

## INTRODUCTION

Programme is intended to develop the basic design skills which plays an important role as a foundation in developing right product. Fundamentals brings a scientific approach for making the design most workable and optimized design of any product. Making manufacturing drawings at par global standards providing all appropriate information through graphical language for all the parts to be manufactured, helps to helps to manufacture the parts without any errors.

In view of this, IMTMA is organizing 15 days comprehensive programme on “**Essential Skills for Machine Design Engineers**” for all the design engineers. The programme will be held at IMTMA Design Institute, Technology centre, Bengaluru.

**\*Note: Participants may register either of the following options:**

**Option 1:** Entire module (**Essential Skills for Machine Design Engineers**) from (27 November to 15 December 2023). [Click here](#) to register

**Option 2: Individual Modules of Essential Skills for Machine Design Engineers:-**

**Module 1: Essential Skills for Machine Design Engineers - Level 1 (27 November to 01 December 2023), [Click here](#) to register**

**Module 2: Essential Skills for Machine Design Engineers - Level 2 (04 to 08 December 2023), [Click here](#) to register**

**Module 3: Essential Skills for Machine Design Engineers - Level 3 (11 to 15 December 2023), [Click here](#) to register**

## FOCUS AREAS

- Manufacturing drawing – What, Why and How from Manufacturing perspective
- Limits, Fits, Tolerances and Geometric Dimensioning and Tolerancing (GD&T) – What, Why and How from Manufacturing perspective
- Design of machine elements – Bearings, Rigid drive (Gear), Chain drive, Flexible drive (Belt) and Springs.
- Strength of Materials, Mechanics, and Kinematics – What Why and How in Machine Design
- Application of Engineering materials and Heat treatment in machine development
- Driving screws - Ball screw & Lead screw - Types, selection and application
- Guideways – Friction and Antifriction Guideways - Types, selection and application
- Pneumatics and Hydraulics – What why and how?
- Design for work holding and fixturing.
- Design For Manufacturability and Assembly
- Tolerance Stack up Analysis
- Analytical analysis of rotating parts for stiffness, inertia, and life
- Finite Element Method for Optimization – Stress, Thermal, Static and Dynamic
- Electronics in Machineries – PLC, VFD, CNC, HMI, SENSORS,

## KEY TAKE AWAYS

- Knowledge on error free manufacturing drawings
- Knowledge on design of machine elements
- Knowledge on critical selection factors for mechanical systems
- Know on importance of dimensional tolerance.
- Knowledge on how to apply GD&T for manufacturing.
- Knowledge on basic science SOM, EM and KOM
- Knowledge on critical machine elements like ball screw and LM guides
- Reduction and optimization of design lead time
- Knowledge on Engineering materials and applications.
- Intense knowledge on Hydraulics and Pneumatics
- Know how on machining fixtures from design to manufacture.
- DFMA
- Tolerance stack-up analysis for optimization
- Develops full confidence to lead the team of machine design.
- How to make cost effective product design.
- Knowledge on control systems what, why and how?

## PARTICIPATION FEE

**Rs. 37500/-**

+18% GST

**IMTMA Members/ Micro Companies/ Individuals/  
Educational Institutions / Students/ IMTMA Non**

**Members/ Others**

**USD 1500/-**

**Overseas Participants**

**Group Concession : 10% for 3 to 5 and 20% for 6 and more delegates being nominated from the same company**

## FACULTY

**Mr. H V Rajashekara, Advisor & Head IMTMA Design Institute**

Mr. Rajashekara HV has over 37 years' experience on Machine design and development from HMT Bangalore and Johnson Electric Group, Hongkong. In addition, he has 10+ years' experience from Training domain at IMTMA.

He developed various machine tools both general and SPM for defence, auto companies, mini All electric Plastic Injection machines, Flexible PCB manufacturing Machines, Automatic Optical Inspection Machines and Modular airless Linear Actuators. Desk top machines, VMC30 and Eco line parts manufacturing platform

**Mr. Ganapathi K N, Advisor - IMTMA**

Is presently working as Advisor at IMTMA, having 16 years of industrial and 16 years of academic and training experience. He is a mechanical engineer with post-graduate in metal casting science and engineering. Prior to IMTMA, Ganapathi has worked at various capacities in manufacturing companies. He has a thorough knowledge of Materials, Metallurgy, Metal casting and heat treatment processes.

**Mr. Preetham B M -Assistant Director (Training) - IMTMA**

He is having over 24+ years of experience in the industry, in the field of manufacturing of precision components for Nuclear, Aerospace & Automation industry. He has acquired expertise in the application and use of GD&T principles in precision manufacturing of components. Prior to working at IMTMA, he has worked at Avasarala Technologies Limited, in the field of machining the precision components using CNC machines.

**Mr. M A Khallaq**

Mr. Khallaq has over 3 decades of expertise in Machine Design and fixturing. An ex-HMT as Dy General Manager, served the R & D dept. He now runs his own Industry "XL CNC Machine" at Peenya. Manufactures of GPMs and SPMs.

**Dr. Krishna Rao - Industrial expert and Professor**

He has served in various positions in HMT Machine Tools Limited in Design Department for 24 years. And he is teaching experience of 17 years as Professor, Head and Principal for 8 years in various engineering colleges.

**Mr. Shiva Kumar - Industrial expert.**

Former Joint General Manager, HMT (R&D), Bangalore. He is an industry expert with over 25 years of rich experience in Design & Development of CNC Machines. Presently Mr. Shiva Kumar is a Technical Consultant to THK India Pvt Ltd and has been associated with THK Co, Ltd., for the past over 20 years.

**Mr. K. Ganapathi Bhat**

Mr. Ganapathy Bhatta is a Mechanical Engineer and an employability expert having 38 plus years of experience as an enabler and a passionate technical trainer in imparting and organizing technical training for newly recruited technical personnel and experienced Industrial employees and instrumental for many of them to become senior executives and entrepreneurs in India and abroad.

Has worked with M/s. LMW, GKDITR - Coimbatore, NTTF - Bangalore, M/s. Maruti Suzuki, Gurgaon, M/s. Triveni Turbines Bangalore. During his tenure, he has trained more than 10000 full-term technicians and Engineers and helped them to successfully establish their careers. Today, his trainees/students are working globally in multinational companies and many of them have become successful entrepreneurs and carrying out successful businesses in India. For Registration Contac

**Mr. BL Patil - Assistant Director -Design Institute IMTMA**

He has over 27 industrial work experience in the field of Jig & Fixture design, SPM design (Metal cutting), Process planning for machined components, Design of machines for Nuclear & Automation industries. Over six years training experience in IMTMA Design Institute - Bengaluru.

**Mr. Ramesh Srinivas Rao**

Mr. Ramesh Srinivasa Rao is an experienced mechanical design engineer professional with 35+ years of work experience in the field of plastics, plastics testing, precision components, and product design. He has been responsible for mechanical design services across the Automotive, Medical, Industrial, process and consumer electronics verticals. He built, trained, and managed teams of 250 + engineers in Plastics, Injection Molds, Dies, and Die Casting Die, New Product Design, Industrial Design, Packaging, Testing, and Reliability. Currently holds seven US patents, two on medical products and four on interconnects. Handled complex projects and managed engineering operations worldwide. Previously worked for L&T Technology Services, Molex, Flextronics, National, etc.

**Mr. Ravi Shankar Nadig,**

He holds a Bachelor's Degree in Mechanical Engineering, is a Manufacturing and Dimensional Management Professional with 27 years of experience in Machine tool, Automotive and Aerospace industries, He has worked as a Scientist in Central Manufacturing Technology Institute (CMTI), Bangalore (9 years) and as a Consultant in Tata Consultancy Services (TCS) for 15 years His core competency is in Design and Manufacture of precision machine elements for Defence and Space applications, Manufacturing Engineering support for Fabrication of sheet metal parts of Aero Engine assemblies, Dimensional Management -Tolerance Stack Analysis of Automotive and Aero engines, GD&T practice and training, and Rapid Prototyping. He is a Senior GD&T professional certified by ASME (Y14.5-2009).

**Mr. P. Aruna Kumar**

Mr. Arunakumar Is a Postgraduate Mechanical Engineer with a Machine tool specialization. He comes with over 36 years of domain expertise in Machine tool design, Assembly, Inspection, Testing and Motor and pump selection

He is a former DGM, Designs and development, HMT Machine tool division, Bangalore. He has a rich experience in Gear design, Gear cutting machine design, Gear metrology and also and Motor and pump selection. He has also worked in the field of assembly and testing machine tools.

**Dr. V Bharat**

**Dr V Bharat** is a Mechanical engineer, with a post-graduation in CAD-CAM and has completed his PhD with a specialization in Powder metallurgy. He is currently working as Associate professor, with Global Academy of Technology, Bangalore. He has an overall academic experience of over 16 years. He has published several papers and conducted a number of workshops on Mechanical engineering related topics

**Ms. K. LAKSHMI KUMARI**

Ms K Lakshmi Kumari has done her BE in electronics and communication and Worked in HMT Machine Tools Limited, Bangalore for 36 years, in various levels from Engineer Trainee to DGM (D & D). She has involved in Design & Development of various SPMs, Conventional machines, CNC Turning machines, CNC Grinding machines, Horizontal and Vertical Machining centers, Flow Forming Lathe etc. She has trained many New Engineers, Graduate Apprentice Trainees and Customers on Relay Logic design, Introduction to CNC system and drives and PLC programming

## For Registration Contact

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**REGISTRATION :** Prior registration for participation is necessary. Number of participants is limited and will be accepted on 'First Come First Serve' basis. A Certificate of participation will be issued to participants.

**Important Information :** Participation fee includes, course material, working lunch and tea / coffee. Interested companies are requested to register online by clicking on 'REGISTER' button and by filling up the nomination authority and participant's details in specified form.