

COURSE DETAILS

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| A. Name of the Institute | Environment Protection Training and Research Institute (EPTRI), Hyderabad, Telangana |
| B. Name/title of the Course | Sustainable Municipal Waste Management(SMWM) |
| C. Proposed Dates and Duration of the Course in weeks / months | From: <u>17th – 30th September, 2025</u> Two (2) weeks |
| D. Eligibility Criteria for Participants <i>1. Educational Qualification</i> <i>2. Work Experience, if any</i> <i>3. Age Limit</i> <i>4. Target group</i> | <ul style="list-style-type: none"> • Bachelor's Degree and above in Basic sciences/ Social Sciences and Humanities/ Management and Engineering • Minimum of 2 years of experience • 25 – 45 years • Government officials from concerned departments, Practitioners, Academicians and Policy makers |
| E. Aims & Objectives of the Course | This course provides a comprehensive overview of Sustainable Municipal Waste Management (SMWM) practices in developing countries. It explores the fundamental components of waste management systems while emphasizing sustainability in technical, environmental, social, financial, and institutional aspects. The course also covers strategic planning and policy development, highlighting the challenges and opportunities in implementing sustainable and resilient waste management solutions at the municipal level. Participants will gain the knowledge and skills required to design, implement, and optimize waste management systems that enhance public health, environmental sustainability, circular economy principles, and resource efficiency. |
| F. Details / Content of the Course | Course content overleaf |
| G. Mode of Evaluation of Performance of the ITEC Participant | <ul style="list-style-type: none"> • Individual and group work to evaluate the understanding of the issues under discussion and retain the acquired knowledge. • Mock exercises, Role play, Case studies, Individual presentations and other tasks will be proposed to the participants. |
| H. Name of the Department | Training Division, EPTRI |

Sustainable Municipal Waste Management (SMWM)

Course Overview:

This course provides an in-depth exploration of Sustainable Municipal Waste Management (SMWM), integrating technical, environmental, social, financial, and institutional interventions. Participants will gain insights into the complexities of waste management and explore innovative, cost effective and sustainable solutions through real-world case studies – contributing to mitigation of Carbon emissions from Municipal solid waste management sector.

The curriculum emphasizes strategic planning, policy development, and futuristic approaches within the frameworks of circular and green economies. Special attention is given to organic waste management, examining technologies such as composting, anaerobic digestion, and other advanced waste treatment solutions tailored for urban and municipal applications.

Aligned with global best practices, including the World Bank Institute framework, this course equips participants with a comprehensive understanding of sustainable waste management systems, enabling them to implement effective, long-term solutions.

Course Modules and Content:

Module I: Foundations of Sustainable Municipal Waste Management

1. **Introduction to SMWM**
2. **Understanding Municipal Solid Waste (MSW)**
 - Definition, types, and characteristics of MSW
 - Sustainable waste segregation practices
 - Integrated Sustainable Waste Management and Circular Economy principles
3. **Waste Generation Trends and Global Perspectives**
 - Data on MSW generation, composition, and collection
 - Global waste treatment and disposal trends
 - Links between waste generation, GDP, and urbanization
4. **Environmental and Climate Impacts of Waste Management**
 - Consequences of inadequate waste management
 - GHG emissions and climate mitigation in waste management
 - Alignment with Sustainable Development Goals (SDGs)

Module II: The Waste Management Chain – Part 1

1. **Waste Segregation and Collection**
 - Source segregation principles and best practices
 - Challenges and solutions in waste collection systems
2. **Waste Transportation and Transfer Stations**
 - Efficient transportation practices for sustainability
 - Role of transfer stations and material recovery facilities

Module III: The Waste Management Chain – Part 2

1. **Recycling and Resource Recovery**
 - Material-specific recycling (plastic, paper, aluminum, glass)
 - Challenges and opportunities in recycling systems

2. Organic Waste Management

- Composting, anaerobic digestion, and mechanical-biological treatment

3. Waste to Energy Treatment

- Waste-to-Energy (WTE) technologies and their environmental impacts

4. Sustainable Landfill Management

- Site selection, gas capture, and innovative landfill management strategies

Module IV: Financial Aspects of MSWM

1. Economic Considerations in Waste Management

- Cost estimation, investment, and operational expenditures
- Economic instruments for sustainable waste financing

2. Public-Private Partnerships (PPP) in MSWM

- Case studies of successful PPP models in waste management

Module V: Governance, Policies, and the Informal Sector

1. Regulatory Frameworks and Institutional Roles

- National, regional, and international policies on MSWM
- Stakeholder engagement in policy implementation

Module VI: Innovations and Circular Economy in MSWM

1. Circular Economy Principles in Waste Management

2. Technological Advancements in Waste Management

- Smart waste management solutions (e.g., apps, augmented reality)
- Community-driven and citizen engagement initiatives

Module VII: Specialized Waste Streams Management

1. Biomedical Waste Management

2. Plastic Waste Management

3. Construction and Demolition (C&D) Waste Management

Module VIII: Sustainable Development Goals (SDGs) role in MSWM

- The role of sustainable waste management in achieving global sustainability targets

Module IX: Design Thinking and Social Innovation

- Innovative problem-solving approaches for municipal waste challenges