

## LESSON PLAN

| <b>Discipline: Civil Engineering</b>  |             | <b>Name of The Teaching Faculty: Jyotirmayee Samal , Bijaya kumar rout</b> |   |  |                                  |
|---|-------------|--|---|--|----------------------------------|
| <b>Subject: WATER SUPPLY&amp; WASTE WATER ENGINEERING(TH.4)</b>                           |             | <b>Semester From Date:14.07.2025 To Date 15.11.2025</b>                    |   |  |                                  |
| <b>SEMESTER-5th (WINTER 2025)</b>   |             | <b>No. Of Weeks:19</b>   |   |  | <b>5P/WEEK</b>                   |
| <b>No. of Days/week class allotted: 05 period per week (Mon,Tues,Wed,Thu &amp; Sat-2)</b> |             |  |   |  | <b>TOTAL PERIOD-75</b>           |
| <b>MONTH</b>  | <b>WEEK</b> | <b>DATE</b>  | <b>DAYS/PERIOD</b>  | <b>SYLLABUS TO BE COVERED</b>  | <b>NOS. OF PERIODS AVAILABLE</b> |
| <b>JULY</b>   |             | <b>SECTION A: WATER SUPPLY</b>   |   |  |                                  |
|   |             |  |   | <b>1. Introduction to Water Supply, Quantity and Quality of water(10P)</b>                                   | 10                               |
|   | <b>3rd</b>  | 14-07-2025   | Mon   | 1.1 Necessity of treated water supply  | 1                                |
|   |             | 15-07-2025   | Tue   | 1.2 Per capita demand, variation in demand and factors affecting demand                                      | 1                                |
|   |             | 16-07-2025   | Wed   | 1.2 Per capita demand, variation in demand and factors affecting demand                                      | 1                                |
|   |             | 17-07-2025   | Thu   | 1.3 Methods of forecasting population, Numerical problems using different methods                            | 1                                |
|   |             | 19-07-2025   | Sat   | 1.3 Methods of forecasting population, Numerical problems using different methods                            | 1                                |
|   |             | 19-07-2025   | Sat   | 1.3 Methods of forecasting population, Numerical problems using different methods                            | 1                                |
|   | <b>4th</b>  | 21-07-2025   | Mon   | 1.4 Impurities in water – organic and inorganic, Harmful effects of impurities                               | 1                                |
|   |             | 22-07-2025   | Tue   | 1.5 Analysis of water –physical, chemical and bacteriological  | 1                                |
|   |             | 23-07-2025   | Wed   | 1.5 Analysis of water –physical, chemical and bacteriological  | 1                                |
|   |             | 24-07-2025   | Thu   | 1.6 Water quality standards for different uses   | 1                                |
|   |             |  |   | <b>2. Sources and Conveyance of water(8P)</b>  | 8                                |
|   | <b>5th</b>  | 28-07-2025   | Mon   | 2.1 Surface sources – Lake, stream, river and impounded reservoir  | 1                                |
|   |             | 29-07-2025   | Tue   | 2.2 Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well | 1                                |
|   |             | 30-07-2025   | Wed   | 2.3 Yield from well- methods of determination, Numerical problems using yield formulae ( deduction excluded) | 1                                |
|   |             | 31-07-2025   | Thu   | 2.3 Yield from well- methods of determination, Numerical problems using yield formulae ( deduction excluded) | 1                                |
|   | <b>1st</b>  | 02-08-2025   | Sat   | 2.4 Intakes – types, description of river intake, reservoir intake, canal intake                             | 1                                |
|   |             | 02-08-2025   | Sat   | 2.5 Pumps for conveyance & distribution – types, selection, installation.                                    | 1                                |
| 04-08-2025  |             | Mon  | 2.6 Pipe materials – necessity, suitability, merits & demerits of each type | 1  |                                  |

|            |            |            |                                 |  |    |
|------------|------------|------------|---------------------------------|--|----|
| <b>AUG</b> | <b>2nd</b> | 05-08-2025 | Tue                             | 2.7 Pipe joints – necessity, types of joints, suitability, methods of jointing Laying of pipes – method Laying of pipes – method   | 1  |
|            |            |            |                                 | <b>3. Treatment of water (12P)</b>   | 12 |
|            |            | 06-08-2025 | Wed                             | 3.1 Flow diagram of conventional water treatment system  | 1  |
|            | 07-08-2025 | Thu        | 3.2 Treatment process / units : |  |    |
|            | <b>3rd</b> | 11-08-2025 | Mon                             | 3.2.1 Aeration ; Necessity   | 1  |
|            |            | 12-08-2025 | Tue                             | 3.2.2 Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance  | 1  |
|            |            | 13-08-2025 | Wed                             | 3.2.3 Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)   | 1  |
|            |            | 14-08-2025 | Thu                             | 3.2.3 Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)   | 1  |
|            |            | 16-08-2025 | Sat                             | 3.2.4 Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features.   | 1  |
|            |            | 16-08-2025 | Sat                             | 3.2.4 Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features.   | 1  |
|            | <b>4th</b> | 18-08-2025 | Mon                             | 3.2.5 Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super- chlorination | 1  |
|            |            | 19-08-2025 | Tue                             | 3.2.5 Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super- chlorination | 1  |
|            |            | 20-08-2025 | Wed                             | 3.2.6 Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only)  | 1  |
|            |            | 21-08-2025 | Thu                             | 3.2.6 Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only)  | 1  |
|            |            |            |                                 | <b>4. Distribution system And Appurtenance in distribution system: (8P)</b>  | 8  |
|            | <b>5th</b> | 25-08-2025 | Mon                             | 4.1 General requirements, types of distribution system-gravity, direct and combined  | 1  |
|            |            | 26-08-2025 | Tue                             | 4.1 General requirements, types of distribution system-gravity, direct and combined  | 1  |
|            |            | 30-08-2025 | Sat                             | 4.2 Methods of supply – intermittent and continuous  | 1  |
|            |            | 30-08-2025 | Sat                             | 4.2 Methods of supply – intermittent and continuous  | 1  |
|            |            |            |                                 | 4.3 Distribution system layout – types, comparison, suitability  | 1  |
|            |            |            |                                 | 4.3 Distribution system layout – types, comparison, suitability  | 1  |

SEPT

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|-----|------------|-----|---|---|
| 1st | 03-09-2025 | Wed | 4.4 Valves-types, features, uses, purpose-slucice valves, check valves, air valves, scour valves, Fire hydrants, Water meters                           | 1 |
|     | 04-09-2025 | Thu | 4.4 Valves-types, features, uses, purpose-slucice valves, check valves, air valves, scour valves, Fire hydrants, Water meters                           | 1 |
|     |            |     | <b>5.W/s plumbing in building : (2P)</b>  | 2 |
|     | 06-09-2026 | Sun | 5.1 Method of connection from water mains to building supply  | 1 |
|     | 06-09-2026 | Sun | 5.2 General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.                              | 1 |
|     |            |     | <b>SECTION B: WASTE WATER ENGINEERING</b>   |   |
| 2nd | 08-09-2026 | Tue | 6.Introduction(5P)  | 5 |
|     | 09-09-2026 | Wed | 6.1 Aims and objectives of sanitary engineering   | 1 |
|     | 10-09-2026 | Thu | 6.2 Definition of terms related to sanitary engineering   | 1 |
|     | 11-09-2026 | Fri | 6.2 Definition of terms related to sanitary engineering   | 1 |
| 3rd | 15-09-2025 | Mon | 6.3 Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability  | 1 |
|     | 16-09-2025 | Tue | 6.3 Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability  | 1 |
|     |            |     | <b>7. Quantity and Quality of sewage (7P)</b>   | 7 |
|     | 17-09-2025 | Wed | 7.1 Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage. | 1 |
|     | 18-09-2025 | Thu | 7.1 Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage. | 1 |
|     | 20-09-2025 | Sat | 7.2 Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring                              | 1 |
|     | 20-09-2025 | Sat | 7.2 Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring                              | 1 |
| 4th | 22-09-2025 | Mon | 7.3 General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological   | 1 |
|     | 23-09-2025 | Tue | 7.4 Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD  | 1 |
|     | 24-09-2025 | Wed | 7.4 Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD  | 1 |
|     |            |     | <b>8. Sewerage system (5P)</b>  | 5 |

|            |     |            |   |   |   |
|------------|-----|------------|---|---|---|
|            |     | 25-09-2025 | Thu   | 8.1 Types of system-separate, combined, partially separate , features, comparison between the types, suitability  | 1 |
| OCT        | 1st | 04-10-2025 | Sat   | 8.2 Shapes of sewer – rectangular, circular, avoid-features, suitability  | 1 |
|            |     | 04-10-2025 | Sat   | 8.2 Shapes of sewer – rectangular, circular, avoid-features, suitability  | 1 |
|            | 2nd | 06-10-2025 | Mon   | 8.3 Laying of sewer-setting out sewer alignment   | 1 |
|            |     | 08-10-2025 | Wed   | 8.3 Laying of sewer-setting out sewer alignment   | 1 |
|            |     |            |   | <b>9. Sewer appurtenances and Sewage Disposal: (7P)</b>   | 7 |
|            |     | 09-10-2025 | Thu   | 9.1 Manholes and Lamp holes – types, features, location, function   | 1 |
|            | 3rd | 13-10-2025 | Mon   | 9.2 Inlets, Grease & oil trap – features, location, function  | 1 |
|            |     | 14-10-2025 | Tue   | 9.3 Storm regulator, inverted siphon – features, location, function   | 1 |
|            |     | 15-10-2025 | Wed   | 9.4 Disposal on land – sewage farming, sewage application and dosing,sewage sickness-causes and remedies          | 1 |
|            |     | 16-10-2025 | Thu   | 9.4 Disposal on land – sewage farming, sewage application and dosing,sewage sickness-causes and remedies          | 1 |
|            |     | 18-10-2025 | Sat   | 9.5 Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream | 1 |
|            |     | 18-10-2025 | Sat   | 9.5 Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream | 1 |
|            |     |            |   | <b>10. Safety Management In Construction (8P)</b>   | 8 |
|            | 4th | 20-10-2025 | Mon   | 10.1 Principles of treatment, flow diagram of conventional treatment  | 1 |
|            |     | 22-10-2025 | Wed   | 10.1 Principles of treatment, flow diagram of conventional treatment  | 1 |
|            |     | 23-10-2025 | Thu   | 10.2 Primary treatment – necessity, principles, essential features, functions                                     | 1 |
|            | 5th | 27-10-2025 | Mon   | 10.2 Primary treatment – necessity, principles, essential features, functions                                     | 1 |
|            |     | 28-10-2025 | Tue   | 10.2 Primary treatment – necessity, principles, essential features, functions                                     | 1 |
|            |     | 29-10-2025 | Wed   | 10.3 Secondary treatment – necessity, principles, essential features, functions                                   | 1 |
|            |     | 30-10-2025 | Thu   | 10.3 Secondary treatment – necessity, principles, essential features, functions                                   | 1 |
|            | 1st | 01-11-2025 | Sat   | 10.3 Secondary treatment – necessity, principles, essential features, functions                                   | 1 |
|            |     |            | <b>11. Sanitary plumbing for building :(3P)</b>   | 3   |   |
| 01-11-2025 |     | Sat        | 11.1 Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage | 1   |   |
|            |     | 03-11-2025 | Mon   | 11.2 Plumbing arrangement of single storied & multi storied building as per I.S. code practice                    | 1 |

|            |            |            |     |  |   |
|------------|------------|------------|-----|--|---|
| <b>NOV</b> | <b>2nd</b> | 04-11-2025 | Tue | 11.3 Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe | 1 |
|            |            | 06-11-2025 | Thu | Rivision class   | 1 |
|            | <b>3rd</b> | 10-11-2025 | Mon | Rivision class   | 1 |
|            |            | 11-11-2025 | Tue | Rivision class   | 1 |
|            |            | 12-11-2025 | Wed | Rivision class   | 1 |
|            |            | 13-11-2025 | Thu | Rivision class   | 1 |
|            |            | 15-11-2025 | Sat | Rivision class   | 1 |
|            |            | 15-11-2025 | Sat | Rivision class   | 1 |