



SUSTAINABILITY THROUGH GREEN MANUFACTURING SYSTEMS: AN APPLIED APPROACH

PROF. DEEPU PHILIP

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IIT Kanpur

TYPE OF COURSE : Rerun | Core | Elective | UG

COURSE DURATION : 8 weeks (23-Aug' 21 - 15-Oct' 21)

EXAM DATE : 23 Oct 2021

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

INTENDED AUDIENCE : Students of all Engineering and Science disciplines.

INDUSTRIES APPLICABLE TO : Manufacturing companies: HAL, NAL, SAIL, ISRO, BHEL, L&T, BEL, BDL, TATA, DRDO, Automotive manufacturers, DELL, HP, Pharmaceuticals, Johnson & Johnson, Abbott, UPL, etc.

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 the Sustainability in Green Manufacturing Systems; various methodologies and its application in improving the eco-efficiency are focused. An additional objective is to provide insights on sustainable aspects of management methodologies such as Lean Manufacturing, Green Supply Chain Management, and Product Life Cycle Management. Simulation of the Manufacturing Systems is also discussed to make the students learn the modern tools that are used in the virtual environment.

ABOUT INSTRUCTOR :

Deepu Philip is a faculty of Industrial & Management Engg. 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 Project Scientist in the Department of Mechanical Engineering at Indian Institute of Technology, Kanpur, India. He holds PhD degree from IIT Kanpur and bachelor degree in Production Engineering. Mr. Singh has over eight years of industrial and academic experience. His research interests are Sustainable Manufacturing Processes and Systems, Simulation of Manufacturing Systems, Value Engineering, Applied Ergonomics and Engineering Metallurgy.

COURSE PLAN :

Week 1: The concept of sustainability, manufacturing, operations, processes, practices

Week 2: Simulation models for manufacturing, validation, verification, output analysis

Week 3: Life Cycle Analysis (LCA) and sustainability framework

Week 4: Basic modeling for factory simulation

Week 5: Green manufacturing modeling

Week 6: Productivity and Sustainability

Week 7: Laboratory demonstration, and renewable sources of energy

Week 8: Developing a green smart factory