


ECOLOGY AND ENVIRONMENT

Prof. Abhijit P Deshpande
Department of Multidisciplinary
IIT Madras

Prof. Ravi Krishna R
Department of Multidisciplinary
IIT Madras

INTENDED AUDIENCE : Any interested Learners

COURSE OUTLINE :

The objectives of the course is to introduce and sensitize all BTech students to the issue of ecology, environment and sustainability. The lectures are aimed at posing various questions that are relevant for all students of engineering and management to incorporate sustainability and a sensitivity to ecology and environment in their design of products, processes and systems.

ABOUT INSTRUCTOR :

Prof. Abhijit P. Deshpande is a Professor of Chemical Engineering at IIT Madras. His research focus is on polymeric systems, more specifically their aggregation and gelation behaviour. In his group, polymeric materials such as hydrogels and membranes are being investigated for applications in electrical, electromehcanical and electrochemical devices. His teaching interests include specialized courses in polymers, fluid mechanics, rheology and continuum mechanics; and core chemical engineering courses such as mass transfer and thermodynamics

Prof. R. Ravikrishna Professor(2018 Current) Indian Institute of Technology Madras Associate Professor (2013-2018) Indian Institute of Technology Madras Assistant Professor (2006-2013) Indian Institute of Technology Madras Research Associate (2000-2006) Louisiana State University, Baton Rouge, USA

COURSE PLAN :

Week 01 : Dr. B.S. Murty: Introduction (1), Sustainability Definition / Goals, Climate Change (2), Case Studies (3) (Eg: Dams, Chemicals, e-waste, IOT, Landfill siting etc)

Week 02 : Dr. Sudhir Chella Rajan: Sustainability and Economics (3), Sustainability and Ethics (3)

Week 03 : Dr. Ligy Philip (Water Quality/ Waste Management): Water Quality and Treatment (3), Waste Management and Treatment (3)

Week 04 : Dr. B. S. Murty (Water Management/ Resources): Urban Drainage, Water Resource Management, Impact of Climate Change

Week 05 : Dr. Srinivas Jayanti (Energy):Energy Demand / Resources (1), Pollution from Energy generation (1), Energy and Climate Change (Global Warming) (1), Energy and Sustainability (1), Long Range and Short Range Solutions (1), (Global vs. India)

Week 06 : Dr. R. Ravi Krishna: Risk Assessment Definition (1), Pollutant Pathways / Safety/ Exposure (1), Liability /Examples (1), Life Cycle Assessment (2), Environmental Management and LCA (1).

Week 07 : Dr. Sudhir Chella Rajan: Urban Planning / Sprawl (1), Challenges in Urban Planning,Transport (1), Energy (Smart Grid) (1), Water (1), Waste (1), Governance (1).

Week 08 : Dr. Susy Varughese / Dr. Parag Ravindran: Ecology – definitions / Systems (1), Biodiversity (1), Examples of Historical Impact of economy on Ecology, Restoration / Ecological Engineering.

Week 09 : Dr. Ligy Philip / Dr. Ravi Krishna: Solid Waste Management, Hazardous Waste Management