

NATURE SCIENCE FOUNDATION, COIMBATORE, TAMIL NADU

Waste Management and Sustainable Development

Course Aim:

Support the students of various streams to develop their skills in terms of maintaining the proper waste disposal practices in an Organization and to progress India's youth into employable and/or self-employment, making use of the widespread network and experience with zero waste environment.

Learning Objectives:

The students and staff members enable to

1. Develop proper waste management skill and commitment to sustainable development, which will help in the attainment of making India into eco – friendly Nation.
2. Exhibit the skills on waste management at Educational Institutions and Industrial sectors across the globe towards sustainable development goals and national biodiversity targets.
3. Understand the principles and importance of various waste management audits in the context of the organization and risk assessment to Educational Institutions and Industries.
4. Study the concept on how to segregate and properly dispose the e-waste.
5. Become a Lead Auditor and Entrepreneur in the field of Waste Management Audits to provide solution for environmental problems.

Course Outcomes:

1. Development of basic understanding on Waste Management System
2. Understand the waste management audits groundwork, checklist preparation and auditing techniques, Audit/Non-conformity report preparation and submission.
3. Expose for the expertise on waste management, segregation and proper disposal as per the government rules.
4. Study the methods of waste disposal, ways to reduce the carbon footprint generated from e-waste.
5. In what way the e-waste management audit process supports the nation for the noble cause of environmental protection and nature conservation to enhance the quality of life to human beings.

Unit I: Introduction to Waste Management

[6 hours]

Waste – Definition, Different types of Waste – Biodegradable, non – biodegradable, plastic waste, biomedical waste, E- waste, Construction and demolition waste and Industrial waste, Scope of waste management audits, significance and benefits of conducting waste management audits.

Unit II: Laws and Legislation

[6 hours]

Board overview of e-waste management policies in the U.S, e-waste management rules in India, UNEP, GeSI – Global e-sustainability initiative, Swiss State Secretariat for Economic Affairs (SECO), e-waste management rules in India, E-waste treatment system and Technology.

Unit III: Audit Procedure and preparation**[6 hours]**

E-Waste management audit procedures and target areas of auditing, Benefits, phases and components of e-waste management audit, e-waste risk assessment, composition and impact of e-waste in environment, Role of education institution in e-waste generation, qualitative and quantitative measures to conduct audits, carbon emission due to e –waste, Report preparation.

Unit IV: Disposal techniques and its impact**[6 hours]**

Impact of E- Waste on Health and environment, Impact of Recycling E-Waste, Availability of more resources in recycling, Essentials for E-Waste Disposal audit, Essential disposal steps for these e-waste items, Steps for Mobile Device Disposal, Personalized Recommendations for E-Waste Disposal, Action Plan and Suggestions for Waste Reduction in the Organization .

Unit V: Case studies**[6 hours]**

Case studies, Seminars, Assignment, Tutorials and Auditing exercises, Audited site visits and demonstrations, Audits groundwork, checklist preparation, Practical auditing and auditing techniques, Audit conformity and Non-conformity report preparation, Recommendations and suggestions after audit to the auditees.

Total Lectures / Demonstrations / Case studies / Audited site visits Hours**[30 hours]****Text Books:**

1. Gnanamangai, B.M., Muruganath, G. and Rajalakshmi, S. 2021. *A Manual on Environment Management Audits to Educational Institutions and Industrial Sectors*. Laser Park Publishing House, Coimbatore, Tamil Nadu, India.
2. Rajalakshmi, S., Amzad Basha Kolar. and Asif Jamal, G A. 2023. *A Manual on Waste Management Audits to Educational Institutions and Industrial Sectors*. Laser Park Publishing House, Coimbatore, Tamil Nadu, India.
3. Ponmurugan, P., Deepa, M.A. and Shreeram B. 2022. *Green skill development*. New Age International Publishing, New Delhi. (In Press).
4. Rajalakshmi, S., Kavitha, G. and Vinoth kumar, D. 2021. *Energy and Environment Management Audits*. AkiNik Publishing, New Delhi, India. techniques

Reference Books:

1. Cardozo, N.H., da Silveira Barros, S.R., Quelhas, O.L.G., Filho, E.R.M. and Salles, W. 2019. *Benchmarks analysis of the higher education institutions participants of the Green Metric World University Ranking*. Springer, Universities and Sustainable Communities: Meeting the Goals of the Agenda 2030, World Sustainability Series.
2. IGBC, 2021. Indian Green Building Council. <https://igbc.in/igbc/>
3. Leal Filho, W., Muthu, N., Edwin, G. and Sima, M. 2015. *Implementing campus greening initiatives: approaches, methods and perspectives*. Springer, London, UK.
4. Pramanik, A.K. 2013. *Environmental Audit and Indian Scenario, Environmental Accounting and Reporting*. Deep and Deep Publications, New Delhi, India.
5. Roethlisberger, F.J. and Dickson, W.J. 2017. *Hygiene Management and its Implementation*. Harvard University Press. Cambridge, UK.
6. Thompson, D. 2018. *Tools for Environmental Management*. New Society Publishers, Gabriola Island, BC.