# Discipline of Mechanical Engineering

**Indian Institute of Technology Indore**

Khandwa Road, Simrol

Indore 453 552


## PhD Program in Mechanical Engineering Discipline

These great sayings cue the Discipline of Mechanical Engineering in putting a wholesome effort in instilling the worth of knowledge among the students. The Discipline along with its strong faculties, on behalf of IIT Indore, an academic platform of international repute, is dedicated to the service of training and building educated minds, confident to work and excel in their respective fields in future. We invite applications from high calibre, sincere and research-oriented students for admission to the PhD Program. The vacancies are available in the following areas:

| Sr. No. | Specialization | Research Areas |
|---|---|---|
| 1 | **Thermal Engineering#** (Dr. S. Dhinakaran) | • Computational Fluid Dynamics<br>• Computational and Experimental Biofluid Mechanics |
| | **Thermal Engineering** (Dr. S.K. Sahu) | • Thermal Engineering |
| 2 | **Production Engineering*** (Dr. I.A. Palani) | • Mechatronics<br>• Soft robotics<br>• Laser based Micro-Manufacturing, surface and additive manufacturing |
| | **Production Engineering** (Dr. Satyajit Chatterjee) | • Coatings Tribology<br>• Solid Lubrication |
| 3 | **Design Engineering** (Dr. I. Singh) | • Analysis of deformation behavior of piezoelectric materials<br>• Understanding the fracture response of BCC single crystals |
| | **Design Engineering** (Dr. S.I. Kundalwal) | • Experimental characterization of nanocomposite<br>• Micromechanics and nanomechanics<br>• Molecular dynamics simulations of solids<br>• Nanotechnology in engineering |
| | **Design Engineering** (Dr. P.K. Kankar) | • Condition monitoring of Industrial systems<br>• Dynamics and Vibration |
| | **Design Engineering** (Dr. S. Reddy) | • Polymer matrix composites<br>• Micromechanics<br>• Fatigue damage<br>• Experimental strain evaluation<br>• Fatigue testing |

# Candidates with BE/BTech in biomedical qualification are also eligible.

***** Candidates with BE/BTech in Instrumentation and Mechatronics qualification are also eligible.

**A. Categories of Admission:** Please refer the main PhD Advertisement of the Institute (http://academic.iiti.ac.in/phdadvt.php)

**B. Eligibility for Indian Students:** Please refer the main PhD Advertisement of the Institute (http://academic.iiti.ac.in/phdadvt.php)

**C. Eligibility for International Students:** Please refer the main PhD Advertisement of the Institute (http://academic.iiti.ac.in/phdadvt.php)

After submitting the application online, the eligible International candidate needs to send the signed hard - copy of the application along with recent photograph, self-attested relevant certificates and Statement of Purpose (SOP) to the DPGC Convener of ME Discipline latest by April 15, 2019.

**D. Last date of online application** (for Indian as well as International Students)**: April 15, 2019**

**E. Application Procedure and General Information for Indian Students:**

[1] Candidates must apply ONLINE through the website (http://academic.iiti.ac.in:8080/nregistration.jsp).

[2] Application Fee: Rs. 100/- (INR) to be paid through State Bank Collect only (https://www.onlinesbi.com/prelogin/icollecthome.htm). Candidate needs to produce payment slip at the time of written test/interview.

[3] **Candidates need NOT send the hard copy** of the submitted online application by post or courier. The candidate should submit the signed application along with all academic and relevant documents as well as recommendation letters at the time of written test/interview to be scheduled in the first or second week of May 2019.

[4] Mere eligibility will not vest any right on any candidate for being called for written test/interview. The decision of the Discipline in all matters will be final.

[5] The shortlisted applicants will be called for written test/interview via email only so mention your email id carefully.

[6] No TA/DA will be provided to the applicants, if called for the written test/interview.

[7] The short-listed candidates must arrange recommendation letters (in the given format only) in sealed envelopes from at least two referees well before appearing for written test. A sample of recommendation letter is provided in Word format which can be downloaded for further use.

[8] The short-listed candidates must submit statement of purpose explaining why they would like to pursue the PhD in the specific area (200 to 300 words) well before appearing for written test.

[9] Follow instructions numbers [3], [7] and [8] carefully otherwise candidate will not be allowed to appear for written test/interview.

The candidates can contact the DPGC convenor for further information on following address:

admission-me@iiti.ac.in

**Faculty members and their research profiles:** *To gain more insight, interested applicants are encouraged to visit below Faculty Members' website who are going to recruit PhD candidates.*

**Dr. I. A. Palani** is currently an Associate Professor in the Mechatronics and Instrumentation lab. Before joining IIT Indore, he was a post-doctoral research scientist in the Graduate school of Information Science and Electrical Engineering, Kyushu University, Japan. His area of research includes: Opto-Mechatronics system design; Laser assisted micro-manufacturing, smart materials and structures. His research concerns the development of shape memory alloy for micro-device development. He has more than 90 research publications in International journals and conference proceedings. He has also written book chapters and been granted three patents. Webpage: http://drpalaniia.webs.com/

**Dr. Shanmugam Dhinakaran** is an Associate Professor in the Discipline of Mechanical Engineering, IIT Indore. He is also the coordinator of The Centre for Fluid Dynamics, IIT Indore. Besides, Dr. Dhinakaran has an adjunct appointment in the Discipline of Biosciences and Biomedical Engineering, IIT Indore. He received his Ph.D in the area of Computational Fluid Dynamics and Heat Transfer from IIT Kharagpur in 2008 and then gained additional post-doctoral experience between 2006 and 2012 at the Université de Pau et des Pays de L' Adour, France; Universidade do Minho, Portugal; Faculdade de Engenharia da Universidade do Porto, Portugal and Université de Valenciennes et du Hainaut-Cambrésis, France. Dr. Dhinakaran's research interests are in bluff body flows; heat and mass transfer in porous media; Nanofluids; Biofluid mechanics and Bio-heat transfer. He is a reviewer of several international peer reviewed journals such as International Journal of Heat and Mass Transfer; Energy; Applied Energy; Journal of Porous Media, etc. just to name a few. He has guided 2 PhD students and 5 M.Tech students. Webpage: http://people.iiti.ac.in/~sdhina/

**Dr. Santosh Kumar Sahu** is serving as Associate Professor in the Discipline of Mechanical Engineering at Indian Institute of Technology Indore. He has received his Master's (2004) and PhD (2009) degrees from Indian Institute of Technology Bombay and Indian Institute of Technology Kharagpur India, respectively. His research interests include rewetting of hot surfaces, quenching of hot stationary and moving surfaces, heat transfer enhancement with nanofluids, heat transfer behavior of gaseous flows in micro devices, pool boiling heat transfer, impinging jets, heat exchanging equipments, phase change materials and synthetic jets. He has published 46 international indexed journal papers, 57 articles in international conference proceedings, 4 articles in the edited book published by Springer, India and Nova Science Publishers, USA besides contributing 01 Indian Patent. He has received the prestigious IUSSTF Research Fellowship by Indo-US Science and Technology Forum for Engineering Sciences in 2011. Under the Indo-US Research Fellowship programme, he has visited Purdue University, West Lafayette, Indiana, USA during September 2011 to January 2012. He is a reviewer of 20 reputed international journals and edited text books from various publishers.

**Dr. Satyajit Chatterjee** (Associate Professor, Mechanical Engineering) and Coatings Tribology group's research endeavors include Surface Technologies, Coatings' Tribology and Solid Lubrication with a primary focus on the development of protective coatings with a suitable combination of hardness, thermal stability, wear and corrosion resistance and low friction characteristics following different methods and procedures. Hard coatings can be manufactured in-situ or ex-situ through laser surface alloying (LSA) or powder metallurgical routes. Manufacturing such hard metal matrix or ceramic matrix composite coatings can increase the potential of a metal surface in tribological applications. We are also involved in the development of electroless Ni plating, which is also one effective route to manufacture metal alloy or composite coatings with considerable superiority in terms of hardness and tribological properties and has relevance to aerospace, automotive, chemical and electrical industries. Presently, we are trying to find a way to incorporate lubricious phases into the electroless coating matrix with a view to improve its frictional properties.

**Dr. Pavan Kumar Kankar** is working as an Associate Professor in Discipline of Mechanical Engineering. His research interests include vibration, fault diagnosis and prognosis, machine design, Bio-medical signal processing and analysis of nonlinear dynamical systems. He obtained PhD from the Mechanical and Industrial Engineering Department at Indian Institute of Technology Roorkee, India. He received his Master's degree from erstwhile Malviya Regional Engineering College, Jaipur now Malviya National Institute of Technology, Jaipur, India in 2000.

Before joining IIT Indore in 2017, **Dr. Shailesh Kundalwal** was Banting Fellow at the University of Toronto. He was awarded his M.Tech and Ph.D. degrees in Solid Mechanics from IIT Kharagpur. He proposed a novel multifunctional Fuzzy Fiber Reinforced Composite in his doctoral studies which led to a critical breakthrough in the field of hybrid nanocomposites. During three-separate international postdoctoral stints, he worked in the field of multiscale modeling of composites and nanotechnology in engineering. He founded the Applied and Theoretical Mechanics (ATOM) Laboratory at IIT Indore and is currently guiding 7 PhD (1 DST Inspire and 1 CSIR Fellows), 5 M.Tech and 4 B.Tech students. He has authored 35 research articles (excluding conference papers and chapters) in reputed international journals. He contributes as a reviewer on several international journals and Elsevier books in the broad field of mechanics and is a member of professional bodies such as ISTAM, ASME, CSME, APS, and IEI (I). Webpage: https://www.sikundalwal.com/

**Dr. Indrasen Singh** received his B.Tech degree in mechanical engineering in 2004 from NIT, Allahabad. Subsequently, he joined as a scientist at ARDE, Pune, a premier lab of DRDO, where he worked with the design team of mechanical fuzes for various ammunition. In 2007, he moved to PTC software (India) Pvt. Ltd., Pune and worked there for 3 years as a software developer. He joined the Ph.D. programme in the Department of Mechanical Engineering at IISc, Bangalore in Aug 2010. His Ph.D. focused on understanding fracture and deformation response of metallic glasses and nanoglasses. In Oct 2016, he joined as post-doctoral researcher at NUS, Singapore. Since April 2017, he has been working as an Assistant Professor at IIT Indore. At present, he is supervising one Ph.D.

**Dr. Subbareddy Daggumati** graduated his PhD from Ghent University Belgium, form the department of Mechanics of Composite Materials with the specialization in "Multiscale Modeling of Textile Composites". After graduating his PhD, Dr. Daggumati worked for almost six years in GE Global Research and SIEMENS related to research and development of advanced fiber-reinforced composites, application ranging from aviation to Wind energy. Currently, Dr. Daggumati is working on mechanics of polymer and ceramic matrix composites under static and fatigue loads.