

# ADVANCED GREEN MANUFACTURING SYSTEMS



## MANAGEMENT

**PROF. DEEPU PHILIP**  
Department of Management  
IIT Kanpur



**TYPE OF COURSE** : New | Elective | UG/PG

**INTENDED AUDIENCE** : Students of all Engineering & Science

**PRE-REQUISITES** : The student should have completed six semesters of UG Engineering or Science program.

**COURSE DURATION** : 12 weeks (28 Jan'19 - 19 Apr'19)

**EXAM DATE** : 28 Apr 2019

**PROF. AMANDEEP SINGH**  
Department of Mechanical Engg  
IIT Kanpur



**INDUSTRIES APPLICABLE TO** : HAL, NAL, SAIL, ISRO, BHEL, L&T, BEL, BDL, TATA, DRDO, Automotive manufacturers, DELL, HP, Pharmaceuticals, Johnson & Johnson, Abbott, UPL, etc., Chemical industries: GAIL, ONGC, Reliance, HPCL, IOCL, FACT, HMT, etc. so on.

### COURSE OUTLINE :

Sustainability aims to conserve energy and natural resources, and to ensure that they have minimal impact on the environment and society. It targets at fulfilling the needs of the present without compromising the ability of future generations to meet their own needs. This course provides an overview of realizing Green Manufacturing Systems. Compared to conventional manufacturing process that is purely productivity driven; various strategies and applications are necessary to improve the ecology first focus of green manufacturing. Specific tools and relevant case studies are presented to provide an engineering approach to the course.

### ABOUT INSTRUCTOR :

Deepu Philip is a faculty of Industrial & Management Engineering Department and Design Programme of IIT Kanpur. He works in the area of Production and Operations, Systems Simulation, Product Life Cycle Management, Unmanned Aerial Systems, and Systems Engineering. He holds bachelor degree in Industrial Engineering with his doctorate in Industrial & Management Engineering from MSU Bozeman. He has both academic and industrial experience with leading organizations of the world. He has experience in designing and implementing complex system of systems in different fields including defense, aviation, fertilizer, strategic chemical plants, transportation, banking, automation, health care, energy, and communication.

Amandeep Singh is working as a Project Scientist in the Mechanical Engineering Department, and Design Program at Indian Institute of Technology, Kanpur, India. He holds PhD degree from Indian Institute of Technology Kanpur, India, and a Bachelor degree in Production Engineering. Dr. Singh has ten years of industrial and academic experience. His research interests are Sustainable Manufacturing Processes and Systems, Simulation of Manufacturing Systems, Product Design and Manufacturing, and Applied Ergonomics.

### COURSE PLAN :

**Week 01** : Introduction to Advanced Green Manufacturing Systems

**Week 02** : Statistics in sustainability (for quantification)

**Week 03** : Optimization for sustainability

**Week 04** : Optimization for sustainability continued

**Week 05** : Design of Experiments for Green Manufacturing Systems

**Week 06** : Value Engineering Green Plan

**Week 07** : Design for Sustainability and Maintenance

**Week 08** : Green transportation models

**Week 09** : Green Manufacturing techniques

**Week 10** : Life Cycle Assessment (software demonstration)

**Week 11** : Sustainable Manufacturing facility development

**Week 12** : Design of Higher Education for Sustainable development