INTEGRATED WASTE MANAGEMENT FOR A SMART CITY

PROF. BRAJESH KUMAR DUBEY
Department of Civil Engineering
IIT Kharagpur

TYPE OF COURSE : Rerun | Core | PG
COURSE DURATION : 12 weeks (26 Jul’21 - 15 Oct’21)
EXAM DATE : 24 Oct 2021

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 - direct land 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 :
Dr. Brajesh Kumar Dubey is an Associate Professor in the Division of Environmental Engineering and Management at Indian Institute of Technology (IIT), Kharagpur, India. Dr. Dubey has more than a decade of research, teaching, training and industrial outreach experience in the areas of Integrated Solid and Hazardous Waste Management, Life Cycle Assessment (LCA) and Sustainable Engineering. He has collaborated with UN agencies, World Bank, National Science foundation, Ontario Ministry of Environment and Auckland Regional Council on various projects including that in the area of LCA.

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 12 : E-Waste Management Rules 2016 and Management Challenges