SOT
SCHOOL OF TECHNOLOGY

PDPU
PANDIT DEENDAYAL PETROLEUM UNIVERSITY

ONLINE SHORT TERM COURSE ON

MODELING APPROACH IN MICRO-MACHINING PROCESSES

BY DEPARTMENT OF MECHANICAL ENGINEERING (NBA Accredited)

26TH - 30TH OCTOBER 2020
10:00AM ONWARDS

CHIEF PATRON

DR. S. SUNDAR MANOHARAN
Director General,
Pandit Deendayal Petroleum University

PATRON

PROF. SUNIL KHANNA
Director, School of Technology, PDPU

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DR. VISHVESH BADHEKA
Head, Department of Mechanical Engineering

ORGANIZING SECRETARY

DR. ABHISHEK KUMAR
Asst. Professor, Department of Mechanical Engineering, PDPU, Gandhinagar

DR. ANKIT OZA, (PhD, PDPU)
Asst. Professor, Department of Engineering and Physical Sciences, Institute of Advanced Research, The Universityfor Innovation, Gandhinagar

REGISTER NOW!

REGISTRATION DETAILS

(SEATS ARE AVAILABLE ON FIRST COME FIRST SERVE)

STUDENTS	FACULTY FROM ACADEMIC INSTITUTIONS	INDUSTRY PARTICIPANTS
FREE/-	INR 250/-	INR 500/-

Online Short Term Course
On

"Modeling Approach in Micro-Machining Processes"

(October 26–30, 2020)

Coordinator
Dr. Abhishek Kumar
Assistant Professor
Mechanical Engineering Department
Pandit Deendayal Petroleum University
Gandhinagar

Organized by
Department of Mechanical Engineering,
School of Technology,
Pandit Deendayal Petroleum University,
Gandhinagar, Gujarat, India.

Objective of the Program

- Overview about the various micromachining processes, with emphasis to modeling fundamentals.
- Various Modeling approaches for micro-machining processes.
- To learn how to model the various machining characteristics during micro-machining processes such as Diamond Turing, ECM, ECDM, EDM, FIB, MRF, Laser, Rotary ultrasonic machining, Abrasive finishing etc.
- To understand the Nano Finishing Processes
- Precision Surface Metrology

Important Date

Registration : 25/09/2020
Last date of registration: 22/10/2020
Intimation of selected candidate by email : : 24/10/2020
Course date : 26-30/10/2020

Registration Charges

Seats are Available on First Come First Serve
Registration Charges:
Students : FREE/-
Faculty from Academic Institutions: INR 250/-
Industry Participants : INR 500/-

Registration free for UG, P.G. and PhD Scholars and for faculty registration fee is to be paid online.
Note: Registration fees once paid will not be refunded.

Registration Link:

https://docs.google.com/forms/d/e/1FAIpQLSepaYFaIVspu1X4IHYHs6rLeVCTe-_Amw7VvJOtMAdQs0OvKw/viewform?usp=sf_link

Address for correspondence:

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About the University

Pandit Deendayal Petroleum University has been established by GERMI as a Private University through the State Act enacted on 4th April 2007, with a vision 'To be an internationally renowned & respected Institution imparting excellent education & training based upon the foundation of futuristic research & innovations'. This objective is being addressed through a number of specialized and well-planned undergraduate and post-graduate energy education programs and intense research initiatives. Pandit Deendayal Petroleum University has been promoted by Government; Industry & Energy to create a world class University in energy education and research with special focus on the oil and gas sector. The University addresses the need for trained and specialized human resource in the domains of engineering, management and humanities. PDPU got NAAC accreditation with "A" grade and CGPA of 3.39 of 4-point scale. Recently Mechanical Engineering Department got NBA accreditation for a period of 3 years starting from 2019.

About the School of Technology (SoT)

The school emphasizes on sound theoretical and practical knowledge of the chosen engineering discipline while also getting abroad overview of other disciplines. The pedagogy involves industrial orientation, industry internships, civic and social internships, international exposure, workshops and presentations, all geared to give the right learning ecosystem for industry ready talent. SoT offers 4 years B. Tech., M. Tech. and Doctoral programs.

About the Department

The Department of Mechanical Engineering was established in the year 2010. At present, Mechanical Engineering Department at PDPU currently offers B. Tech, M. Tech. and Ph.D. programs. The Department has well established laboratories in the areas of Design, Thermal and Manufacturing Engineering.
From this academic year the department is also starting B.Tech in Automobile Engineering in collaboration with International Automobile Center of excellence. Recently Department has received NBA accreditation for a period of 3 years.

How to Apply

The applicants are required to fill registration form/link along with transfer details of registration fees (payable through online transfer).

Account No: 31803338764, IFSC code: SBIN0014937, SBI, PDPU Branch, Gandhinagar, Gujarat

Confirmation of participation: 24st October, 2020

Who should attend?

- Academicians from Institutions and Universities
- Industry professionals
- Research scholars
- Students at UG/PG level

About the Workshop

Micromachining refers to techniques for fabrication of 3D structures on the micrometer scale. The ever-increasing demand for smaller and more precise products has fuelled continuous developments in micro-machining technologies. Global competition has driven improvements in the accuracy of manufactured parts as well as the requirement for high productivity and reduced costs. Typical micro products include micro-reactors, MEMS devices, micro medical components, home appliances, telecommunication devices, electronic devices, automotive, aerospace components, micro-channels, heat-exchangers, micro-reactors, micro-scale fuel cells, micro-holes for fiber optics, micro-nozzles for high-temperature jets and many more. Application of micro-product in various industries is increased in the last decade and this demand will also increase in the coming years.

The understanding of the basic mechanism such as heat and mass transport with associated fluid flow including metallurgical transformation, distortion and residual stress generation in different micro-machining is the focus of this course. Understanding the complex interaction not only helps to develop mathematical model, it makes the foundation for analysis, numerical simulation at different scale and experimentation for different types of manufacturing processes. The development of computational models for a manufacturing process relies on mathematical expression of the governing mechanism. It helps to design relevant experiments and drives to find the data to be obtained. Mutual understanding between analytical/numerical and experimental results leads to better insight of the basic manufacturing processes that impact on the improvement of existing process and directs for the development of new process. This course emphasized on the understanding of the most general to advanced manufacturing processes based on scientific principle. The complex mechanism is presented in a simplified way to understand the subject at elementary level. The broad impact is that the students will be able to develop physics based computational model of manufacturing process using various methods.

This workshop aims to give a brief overview of how various modeling approaches helps to analyze Micro and Nano manufacturing process performance along with precision measurement techniques. This workshop will provide a platform to discuss the current research activities across the globe in this field.

Organizing Committee

Chief Patron

Dr.S. Sundar Manoharan
Director General, Pandit Deendayal Petroleum University

Patron

Dr. Sunil Khanna
Director, School of Technology

Chairman

Dr. Vishvesh Badheka
Head, Department of Mechanical Engineering

Organizing Secretary

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Dr. Ankit Oza, (PhD, PDPU)
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Dr. M. Ravi Shankar, Associate Professor, I.I.T.-Tirupati
Dr. I. A. Palani, Associate Professor, I.I.T. - Indore
Dr. Pradeep Dixit, Assistant Professor, I.I.T. - Bombay
Dr. Ajay Sidpara, Assistant Professor, I.I.T. - Kharagpur
Dr. Chandrakant K Nirala, Assistant Professor, I.I.T.– Ropar

Detailed Schedule Plan for Online Short Term Course on "Modeling Approach in Micro-Machining Processes" (October 26-30, 2020)

Days / Dates	Timings	Description	Experts
Monday 26/10/2020	10:00 – 10:05	Welcome Speech	**Prof. Vishvesh Badheka** HOD, Dept. of Mechanical Engineering
	10:05 – 10:15	Brief about workshop	**Prof. Abhishek Kumar** Assistant Professor, Dept. of Mechanical Engineering
	10:15 – 10:25	Inaugural Speech	**Prof. (Dr.) Sunil Khanna** Director, SOT - PDPU
	10:30 – 12:00	Lecture - 1	Research Approach for Micro-manufacturing Processes **Prof. V. K. Jain** IIT – Kanpur
	12:00 – 02:00	*Session break*	
	02:00 – 03:30	Lecture - 2	Diamond Turn Machining Technology **Dr. R. Balasubramaniam** Bhabha Atomic Research Centre, Mumbai
Tuesday 27/10/2020	10:00 – 11:30	Lecture - 3	Large area Texturing with Electrochemical Machining Process **Prof. J. Ramkumar** IIT – Kanpur
	11:30– 01:00	Lecture - 4	Advances in Abrasive Finishing Processes **Prof. P M Pandey** IIT-Delhi
	01:00 – 02:00	*Session break*	
	02:00 – 03:30	Lecture - 5	Rotary Tool Micro-USM (RT-MUSM) Process **Prof. Akshay Dvivedi** IIT - Roorkee
Wednesday 28/10/2020	10:00 – 11:30	Lecture - 6	Electrochemical Discharge Machining Process for MEMS Applications **Prof. Pradeep Dixit** IIT - Bombay
	11:30– 01:00	Lecture – 7	Manufacturing Process of MEMS Devices **Prof. Ramesh Guduru, PDPU**
	01:00 – 02:00	*Session break*	
	02:00 – 03:30	Lecture – 8	Focused Ion Beam (FIB) Process **Prof. Rakesh Mote** IIT Bombay
Thursday 29/10/2020	10:00 – 11:30	Lecture – 9	Lab View Based Micro – EDM Process Monitoring **Prof. Chandrakant Kumar Nirala** IIT - Ropar
	11:30– 01:00	Lecture – 10	Magnetorheological Finishing (MRF) Process **Prof. Manas Das** IIT - Guwahati
	01:00 – 02:00	*Session break*	
	02:00 – 03:30	Lecture – 11	Laser Assisted Micro and Nano Processing **Prof. I. A. Palani** IIT - Indore
Friday 30/10/2020	10:00 – 11:30	Lecture – 12	Nano Finishing Processes **Prof. M Ravi Sankar** IIT-Tirupati
	11:30– 01:00	Lecture – 13	Surface Metrology **Prof. Ajay Sidpara** IIT - Kharagpur
	01:00 – 02:00	*Session break*	
	02:00 – 02:45	Lecture – 14	Modeling approach of Wire-ECDM Process **Prof. Abhishek Kumar,** PDPU and **Prof. Ankit D. Oza,** IAR
	02:45 – 03:30	Lecture – 15	Modeling approach in micro milling operation. **Prof. Vipindas K,** PDPU
	03:30 – 04:00	**Feedback and Closing Remark**	