Course Type	Course Code	Name of the course	L	Т	Р	Credit	TTT.
ESC	NESE101	Basics of Environmental Engineering	3	0	0	3	XIC
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Course Objective

This course aims to provide a basic introduction to (i) water and wastewater quality, distribution system and treatment concepts; (ii) effects, monitoring and principles of control of gaseous and particulate pollutants; and (iii) an introduction to solid waste management.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- Gain an insight into the structure of water purification and water supply scheme for drinking water.
- Understand water and wastewater quality criteria and standards, and design of unit operations and processes. •
- Identify major sources, effects, monitor and control of air pollutants.
- Get an overview of the solid waste management.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
Ι	Water pollution and management Sources, water quality requirements and Indian standards. Water demand forecasting, design periods and design population, design capacities for various water supply components. Water treatment process and design (Sedimentation tank, granular media filtration, water softening, disinfection).	12	To understand the criteria for planning of water supply system, the principle and mechanism of different treatment units required for drinking water treatment.
Π	Wastewater Engineering Industrial Wastewater and Sewage characteristics, Quantity & Quality, flow rate, treatment flow-sheet. Operation and design of approach channel, screen, grit chamber, settling tank, activated sludge process, Trickling filter, Oxidation ditch, SBR, UASB reactors, biological nitrification & denitrification systems, Sludge thickener and digestors.	12	The unit will provide an overview of sources, characteristics and the basic engineering concepts of designing an effluent treatment plant (ETP).
III	Air and noise pollution Fundamentals of air pollutants and their effects, ambient air quality standards, ambient air monitoring, emission factors; overview of prediction models, control systems. Fundamentals of Noise Pollution and Impact, monitoring and control measures.	12	To understand monitoring, analysis, control and prediction of air pollutants
IV	Solid waste management Method of collection, disposal, land filling.	6	Provide an overview of solid waste management.

Text Books:

- 1. Environmental Engineering-Peavy, H. S., Rowe, D. R., and Tchobanoglous, G. McGraw Hill.
- Introduction to Environmental Engineering-Mackenzie L Davis and David A Cornwell., Mc 2. Graw Hill publishers.

Reference Books:

- Wastewater Engineering: Treatment, disposal, reuse Metcalf & Eddy Inc. Tata McGraw Hill. 1.
- Air Pollution Control Engineering- De Nevers, N., 3rd edition Waveland Press Inc 2016. 2.
- Atmospheric Chemistry and Physics: from Air Pollution to Climate change- Seinfeld, J. H. and 3. Pandis, S N., John Wiley, New York.