DEPARTMENT OF CIVIL ENGINEERING
SCHEME OF COURSE WORK

Course Details:

Course Title	**ENVIRONMENTAL SANITATION**
Course Code	**20CE1152**
L T P C	**3 0 0 3**
Program	**B.Tech.**
Specialization	**CIVIL ENGINEERING**
Semester	**V**
Prerequisites	**Environmental Science**
Courses to which it is a prerequisite	**Environmental Engineering**

COURSE OUTCOMES (COs):

After completion of this course the student would be able to

CO	Course Outcomes	Learning Outcomes
1	State the mode of transmission of a disease and its prevention	1. Categorize the diseases based on the mode of transmission (L2) 2. Illustrate the symptoms and origin of various diseases (L3) 3. Explain the steps to be taken during epidemics (L2)
2	Describe various scenarios of solid waste management	1. Identify different sources of solid waste and characteristics of municipal solid waste (L2) 2. Examine the technical points that are required to set up a solid waste management system (L2) 3. Analyze different processing technologies for the conversion of MSW to energy (L4)
3	List out the controlling methods of mosquitoes and rodents	1. Illustrate the life cycle of mosquito and their species (L2) 2. Discuss the diseases transmitted by mosquitoes and houseflies (L2) 3. List out the preventive methods of mosquitoes, houseflies and rodents (L2)
4	Explain the method of illumination and air circulation required for comfort	1. Explain the types of air pollutants and their effects (L2) 2. Explain different types of ventilation (L2) 3. Discuss the artificial lighting and illumination standards (L2)
5	Discuss the sanitary aspects in institutions and rural areas	1. Explain the sanitary aspects in relation to different social institutions (L2) 2. Identify the problems pertaining to rural water supply and sanitation (L2) 3. Discuss the low cost excreta disposal systems for rural areas (L2)

PROGRAMME OUTCOMES

1. Graduates will be able to apply the knowledge of mathematics, science, engineering fundamentals to solve complex civil engineering problems.
2. Graduates will attain the capability to identify, formulate and analyse problems related to civil engineering and substantiate the conclusions
3. Graduates will be in a position to design solutions for civil engineering problems and design system components and processes that meet the specified needs with appropriate consideration to public health and safety.
4. Graduates will be able to perform analysis and interpretation of data by using research methods such as design of experiments to synthesize the information and to provide valid conclusions.
5. Graduates will be able to select and apply appropriate techniques from the available resources and modern civil engineering and software tools, and will be able to predict and model complex engineering activities with an understanding of the practical limitations.
6. Graduates will be able to carry out their professional practice in civil engineering by appropriately considering and weighing the issues related to society and culture and the consequent responsibilities.
7. Graduates will be able to understand the impact of the professional engineering solutions on environmental safety and legal issues.
8. Graduates will transform into responsible citizens by resorting to professional ethics and norms of the engineering practice.
9. Graduates will be able to function effectively in individual capacity as well as a member in diverse teams and in multidisciplinary streams.
10. Graduates will be able to communicate fluently on complex engineering activities with the engineering community and society, and will be able to prepare reports and make presentations effectively.
11. Graduates will be able to demonstrate knowledge and understanding of the engineering and management principles and apply the same while managing projects in multidisciplinary environments.
12. Graduates will engage themselves in independent and life-long learning in the broadest context of technological change while continuing professional practice in their specialized areas of civil engineering.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Collect, process and analyse the data from topographic surveys, remote sensing, hydrogeological investigations, geotechnical explorations, and integrate the data for planning of civil engineering infrastructure.
2. Analyse and design of substructures and superstructure for buildings, bridges, irrigation structures and pavements.
3. Estimate, cost evaluation, execution and management of civil engineering projects.

Course Outcome Vs Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	2	1	3	----	----	2	1	1	----	----	----	1
CO-2	3	3	3	----	----	2	2	1	----	----	----	2
CO-3	2	3	3	----	----	1	1	1	----	----	----	1
CO-4	2	1	3	----	----	2	2	----	----	----	----	1
CO-5	2	2	3	----	----	2	2	----	----	----	----	1

Course Outcome Vs Programme Specific Outcomes:

COs	PSO1	PSO2	PSO3
CO-1	1	----	----
CO-2	1	----	----
CO-3	----	----	----
CO-4	----	----	----
CO-5	----	----	----

Mapping Levels:

1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), put ---: No Correlation

Assessment Methods:	Assignment / Quiz / Seminar / Case Study / Mid-Test / End Exam

Teaching-Learning and Evaluation:

Week	Topics	CO	Sample questions	Teaching-learning strategy	Assessment Method & Schedule
1	**UNIT-I:** Modes of transmission of diseases.	1	1. Define the following: (i)Communicable disease (ii) Epidemic (iii) Pathogen (iv) Sanitation.	Chalk & Board, Lecture	Assignment/ Quiz
2	Diseases spreading by intestinal discharges, Nose and Throat discharges, Arthopod borne diseases – Diseases of animals transmitted to man	1	1. Discuss the following: (i) Diseases communicated by nose and throat discharges and their control. (ii) Arthopod borne diseases	Chalk & Board, Lecture	Mid-Test
3	Miscellaneous diseases Immunization – Control of epidemics.	1	1. Write short notes on Immunization. 2. What are the steps to be taken for the control of epidemics?	Chalk & Board, Lecture	Mid-Test
4	**UNIT-II** Types of solid waste – refuse storage – collection equipment	2	1. Enlist the types of solid waste 2. Write about the refuse storage containers	Chalk & Board, Lecture	Assignment/ Quiz
5	Collection equipment – frequency of collection – refuse disposal.	2	1. Explain the frequency of collection of MSW. 2. What are the refuse disposal methods?	Chalk & Board, Lecture	Mid-Test
6	Dumping, hog feed, Incineration	2	1. Explain the ill effects of dumping of solid waste? 2. Write in detail about Incineration.	Chalk & Board, Lecture	Mid-Test
7	Sanitary Landfill and Composting.	2	1. What is Vermi-composting? 2. Explain the site selection criteria of a landfill.	Chalk & Board, Lecture	Assignment, Quiz
8	**MID – I**				
9	**UNIT-III:** Life cycle of a mosquito, different species.	3	1. Explain the life cycle of a mosquito. 2. List out the species of mosquitos.	Chalk & Board, Lecture	Assignment, Quiz
10	Mosquitoes as carriers of diseases, Manmade mosquito breeding centers –outdoor control of mosquitoes	3	1. Name the diseases spread by mosquitoes. 2. Write short notes on man-made mosquito breeding centers.	Chalk & Board, Lecture	Mid-Test

11	Housefly as disease carrier Fly control – Rodent control.	3	1. Explain the role of housefly as disease carrier. How to control the problem?	Chalk & Board, Lecture	Assignment, Quiz
12	**UNIT-IV:** Composition of Atmosphere, Air Pollutants, Bacteria, Odors – Effective Temperature	4	1. What are primary and secondary air pollutants? 2. Explain about Effective Temperature.	Chalk & Board, Lecture	Mid-Test
13	Natural ventilation – Artificial ventilation – Air conditioning- Comfort Standards of ventilation	4	1. Discuss the necessity of ventilation. 2. What are the different types of ventilation?	Chalk & Board, Lecture	Assignment, Quiz
14	Measurement of light – Illumination standards- Natural lighting – Artificial lighting.	4	1. Discuss the necessity of illumination. 2. What are the different forms of natural and artificial lighting?	Chalk & Board, Lecture	Mid-Test
15	**UNIT-V:** Schools - Location, interior finish, light and color. Heating / Cooling and ventilation	5	1. State the factors influencing the location of schools. 2. Explain in detail about the interior finish in schools	Chalk & Board, Lecture	Assignment, Quiz
16	Sanitary Aspects of Hospitals – Operation &Labor rooms	5	1. Briefly discuss the important aspects of sanitation in a hospital.	Chalk & Board, Lecture	Mid-Test
17	Sanitary Aspects of Jails – Cleanliness – Pest control	5	1. Discuss the sanitation aspects of a jail.	Chalk & Board, Lecture	Assignment, Quiz
18	**MID – II**				