | | 4th | | Reciprocating pumps: types, |
| | | | | Operation, discharge, horse power & efficiency |
| | | 5th | | Question Discussion |
| | 5th | 1st | | **CLASS TEST-1** |
| | | 2nd | UNIT-1 | **PART: B (Irrigation Engineering)** |
| | | | | **1. Hydrologys:** |
| | | | | Hydrology Cycle |
| | | | | Rainfall: types, intensity, hyetograph |
| | | 3rd | | Estimation of rainfall, rain gauges, Its types(concept only), |
| | | 4th | | Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae |
| | | | | Question Discussion |
| | | 5th | | Question Discussion |
| | 6th | 1st | | **Id-Ul-Fitre** |
| | 1st | 2nd | | **Utkal Divas** |
| | | 3rd | UNIT-2 | **2. Water Requirement of Crops:** |
| | | | | Definition of irrigation, necessity, benefits of irrigation, types of irrigation |
| | | 4th | | Crop season |
| | | | | Duty, Delta and base period their relationship, overlap allowance, kharif and rabi crops |
| | | 5th | | Gross command area, culturable command area, Intensity of Irrigation, irrigable area, time factor, crop ratio |
| | 2nd | 1st | | Question Discussion |
| | | 2nd | | **Internal Assessment** |
| | | 3rd | UNIT-3 | **3. FLOW IRRIGATION :** |
| | | | | Canal irrigation, types of canals, loss of water in canals |
| | | | | Perennial irrigation |
| | | 4th | | Different components of irrigation canals and their functions |
| | | 5th | | Question Discussion |

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| APRIL | 3rd | 1st | | **Dr. B.R Ambedkar Jayanti** |
| | | 2nd | | Sketches of different canal cross-sections |
| | | 3rd | | Classification of canals according to their alignment, Various types of canal lining – Advantages and disadvantages |
| | | 4th | UNIT-4 | **4. WATER LOGGING AND DRAINAGE :** |
| | | | | Causes and effects of water logging, |
| | | 5th | | **Good Friday** |
| | 4th | 1st | | Detection, prevention and remedies |
| | | | | Question Discussion |
| | | 2nd | UNIT-5 | **5. DIVERSION HEAD WORKS AND REGULATORY STRUCTURES:** |
| | | | | Necessity and objectives of diversion head works, weirs and barrages |
| | | 3rd | | General layout, functions of different parts of barrage |
| | | 4th | | Silting and scouring |
| | | 5th | | Functions of regulatory structures |
| | 5th | 1st | | Question Discussion |
| | | 2nd | | **CLASS TEST-2** |
| | | 3rd | UNIT-6 | **6. CROSS DRAINAGE WORKS :** |
| | | | | Functions and necessity of Cross drainage works - aqueduct, siphon, |
| MAY | 1st | 4th | | Superpassage, level crossing |
| | | 5th | | Concept of each with help of neat sketch |
| | 2nd | 1st | | Question Discussion |
| | | 2nd | UNIT-7 | **7. DAMS :** |
| | | | | Necessity of storage reservoirs, types of dams |
| | | 3rd | | Earthen dams: types, description, causes of failure and protection measures. |
| | | 4th | | Gravity dam- types, description, Causes of failure and protection measures. |
| | | 5th | | Question Discussion |
| | 3rd | 1st | | **Budha Purnima** |
| | | 2nd | | Spillways- Types (With Sketch) and necessity. |
| | | 3rd | | Semester Questions Discussion |
| | | 4th | | Semester Questions Discussion |
| | | 5th | | Semester Questions Discussion |