

PNS SCHOOL OF ENGINEERING & TECHNOLOGY

LESSON PLAN

| BRANCH-CIVIL | SEMESTER-5th | NAME OF THE FACULTY-SWATI SURAVITA JENA |
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| SUBJECT- WATER SUPPLY AND WASTE WATER ENGINEERING(TH-4) | NO OF DAYS PER WEEK -4 CLASS ALLOTTED 75 | SEMESTER FROM-14/07/2025 TO 15/11/2025 |
| WEEK | CLASS DAY | THEORY TOPIC |
| JULY-3RD | 1ST | Introduction to Water Supply, Quantity and Quality of water- Necessity of treated water supply |
| | 2ND | Per capita demand, variation in demand and factors affecting demand |
| | 3RD | Methods of forecasting population, Numerical problems using different methods |
| | 4TH | CONTINUING AND END |
| 4TH | 1ST | Impurities in water – organic and inorganic, Harmful effects of impurities |
| | 2ND | Analysis of water –physical, chemical and bacteriological |
| | 3RD | Water quality standards for different uses |
| | 4TH | Sources and Conveyance of water- Surface sources – Lake, stream, river and impounded reservoir |
| 5TH | 1ST | Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well |
| | 2ND | Yield from well- methods of determination, Numerical problems using yield formulae (deduction excluded) |
| | 3RD | Intakes – types, description of river intake, reservoir intake, canal intake |
| AUG -1ST | 1ST | Pumps for conveyance & distribution – types, selection, installation |
| 2ND | 1ST | Pipe materials – necessity, suitability, merits & demerits of each type |
| | 2ND | Pipe joints – necessity, types of joints, suitability, methods of jointing Laying of pipes – method |
| | 3RD | Treatment of water Treatment process / units : 3.2.1 Aeration ; Necessity |
| 3RD | 1ST | Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance |
| | 2ND | Sedimentation with coagulation: Necessity, principles of coagulation , types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only) |
| | 3RD | Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features |
| 4TH | 1ST | Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand, available chlorine, |
| | 2ND | Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only) |

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| | 3RD | ITS CONITINING |
| | 4TH | ITS CONTINUING AND END |
| 5TH | 1ST | Distribution system And Appurtenance in distribution system:- General requirements, types of distribution system-gravity, direct and combined |
| | 2ND | Methods of supply – intermittent and continuous |
| | 3RD | Distribution system layout – types, comparison, suitability |
| SEP - 1ST | 1ST | Valves-types, features, uses, purpose-sludge valves, check valves, air valves, scour valves, Fire hydrants, Water meters |
| | 2ND | ITS CONTINUING AND END |
| | 3RD | W/s plumbing in building : Method of connection from water mains to building supply |
| | 4TH | General layout of plumbing arrangement for water supply in single storied and multistoried building as per I.S. code. |
| 2ND | 1ST | WASTE WATER ENGINEERING Introduction Aims and objectives of sanitary engineering |
| | 2ND | Definition of terms related to sanitary engineering |
| | 3RD | Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability |
| | 4TH | Water Carriage System – features, comparison, suitability |
| 3RD | 1ST | Quantity and Quality of sewage - Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow |
| | 2ND | Quantity and Quality of sewage - numerical problem on computation quantity of sanitary sewage |
| | 3RD | Computation of size of sewer, application of Chazy's formula |
| | 4TH | Limiting velocities of flow : self-cleaning and scouring |
| 4TH | 1ST | General importance, strength of sewage |
| | 2ND | Characteristics of sewage-physical, chemical & biological |
| | 3RD | Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD |
| OCT - 2ND | 1ST | Sewerage system - Types of system-separate, combined, partially separate , features, comparison between the types, suitability |
| | 2ND | Shapes of sewer – rectangular, circular, avoid-features, suitability |
| | 3RD | Laying of sewer-setting out sewer alignment |
| 3RD | 1ST | Sewer appurtenances and Sewage Disposal: Manholes and Lamp holes – types, features, location, function |
| | 2ND | Inlets, Grease & oil trap – features, location, function |
| | 3RD | Storm regulator, inverted siphon – features, location, function |
| | 4TH | Disposal on land – Sewage farming, sewage application and dosing |
| 4TH | 1ST | Disposal on land – Sewage sickness-causes and remedies |
| | 2ND | Disposal by dilution – standards for disposal in different types of water bodies |
| | 3RD | Disposal by dilution – self purification of stream |
| 5TH | 1ST | Sewage treatment :- Principles of treatment, flow diagram of conventional treatment |
| | 2ND | Primary treatment – necessity, principles, essential features, functions |
| | 3RD | Secondary treatment – necessity, principles, essential features, functions |
| NOV - 1ST | 1ST | Sanitary plumbing for building :- Requirements of building drainage |
| 2ND | 1ST | Sanitary plumbing for building :- layout of lavatory blocks in residential buildings |
| | 2ND | Sanitary plumbing for building :- layout of building drainage |

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| 3RD | 1ST | Plumbing arrangement of single storied & multi storied building as per I.S. code practice |
| | 2ND | 3 Sanitary fixtures – features, function, and maintenance and fixing of the fixtures |
| | 3RD | 3 Sanitary fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, antisiphonage pipe |
| | 4TH | ITS CONTINUING AND END |

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