



# MANUFACTURING SYSTEMS TECHNOLOGY I & II

## PROF. SHANTANU BHATTACHARYA

Department of Mechanical Engineering  
IIT Kanpur

**INTENDED AUDIENCE :** UG/PG of Mechanical Engineering/ Industrial and Production Engineering/ Material Science and Engineering/ Metallurgical Engineering.

**INDUSTRIES APPLICABLE TO :** SMIL (Gurgaon), HAL (Kanpur and Lucknow), Cyeint (Hyderabad), Small and medium scale production industries.

### COURSE OUTLINE :

This is an introductory level course in Manufacturing Systems Technology and management. For most enterprises, the long term goal is to stay in business, grow and make profits. This is particularly true for manufacturing enterprises, which must understand the dynamic changes that are taking place in business environment and are flexible enough to change at every level. This course is an introductory course for engineering professionals who would like to take up careers in manufacturing and also for professionals who are already in manufacturing careers and would like to see the technological changes that manufacturing paradigm has witnessed in the last 3 decades.

### ABOUT INSTRUCTOR :

Prof. Shantanu Bhattacharya is an Abdul Kalam Technology Innovation National (INAE) Fellow and currently working as Dr. Gurumukh D. Mehta and Veena M. Mehta Chair, Professor at the Department of Mechanical Engineering at the Indian Institute of technology (IIT) Kanpur. He also performed the duties as Head of the Design Programme from 2017-2020 at IIT Kanpur. Prior to joining the Department of Mechanical Engineering at IIT Kanpur, he has been associated at a senior management level at Suzuki Motors and has over 6 years of experience in various production capacities and positions. His research includes Micro-system design and fabrication, Bio Micro Electromechanical Systems, Nano Technology, Lab on Chip, Nano energetics, Water remediation, Energy storage devices and Microfluidics. He currently heads Microsystems Fabrication Laboratory and worked as a coordinator of the 4-I laboratory and associated with the TA202 laboratory as coordinator between 2012-2015 at IIT Kanpur. Both these laboratories are very high end in terms of offering manufacturing training programs. He has 19 international and national patents, 100 international journals and numerous national and international conferences to his name and recipient of many awards and honours - NASI Reliance Platinum Jubilee Award – 2019, Er. M.P. Baya National Award from IEI for 2019; Senior Member, IEEE, 2019; Fellow of the International Society of Energy, Environment and Sustainability (ISEES), 2018 to name a few.

### COURSE PLAN :

- Week 1 to 3** : Manufacturing properties of materials, Computer aided designing
- Week 4 to 5** : Principles and process planning of basic machining processes, Machine tools design.
- Week 6** : Computer aided process planning
- Week 7** : Introduction to CNC part programming, Product design
- Week 8** : Just-in-time manufacturing
- Week 9** : Quality systems engineering
- Week 10 to 11** : Cost of quality and statistical quality control
- Week 12** : Robotic systems planning and designing