



## DESIGN PRACTICE - II

**PROF. SHANTANU BHATTACHARYA**

Department of Mechanical Engineering  
IIT Kanpur

**INTENDED AUDIENCE :** Students of BE/ME/MS/BSc/MSc stream

**INDUSTRIES SUPPORT :** SMIL (Gurgaon), HAL Kanpur and Lucknow, Small and medium scale production industries

**COURSE OUTLINE :**

The course is intended for beginners in post graduate studies in Design. It can also serve well for aspiring professionals in industry who will be willing to undertake careers in the field of design.

**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 :** Geometrical Transformations

**Week 2 :** 3-D shapes/ solid modelling

**Week 3 :** Micro-electro Mechanical Systems (MEMS)/ Sensors and actuators

**Week 4 :** Rapid Prototyping (3-D printing)/ Rapid tooling

**Week 5 :** Creating forms and their geometric transformation models

**Week 6 :** Strength and Stiffness of Structural Elements/ Mechanisms

**Week 7 :** Mechatronics/ Introduction to Control

**Week 8 :** Intelligent Product Design