भारतीय प्रौद्योगिकी संस्थान गुवाहाटी
Indian Institute of Technology Guwahati

Short Term Course

Advanced Manufacturing Technology

December 21st – December 25th, 2020

In ONLINE Mode

Conducted by:
Department of Mechanical Engineering

Organized by :
Knowledge Incubation for TEQIP
Centre for Educational Technology
URL: http://www.iitg.ac.in/cet

ABOUT THE COURSE

Advanced Manufacturing Technology relies on the functional structures and devices that have dimensions in micron scales. To develop micro-structures and devices in such a small dimension relies on Advanced Manufacturing Technologies. The fundamental difference between conventional processes and Advanced Manufacturing processes is in the dimension of structures or parts to be fabricated. Manufacturing from millimeter range to micrometer represents not a simple downsizing of structure dimension but also major advance in processing technology, which requires wide range of knowledge because micro manufacturing processes involve different physical and chemical principles. Manufacturing industry in India has been facing unprecedented challenges by ever changing global and competitive market conditions as well as changing social demands and environmental regulations. Advanced Manufacturing processes present a great challenge to engineers and researchers as they manipulate material in micron scales to produce submicron components and systems. Keeping in view of these challenges, a workshop on Advanced Manufacturing Technology has been designed to fulfill the present day needs for up gradation of knowledge base of teachers from engineering colleges, scientists from various R&D laboratories and practicing engineers from industries. The objective of the present workshop is to accustom the participants with fundamental principles, basic machine tools and developments in the area of Advanced Manufacturing processes. Research trends and future needs of this area will also be highlighted.

Faculty members of IIT Guwahati and eminent scientists from other organizations will deliver the lectures.

COURSE OBJECTIVE

The basic objective of the present course is to acquaint the participants with the principles, basic machine tools, developments, and research trends in the areas of Advanced Manufacturing Technology. Thus, this short term course will deal with various areas of Advanced Manufacturing Technology, including measurement techniques. The course is designed to cater the needs of teachers, scientists from R&D houses and Labs, and practicing engineers from industries. This program will be specifically useful for persons concerned with teaching, research, and industrial applications of micromachining, micro to nanofinishing, micro-fabrication, and micro joining.

PROGRAMME SCHEDULE	
Time	**Topic**
Day 1	
09:00AM – 09:30 AM	Inauguration
09:30AM – 11:00 AM	Introduction to Advanced Manufacturing Technology
11:00AM – 11:30 AM	Break
11:30AM – 01:00 PM	Electrochemical machining: Macro to Micro
01:00 PM – 02:00 PM	Lunch Break
02:00 PM – 03:30 PM	Micro electrodischarge machining
03:30 PM – 04:00 PM	Break
04:00PM – 05:30 PM	Learning Session on Mastercam®
Day 2	
09:30AM – 11:00 AM	Diamond turning
11:00AM – 11:30 AM	Break
11:30AM – 01:00 PM	Basics of Lasers in manufacturing
01:00PM – 02:00 PM	Lunch Break
02:00PM – 03:30 PM	Advanced sheet metal forming
03:30PM – 04:00 PM	Break
04:00PM – 05:30 PM	Thermal issues in advanced welding processes
Day 3	
09:30AM – 11:00 AM	Magnetorheological finishing process
11:00AM – 11:30 AM	Tea Break
11:30AM – 01:00 PM	Application of CFD in advanced manufacturing processes
01:00PM – 02:00 PM	Lunch Break
02:00PM – 03:30 PM	Chemomechanical polishing
03:30PM – 04:00 PM	Break
04:00PM – 05:30 PM	Optimization in manufacturing

Day 4	
09:30AM – 11:00 AM	Simulation and modeling of advanced manufacturing processes
11:00 AM –11:30 AM	Break
11:30AM – 01:00 PM	Material challenges in advanced manufacturing
01:00PM – 02:00 PM	Lunch Break
02:00PM – 03:30 PM	Pedagogy
03:30PM – 04:00 PM	Break
04:00PM – 05:30 PM	Learning Session on Ansys®
Day 5	
09:30AM – 11:00 AM	Bio-material and Bio-medical devices
11:00AM – 11:30 AM	Break
11:30AM – 01:00 PM	Advanced welding processes
01:00 PM – 02:00 PM	Lunch Break
02:00 PM – 03:30 PM	Rapid prototyping
03:30 PM – 05:00 PM	Engineering application of smart materials
03:30 PM – 05:00 PM	Valedictory function

ELIGIBILITY

The course is open to faculty members/students from **TEQIP mapped Institutions/Engineering Colleges/ATUs**. No course fee is charged.

IMPORTANT DATES

The last date for the receipt of duly sponsored application:
By email: scanned copy: 16/12/20 (Wednesday)
Intimation of selection: 17/12/20 (Thursday)

SELECTION CRITERIA

Number of seats: 50
Selection will be based on **First cum first served basis**. Participants from TEQIP-III mapped institutes will get preference.

ADDRESS FOR CORRESPONDENCE

Dr. Manas Das
Department of Mechanical Engineering
Indian Institute of Technology Guwahati
Guwahati- 781039
E-mail: manasdas@iitg.ac.in

http://www.iitg.ac.in/manasdas/

ABOUT TEQIP

TEQIP conceived in pursuance of the NPE-1986 (revised in 1992) by Govt of India as a long term program to be implemented in different phases. After successful execution of TEQIP II, TEQIP III starts from 2017-18 as Central Sector Scheme with a focus on the Low Income States, Northeast, Hill States and Islands. The third phase of TEQIP is also special in a way that it incorporates twinning arrangements between mentee & mentor institutions with an emphasis on Focused Training (PT) and Focused Interventions from IITs in terms of deliverables and accountability. KIT, established at IIT Guwahati under 2nd phase of TEQIP is a focal point for training Faculty, Staff and students from TEQIP-III institutions in Knowledge Engineering, Content Creation, Improving Teaching, Pedagogy & administrative skills in identified niche areas/disciplines.

ABOUT KIT

KIT (**K**nowledge **I**ncubation Cell for **T**EQIP) at IIT Guwahati functions as a multi-disciplinary as well as interdisciplinary Innovation Incubation Centre with a focus to impart Knowledge, infusing innovation and leading a path to achieve academic excellence. Its activities are in the area of improving quality of technical education, incubator of Innovative Ideas; implementer of contemporary pedagogy practices and development of Learning Content in Technical institutions while mentoring them.

ABOUT IIT GUWAHATI

SNAP OF CAMPUS

IIT Guwahati campus is spread over a sprawling 785 hectares plot of green land on the north bank of the river Brahmaputra around 25 km from the heart of the city. With hills and vast open spaces, the campus provides an ideal setting for training. Details on how to reach IITG Campus are available on the institute website

Website: www.iitg.ac.in

IIT GUWAHATI

Application Form for Attending TEQIP-III Online Short-term Course on
(please send the filled-up application **by email** to the course coordinator)

Title of Course: Advanced Manufacturing Technology

Name of Course Coordinator: Dr. Manas Das, IIT Guwahati

Dates of the Online course: 21st December to 25th December, 2020

1. Name (block letters):
2. Sex: ☐ Male ☐ Female
3. Category: ☐ General ☐ Reserved
4. Highest Academic Qualification:
5. Specialization:
6. Designation & pay scale:
7. Name of the organization:

8. Experience (in years):

   (a) Teaching: (b) Industrial:

9. Address for communication:

Pin code: Mobile No.:

E-mail:

Place:
Date: *Signature of the applicant*

SPONSORSHIP / NOMINATION CERTIFICTE

Prof/Dr./Mr./Ms./Mrs./.....

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is an employee of our institute and his/her application is hereby sponsored/nominated. The applicant is permitted to attend the short-term course "Advanced Manufacturing Technology" at IIT Guwahati during Dec 21 – Dec 25, 2020 if selected.

I also certify that our institute/college is under the "Institution List" of 3rd phase of TEQIP Project of MHRD.

Date

Signature of Authority

Designation

Official Seal

Selected participants will be informed by e-mail. The duly sponsored/nominated application form should be sent by email to the course coordinators