



COMPUTER INTEGRATED MANUFACTURING

PROF. JANAKARAJAN RAMKUMAR

Department of Mechanical Engineering
IIT Kanpur

PROF. AMANDEEP SINGH

Department of Mechanical Engineering
IIT Kanpur

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

INTENDED AUDIENCE : Students of all Engineering and Science disciplines.

INDUSTRIES APPLICABLE TO : HAL, NAL, SAIL, ISRO

COURSE OUTLINE :

Use of computers in manufacturing in order to design and develop the products has found unprecedented applications. Computer integrated way of manufacturing provides a myriad of benefits such as speed, flexibility, and better control. In this course, Computer Integrated Manufacturing (CIM) approaches are discussed. CAD/CAM tools and their within and between the production systems are presented along with appropriate case studies. Data storage and handling is also the need of contemporary manufacturing systems. This is also catered using software tools. The course is reinforced with the laboratory demonstrations to add a practitioners' touch. Students would develop a process to largely plan, design and develop a product and a production system after completing this course

ABOUT INSTRUCTOR :

Prof. Janakarajan Ramkumar is Professor of Mechanical Engineering Department, and Design Program, at Indian Institute of Technology, Kanpur. He teaches manufacturing science, micro/nano technology, new product development. He has a bachelor's in Production Engineering with his doctorate in Defect quantification in drilling of composites from IIT Madras, India with a best thesis award. Over the years his contribution in teaching and research is remarkable. He has worked for BOSCH group and improved the productivity of the company. His research and teaching focus is on nano technology and inclusive design. He has several international and national patents in his credit and has published more than 100 journal papers

Prof. Amandeep Singh is working as Research Scientist in the Mechanical Engineering Department, and Design Program, 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, Applied Ergonomics and Engineering Metrology. He has traveled in countries like US, Canada, and Australia to present his research in various international conferences organized by reputed bodies like CIRP and IEOM. His research is also published in various international reputed journals.

COURSE PLAN :

Week 1: Introduction to Computer Integrated Manufacturing (CIM)

Week 2: Computer Aided Design

Week 3: Computer Aided Manufacturing

Week 4: Computer Numerical Control

Week 5: Computer Aided Process Planning (CAPP)

Week 6: CIM interfaces: CAD vs CAM

Week 7: Data and information in CIM

Week 8: Manufacturing Systems and their design

Week 9: Simulation of Manufacturing Systems

Week 10: Computer Aided Maintenance

Week 11: Computer Integrated Additive Manufacturing

Week 12: Advanced CIM techniques