



# A GIAN Course on Mechanical Design for Price Sensitive Markets

Indian Institute of Technology Delhi

January 14 – 18, 2019



## Overview

The growth in mechanical engineering goods are for compact, intelligent, and cost-effective solutions. Successful designs evolve out of frugal specification of the needs and precise formulations. Fundamental machine design theory is augmented in this course to parametrically analyze technologies; bottom-up/top-down design processes; engaging stakeholders in the design process; understanding socioeconomic factors that affect adoption of products; and developing and emerging market dynamics and their effect on the business and technology of new product acceptance. The first section introduces the principles of human centric design and their use to evolve minimum specifications of the needs. This is followed by embodiment design, based on degree of freedom, constraint and stiffness analysis. The next section looks at methods to prototype and analyze systems for evaluations, both in-silicon and physically. Finally use of assembly requirements through exact-constrained design methodologies will be deployed to simplify machining and assembly effort to target cost sensitive markets.

## Objectives

The objectives of the course are as follows:

- Exposing participants to the basic tenets of product design for cost-sensitive markets,
- Deriving requirements and design specifications,
- Embodiment design and evaluation, and
- Building confidence and capability among the participants in designing products through case studies.

## The Faculty



**Prof. Amos G. Winter** is Ratan N. Tata Professor in the Department of Mechanical Engineering at MIT, USA. He is the Director of the Global Engineering and Research Lab, which focuses on the marriage of mechanical design theory and user-centered product design to create

simple, elegant technological solutions for use in highly constrained environments. His research interests include design for emerging markets and developing countries, biomimetic design, and biomechanics. He was named one of the 35 Innovators under 35 (TR35) by Technology Review magazine.



**Prof. Sudipto Mukherjee** is the Volvo Chair Professor in the Department of Mechanical Engineering at IIT Delhi. His research interests include mechanical system design, computer controlled mechanisms, and dynamics and biomechanics. He is a recipient of AICTE

Career Award for Young Teachers and Indian National Academy of Engineering Young Engineer Award in 1998. He has more than 60 sponsored projects, 7 patents, 60 journal paper and 80 conference papers to his credit.



**Dr. Jitendra P. Khatait** is an Assistant Professor at IIT Delhi. His research interests include precision machine design, compliant mechanisms, and medical robotics. He worked as a Design Engineer at ASML, Netherlands and as a Research Engineer in SIMTech, A\*STAR,

Singapore. He worked with industries in designing consumer products to high end precision motion stages for semiconductor industries and medical robotic systems using flexible instruments.

## Course Modules

- Human-centered design, Frugal innovation
- Product design and development, Prototyping
- Design Principles, Embodiment design
- Exact-constrained design, Flexures
- Stiffness based design, Error-budgeting

## Who Should Attend

Executives, engineers and designers from industries and government organizations including R&D laboratories.

Student at all levels (BTech/MSc/MTech/PhD) or Faculty from academic institutions and technical institutions.

## Fees

The participation fees for the course is as follows:

- Research scholars/ Students: Rs. 5,000/-
- Faculty: Rs. 10,000/-
- Working professionals: Rs. 20,000/-
- Participants from abroad : US \$500

The above fees (**inclusive of GST**) include all instructional materials and laboratory equipment usage charges.

## Course Coordinator

Dr. Jitendra Prasad Khatait, Assistant Professor  
Department of Mechanical Engineering, II-354  
IIT Delhi, Hauz Khas, New Delhi 110016  
Tel: +91 11 26591132 (O)  
Email: [jpkhatait@mech.iitd.ac.in](mailto:jpkhatait@mech.iitd.ac.in)

## Register for the course at:

<http://www.gian.iitkgp.ac.in/GREGN/index>

Please email the registration confirmation.



# A GIAN Course on Mechanical Design for Price Sensitive Markets

Indian Institute of Technology Delhi

January 14 – 18, 2019



## Registration Process

**Step 1:** Register in the GIAN portal

(<http://www.gian.iitkgp.ac.in/GREGN/index>) by paying Rs. 500/- online. Registration to GIAN portal is one-time process. Please note that the course fee is separate.

**Step 2:** Login to the GIAN portal with the registered User ID and Password. Choose for the Course registration option. Select the course titled "Mechanical Design for Price Sensitive Markets" from the list and click the "Save" option. Confirm your registration by clicking the suitable option.

**Step 3:** Candidates will be intimated through email regarding their selection.

**Step 4:** Once you receive the intimation from the Course Coordinator, the fee (as applicable) need to be paid.

**Step 5:** Pay the course fee by Electronic Clearing Service/ RTGS/ Demand Draft in the name of "IITD CEP ACCOUNT". The bank details are as follows:

1	Bank Account No.	36819334799
2	Bank Address	State Bank of India, IIT Delhi, Hauz Khas, New Delhi 110016
3	Beneficiary	IITD CEP Accounts
4	IFSC code	SBIN0001077
5	MICR code	110002156
6	SWIFT code	SBININBB547
7	IITD PAN No.	AAATI0393L
8	Account Type	Savings

The participants are required to send the Demand Draft for the registration fee to the Course Coordinator.

**Step 6:** Fill up the registration form, by providing details of the bank transaction. Send the scanned copy of registration form to the Course coordinator at [jpkhatait@mech.iitd.ac.in](mailto:jpkhatait@mech.iitd.ac.in) before **10<sup>th</sup> January 2019**.

## GIAN COURSE REGISTRATION FORM

(14 – 18 January 2019)

NAME : \_\_\_\_\_

DESIGNATION: \_\_\_\_\_

ORGANIZATION: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

EMAIL ID: \_\_\_\_\_

MOBILE NO.: \_\_\_\_\_

COURSE NAME: \_\_\_\_\_

\_\_\_\_\_

Fees payable to "IITD CEP ACCOUNT", SBI, IIT DELHI

TRANSACTION NO. (e-transfer/RTGS/NEFT):

\_\_\_\_\_

DEMAND DRAFT NO.(If paid by Demand Draft):

\_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

Signature of the Applicant: \_\_\_\_\_