

INSTITUTE	DIPLOMA STUDIES
PROGRAM	DIPLOMA ENGINEERING (CIVIL ENGINEERING)
SEMESTER	6
COURSE TITLE	PUBLIC HEALTH ENGINEERING
COURSE CODE	09CI0612
COURSE CREDITS	4

Objective:

- 1 To learn the principles for the identification of sources of surface and subsurface water.
- 2 To learn the calculation of population and requirement of drinking water.
- 3 To understand the plotting of the water supply scheme highlighting different features.
- 4 To know the evaluation of characteristics and treatment of sewage.

Course Outcomes: After completion of this course, student will be able to:

- 1 Know the procedure to identify the sources of surface and subsurface water.
- 2 Estimate the quantity of drinking water required for a population.
- 3 Draw a labelled layout for the water supply scheme.
- 4 Device-suitable water treatment technique.
- 5 Evaluate the characteristics and suggest treatment of sewage.

Pre-requisite of course: Water Supply & Sanitary Engineering

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	Source, Quality, and demand of water Importance and necessity of public health engineering, Sources of water, Choice of source, Types of demand, Population forecast Computation of quantity of water, Factors affecting demand, Impurities in water, Collection of water samples, Physical Chemical, Biological tests, Standards of quality of water	12
2	Treatment of water Objectives and location of water treatment, Layout of the water treatment plant, Various stages of treatment of influent water, Functioning of Coagulation, Treatment plant Sedimentation, Filtration and Disinfection methods	10

Contents : Unit	Topics	Contact Hours
3	Conveyance of water Types of pipes used for conveyance, Pipe joints and types of valves, Distribution system, Methods to prevent leaks, Measures for the conservation of water	8
4	Domestic sewage and System of Sewerages Objective of sewage disposal , Methods of sewage collection, Sewer section, Sewer joint, Manhole, Flushing tank, Catch basin, Hydraulic testing of sewer pipe, Procedure for maintenance of sewerage system, Treatment of sewage, B.O.D. Test and C.O.D. test, Recycling of Wastewater and Solid Waste, Methods of sewage disposal	12
Total Hours		42

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Experiment -1 Preparation of chart on sources of water.	2
2	Experiment -2 Solving numerical based on water demand and Population forecasting	2
3	Experiment -3 Sketches on laboratory glassware and its use	2
4	Experiment -4 Demonstration: How to measure the PH value of Water by PH meter	2
5	Experiment -5 Demonstration: How to measure the Hardness of water	2
6	Experiment -6 Preparing layout sketch of water and sewage treatment plant.	2
7	Experiment -7 Preparing a model of a water treatment plant describing all its components and review.	2
8	Experiment -8 Preparing sketch of valve, fittings, and fixture	2
9	Experiment -9 Sketches on manhole and cross-section elements of sewer pipe	2
10	Experiment -10 Demonstration of B.O.D and C.O.D Test	6
11	Experiment -11 Water and waste water treatment plant site visit	4
Total Hours		28

Textbook :

- 1 A textbook of water supply & sanitary engineering, S. K. Garg, Khanna publishers, 2013

References:

- 1 Textbook of water supply & sanitary engineering, Textbook of water supply & sanitary engineering, S. K. Hussain, Oxford & Ibh, 2017
- 2 Elements of public health engineering , Elements of public health engineering , K. N. Duggal, S. Chand & CO, 2013

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
30.00	40.00	30.00	0.00	0.00	0.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and the need of students. The teacher, in addition to the conventional teaching method by blackboard may also use any of the tools such as demonstration, role play, Quiz, brainstorming, MOOCs, etc.
- 2 The internal evaluation will be done based on continuous evaluation of students in the laboratory.
- 3 A practical examination will be conducted at the end of the semester for evaluation of the performance of students in the laboratory.
- 4 Students will use supplementary resources such as online videos, videos, e-courses, and Virtual Laboratories.

Supplementary Resources:

- 1 https://onlinecourses.nptel.ac.in/noc20_ce23/preview
- 2 <https://cpheeo.gov.in/>
- 3 <https://gwssb.gujarat.gov.in/>
- 4 <https://www.wbphed.gov.in/>