



INTEGRATED WASTE MANAGEMENT FOR A SMART CITY

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INTENDED AUDIENCE : The course will be beneficial for B.Tech/M.Tech/B.Sc/M.Sc/Research Scholars/ Faculty members from different institutions. In addition, we will strongly encourage engineers/professionals working in any area related to waste management should consider taking advantage from this unique application orientated course. Regulators (SPCB, CPCB and MOEF professionals) and policy makers will also benefit from this course.

PRE-REQUISITES : Environmental Sciences, Introduction to Environmental Engineering

INDUSTRIES APPLICABLE TO : Larsen and Tourbo, Tata Group of Industries, Ramky Group of Industries, IF&LS Environment

COURSE OUTLINE :

This course has emphasises on Integrated Solid Waste Management aspects within the broad subject area of Integrated Waste Management for a Smart City. The issues of Municipal Solid Waste (MSW) management, Construction and Demolition (C&D) Waste and Electronic Waste Management will be covered in this course. The topics will include: generation rates and waste composition; Integrated waste management issues, collection, recovery, reuse, recycling, energy-from-waste, and landfilling; Biological treatment of the organic waste fraction - diet I and application, composting, and anaerobic digestion. The environmental impact of waste management and its relationship on the big picture sustainable development and smart city development will be discussed. A major focus of this course will be the role of MSW management within the various initiatives of the Govt. of India including: Swachh Bharat Mission, Smart Cities as well as Make in India. The challenges of waste management for smart cities will also be discussed taking case studies from the first list of 20 smart cities identified in the first phase for this program. This will be followed by overview of the Construction and Demolition (C&D) Waste and Electronic Waste (E-Waste) management issues in India in general and for the smart cities in particular. The new rules with respect of C&D Waste and E-Waste Management will be covered. The challenges of managing these waste streams effectively will be discussed.

ABOUT INSTRUCTOR :

Prof. Brajesh Kr. Dubey has his bachelors degree in Civil Engineering (Hons) from Indian Institute of Technology (IIT) Kharagpur, India and PhD in Environmental Engineering Sciences, University of Florida, Gainesville, Florida, USA. He is presently Associate Professor (Integrated Waste Management and Sustainable Engineering) in the Division of Environmental Engineering and Management at Indian Institute of Technology (IIT), Kharagpur, India. Dr. Dubey has more than 17 years of research, teaching, training and industrial outreach experience in the areas of Integrated Solid and Hazardous Waste Management, and Sustainable Engineering and Application of Life Cycle Assessment techniques. He also works in the area of Life Cycle Analysis and Sustainable Engineering. He has been teaching courses in the area of Solid Waste Management, Hazardous Waste Management, Life Cycle Analysis and Environmental Risk Assessment among other courses for nearly a decade. He has taught at several universities in USA, Canada, New Zealand, China and India. He has also conducted training programs in the Integrated Waste Management areas including that for Electronics Waste. Dr. Dubey has authored/co- authored more than 200 publications in his area of expertise and have presented at several national and international conferences. He has worked as Waste Management Expert for UN agencies and World Bank.

COURSE PLAN :

Week 01 : Introduction to Solid Waste Management

Week 02 : Municipal Solid Waste Characteristics and Quantities

Week 03 : MSW Rules 2016, Swachh Bharat Mission and Smart Cities Program

Week 04 : Municipal Solid Waste Collection, Transportation, Segregation and Processing

Week 05 : Disposal of Municipal Solid Waste

Week 06 : Biochemical Processes and Composting

- Week 07** : Energy Recovery from Municipal Solid Waste
- Week 08** : Current Issues in Solid Waste Management and Review of MSW Management Status in First List of 20 Smart Cities in the Country
- Week 09** : Construction and Demolition (C&D) Waste Management - Overview
- Week 10** : C&D Waste – Regulation, Beneficial Reuse of C&D Waste Materials
- Week 11** : Electronic Waste (E-Waste) Management – Issues and Status in India and Globally
- Week 12** : E-Waste Management Rules 2016 and Management Challenges