



GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering

Subject Code: 3731705

Semester – III

Subject Name: URBAN ENVIRONMENT AND SUSTAINABILITY

Type of course: Environmental Engineering and Technology

Prerequisite: Basic Knowledge of water and wastewater parameters & Basic concepts regarding water and wastewater treatment units

Rationale: To provide knowledge related to requirement of industrial water and wastewater treatment technologies and its design

Teaching and Examination Scheme:

| Teaching Scheme | | | Credits C | Examination Marks | | | | Total Marks |
|-----------------|---|---|--------------|-------------------|---------|-----------------|---|----------------|
| L | T | P | | Theory Marks | | Practical Marks | | |
| | | | ESE (E) | PA (M) | ESE (V) | PA (I) | | |
| 3 | 0 | 0 | 3 | 70 | 30 | 0 | 0 | 100 |

Content:

| Sr.No. | Topics | Hours |
|--------|--|--------|
| 1 | Introduction to Sustainability: Concept of sustainability, Objectives of sustainability, urbanization and its impact, scenario of sustainability at micro and macro level, approach towards sustainability. | 04 hrs |
| 2. | Urban Environmental Issues: urban heat island, climate change, GHG emission, Socio economics impact, disease, urban noise. | 06 hrs |
| 3. | Urban Waste Management: urban water and wastewater management, reuse and recycling of water and waste water, water conservation techniques, evaluation of ambient air quality, vehicular emissions, indoor air quality, odour evaluation and control, urban solid waste management, integrated municipal solid waste management, management of plastic waste, E-waste and Biomedical waste, segregation at source, decentralized solid waste management, 4 R's Management, waste to energy. | 20 hrs |
| 4. | Urban Planning for sustainability: Location of waste handling facilities, sustainable transportation: Mass transportation and green fuel, green building and energy efficient building, Carbon Footprint. | 12 hrs |

Reference Books:

1. Management of municipal solid waste by T.V. Ramachandra, TERI press.
2. Water Quality and Treatment Hand Book of Public Water Supplies by AWWA - McGraw Hill
3. Quenching the thirst sustainable water supply and climate change by George Annandale, createspace independent publishing platform.



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4. Sustainable Urban Environments and eco system approach by Ellen van bueren, hein van bohemian, laure itard, henk visscher editors, springer publications.

Course Outcomes:

| Sr. No. | CO statement | Marks % weightage |
|---------|--|-------------------|
| CO-1 | To study basic concept of sustainability and urban development | 20% |
| CO-2 | To study the environmental urban issues and management. | 30% |
| CO-3 | Prepare plan strategies to control and reduce Urban environmental pollution. | 50% |

List of Experiments:

1. Field visit of green building and urban waste management facilities.
2. Report on research paper.
3. Preparation of Graduate Report.

Major Equipment: -----

List of Open Source Software/learning website:

1. <https://nptel.ac.in/>