

Contact Information

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Coordinators

STTP on UPMT

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REGISTRATION

No registration fee will be charged to the teachers of AICTE recognized technical institutions / Engineering Colleges / Universities.

A caution deposit of Rs. 500/- is to be paid by all the applicants, which will be refunded.

This caution deposit should be paid by a crossed demand draft drawn in favour of "IIT Madras", payable at Chennai.

The participants will be paid to and fro 3-tier AC train fare by the shortest route on production of tickets.

Important Dates

Receipt of Registration Form: **25th January, 2018**

Intimation of Selection : **30th January, 2018**

Confirmation of Participation: **5th-10th March, 2018**

For Further Details

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Brochure: <http://mech.iitm.ac.in/upmt.pdf> or
<http://www.cce.iitm.ac.in/Brochure.pdf>

Short Term Training Programme
on
**ULTRA HIGH PRECISION MACHINE
TOOLS – Design and Characterization
(UPMT)**

March 05 - 10, 2018

Coordinators

Dr. Sivasrinivasu Devadula,
Dr. G.L. Samuel,
Professor N. Ramesh Babu

Under
Quality Improvement Programme



Manufacturing Engineering Section
Department of Mechanical Engineering
Indian Institute of Technology Madras
Chennai – 600 036, India.

Introduction

The Indian Institute of Technology Madras, established by the Government of India in 1959, is among the foremost of Institutes in India and abroad in higher technical education and fundamental and applied research. The Institute, located in a lush green forest covered land of about 250 hectares in South Chennai, has about 565 Faculty, 8300 Students, and 700 Administrative and Supporting Staff working in various departments and centres.

The Manufacturing Engineering Section (MES) was started in 1965 under the Department of Mechanical Engineering. This section is now equipped with state-of-the-art facilities for teaching, training, research and development, and industrial consultancy in various aspects of manufacturing. The facilities available in the section encompass conventional, unconventional and advanced manufacturing technologies. These are grouped under Machine Tool Laboratory, Computer Aided Design (CAD) Laboratory, Computer Aided Manufacturing (CAM) Laboratory, Robotics, CIM Laboratory, Micro Machining and Metrology Laboratory. Since its inception, emphasis has been on practical and industrially relevant developmental activities. The facilities in the section have been augmented with support from Ministry of HRD, Government of India, Indo-German Projects, and Sponsored Projects from various Governmental Agencies and Industries.

The Background

High accuracy machine tools (ultraprecision and miniaturised machine tools) are in high demand for manufacturing of aerospace, automobile, semiconductor, defence and biomedical components which require higher accuracies and closer tolerances. The target part accuracy depends on the process-machine tool-fixturing-workpiece interactions. In order to maintain the high part accuracy, ultra-precision and micro machine tools need to be designed and analysed for both static and dynamic stability of the total machining system as well as determining the sources of errors and eliminating/compensating them. However, there exists a big vacuum in the area of ultra-precision

machine tool design and manufacturing sector in India. A proper knowledge of various aspects of high precision machine tools is required to carry out R&D activities to fill this vacuum. This course aims at imparting both fundamental and advanced knowledge about various aspects of ultra-high precision machining processes, machine tools, measurement and characterization systems.

Course Contents

The course will cover the following topics:

- ❖ Introduction to ultra-high precision (UHP) manufacturing
- ❖ Exposure to the industrial requirements
- ❖ UHP machine tools and the detailing on elements: spindles, guide ways, slides etc.
- ❖ Machining process-machine tool interaction on part accuracy
- ❖ Design and development of UHP machine tools
- ❖ Static and dynamic analysis of UHP machine tools
- ❖ Thermal analysis of UHP machine tools
- ❖ Sub structuring machine tools

Faculty

The faculty will be eminent personalities drawn from IITs, other research organisations and Industries.

Eligibility

Teachers of AICTE recognized Engineering Colleges are eligible to apply for participation.

BOARDING AND LODGING

Arrangements have been made to accommodate all the participants in the Taramani guest house at IIT, Madras. Boarding and lodging (twin sharing basis) will be provided to selected candidates.

Short Term Training Programme
on
**ULTRA HIGH PRECISION MACHINE TOOLS –
Design and Characterisation
March 05 - 10, 2018**

Registration Form*

Name (Mr/Ms/Dr/Prof):

Designation :

Office Address :

Tel. Office:

Fax:

Age

Sex

Highest Acad. Qualification :

Professional Experience :

Research Interest :

Accommodation

Demand Draft Details :

Amount: Rs.

Date:

Residence:

E-mail:

: ____ Years

: Male / Female

:

:

:

: Required/Not Required

:

:

Bank:

I agree to abide by the rules of STTP courses. If selected, I shall attend the course for the entire duration.

Date:

Place:

Signature of Applicant

Certificate

Certified hereby that Mr/Ms/Dr/Prof _____

will be permitted to attend the above course to be held at Indian Institute of Technology Madras during March 05 - 10, 2018

Date:

Place:

Signature of Competent Authority

* *Can be printed on A4 sheet*

Schedule

Short Term Training Program on
Ultra-high Precision (UHP) Machine Tools – Design & Characterization
 Manufacturing Engineering Section, Department of Mechanical Engineering
 Indian Institute of Technology Madras, Chennai-600 036,

Day/Time	8.30 -10.15am	10.15 -10.30	10.30 am-12.15 pm	12.15-1.30	1.30 - 3.00 pm		3.15-5.00pm	
Monday 05.03.2018	Registration 8.00-9.00 am Inauguration 9.00-9.30 am Introduction 9.30-10.15am of participants	T e a - B r e a k	Introduction to UHP machining & design of machine tools	L u n c h - B r e a k	Industrial demands on UHP machining processes	T e a - B r e a k	Industrial demands on UHP machine tools	
Tuesday 06.03.2018	State-of-the-art on UHP machining & machine tools		State-of-the-art on metrological aspects of UHP parts/machining & machine tools		Laboratory session 1. KERN micro machining center 2. Indigenously built table top machine tool		Laboratory session (<i>Demonstration on KERN</i>)	
Wednesday 07.03.2018	Design of general machine tools		Design of UHP machine tools		Characterization of UHP machine tools		Laboratory session (<i>New generation precision Grinding Machine tool - NGPG</i>)	
Thursday 08.03.2018	Influence of machining process on machine tool design and performance		Design of <i>machine tool structures</i> for general & high precision machine tools		Industry Visit (MTAB Kakalur plant)			
Friday 09.03.2018	General & high precision <i>spindle</i> design		General & high precision <i>slides & drives</i> design		Static and dynamic analysis of machine tools in machine tool design		B r e a k	Sub structuring in machine tool design & characterization
Saturday 10.03.2018	Design & development of machine tools for unconventional machining		Presentation on the advanced manufacturing technologies development centre (AMTDC) funded by the department of heavy industries (DHI) at IITM research park		Demonstration of machine tool characterization equipment – SEA & DBB			Discussion/ feedback/ Evaluation/ Valedictory