ENVIRONMENTAL SANITATION
(Professional Elective- I)

Course Code: 20CE1152

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Pre-requisite: Environmental Science

Course Outcomes:
At the end of the course, the student will be able to:
CO1: State the mode of transmission of a disease and its prevention (L2)
CO2: Describe various scenarios of solid waste management (L2)
CO3: List out the controlling methods of mosquitoes and rodents (L2)
CO4: Explain the method of illumination and air circulation required for comfort (L2)
CO5: Discuss the sanitary aspects in institutions and rural areas (L2)

UNIT-I **(10 Lectures)**

COMMUNICABLE DISEASES:

Modes of transmission of diseases – Diseases spreading by intestinal discharges – Diseases communicated by Nose and Throat discharges–Arthopod-borne diseases – Diseases of animals transmitted to man – miscellaneous diseases – Immunization – Control of epidemics.

Learning outcomes:
At the end of the unit, the student will be able to
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)

UNIT- II **(10 Lectures)**

REFUSE SANITATION:

Classification of solid waste – Functional elements of solid waste management system – refuse storage – collection equipment – transfer and transport – frequency of collection – refuse disposal, Dumping, Incineration, Sanitary Landfill and Composting.

Learning outcomes:
At the end of the unit, the student will be able to
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)

UNIT- III **(10 Lectures)**

INSECT VECTOR AND RODENT CONTROL:

Mosquitoes, Life cycle, Species – Mosquito control – Man made mosquito breeding centres – Life cycle of a Housefly – Housefly as disease carrier – Prevention of fly breeding – disinfectants (Phenols, Lime, Chlorine, Ammonium compounds), Insecticides (DDT, BHC) – Rodent control.

Learning outcomes:

At the end of the unit, the student will be able to
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)

UNIT- IV **(10 Lectures)**

VENTILATION, AIR CONDITIONING AND LIGHTING:

Composition of Atmosphere – Air Pollutants – Indoor Air Pollution – Effective Temperature – Comfort Standards of ventilation – Air interchange – Natural ventilation – Artificial ventilation – Air conditioning – Measurement of light – Illumination standards – Natural lighting – Artificial lighting.

Learning outcomes:

At the end of the unit, the student will be able to
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)

UNIT-V **(10 Lectures)**

INSTITUTIONAL & RURAL SANITATION:

Schools - Location, interior finish, light and colour. Heating/ Cooling and ventilation – Hospitals, Operation & Labour rooms – Jails – Eating establishments – Swimming pools – Plumbing fixtures – Cleanliness and maintenance and comfort. Rural areas, Population habits and environmental conditions – problems of water supply and sanitation aspects – low cost excreta disposal systems – Rural sanitation improvement schemes.

Learning outcomes:

At the end of the unit, the student will be able to
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)

Text Books:

1. V. M. Ehlers, Ernest W. Steel, "Municipal and Rural Sanitation (Sanitary Science & Water Engineering)" – 6th Revised Edition Tata McGraw-Hill, 1977.
2. Baljeet S. Kapoor, "Environmental Sanitation", 1st Edition, S. Chand & Co., New Delhi, 2001.
3. Joseph A Salvato, "Environmental Engineering and Sanitation", 4th Edition, Wiley-Inter science, 1992.

References:

1. CPCB, Govt. of India, "MSW Management Rules", available online in CPCB website, 2016.
2. K V.S.G.Murali Krishna, "Environmental Sanitation", 1st Edition, Reem Publications Pvt. Ltd, 2012.
3. Swachh Bharat Mission 2017 Gramin, Ministry of Drinking Water and Sanitation, Government of India.