



भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

MTech Admissions

Department of Mechanical Engineering

Indian Institute of Technology, Hyderabad

The Institute

Started in 2008, IIT Hyderabad added another link to the chain of the premier institutions of the country - The IITs, known world over for extraordinary excellence in academics, research and technology. IIT Hyderabad aims to carry this tradition of excellence forward with its brilliant students, extraordinary faculty, state of the art facilities and cutting-edge research. In its first year, IIT Hyderabad had B.Tech. programs in Computer Science and Engineering, Electrical Engineering and Mechanical Engineering; with a total student strength of 111. Keeping its thrust on research, the PhD program was started in January 2009 and the M.Tech. program in August 2009. At present the institute has 11 departments covering all the major engineering, science and humanities disciplines, offering B.Tech., M.Tech., M.Sc. and PhD with a total strength of more than 500 including 351 undergraduates. IIT Hyderabad started functioning from August 2008 from its temporary campus located in Ordnance Factory, Medak District (Andhra Pradesh). On 27 February 2009, on its main campus in Kandi, the foundation stone of IIT Hyderabad was laid by Smt. Sonia Gandhi, Hon'ble Chairperson of UPA. The Master Plan for the main campus is ready and a panel of architects has been appointed for the first phase of the main campus development.

Inventions and innovations are keywords on which the foundation of IIT Hyderabad is based. These are also the key drivers for the vision of IIT Hyderabad. Our endeavor is to create an institution that will provide a space for free and uninhibited thinking, a space where faculty and students can experiment with novel ideas without the fear of failure.

In its endeavor to have global collaborations IIT Hyderabad has MoUs with University of Illinois at Urbana- Champaign, Georgia Institute of Technology – Atlanta and University of Utah- Salt Lake City.



Indo Japan Collaboration:

IIT Hyderabad has active collaboration with Japan. This involves joint research projects, exchange of faculty and students, and in future some infrastructure development on the main campus.

National Knowledge Network:

IIT Hyderabad has been identified as one of the participating institution for National Knowledge Network (NKN), a MHRD initiative to bring together all the stakeholders in Science, Technology, Higher Education, Research and Development, and Governance with speeds of the order of gigabits per second coupled with extremely low latencies, and to help the country evolve as Knowledge Society. Six virtual classrooms over NKN have been established at six IITs including IIT Hyderabad, IIT Madras and IIT Bombay. The initial phase of National Knowledge Network (NKN) was inaugurated by H.E. Smt. Pratibha Patil, Hon'able President of India on April 9, 2009

The Department

- The Department of Mechanical Engineering aims at pushing the frontiers of modern science and engineering through quality teaching and cutting edge research. In order to make the nation self-sufficient, it is highly motivated to invest in state-of-the-art manufacturing technology and address the issue of energy in the context of global energy environment.
- Right from its inception in 2008, it has attracted a rich and diverse set of talented individuals, currently nurturing 120 undergraduates and 70 postgraduates, who are trained in the nuances of the field by highly qualified faculty
- The department presently offers MTech in (a) Design (b) Manufacturing (c) Thermo-fluids in addition to BTech in Mechanical and a Ph.D. program.



- The faculty is well experienced and very enthusiastic about research and practical learning. All of them are at the foremost in their field of research. Major areas of faculty expertise includes CFD, Acoustics and Vibration, Dynamics and controls, Mechatronics, Thermodynamics, Multiphase flows, Process Modeling and Optimization, Manufacturing, Linear and Nonlinear Vibrations, FEM, Fracture Mechanics, Rapid Prototyping, MEMS, NEMS and CNC Machining.
- The faculty has been actively involved with industry and research organizations with work experience in DRDO, DST, BHEL, NRB, GM etc.

Facilities

The Department boasts of following state-of-the-art laboratories for undergraduate, graduate and doctoral students:

- ❖ Acoustics and Vibration lab
- ❖ Applied Micro & Nano Mechanics Lab
- ❖ Computer Aided Engineering Lab
- ❖ Dynamics of Machinery Lab
- ❖ Engineering optics lab
- ❖ Fluid Mechanics Lab
- ❖ Heat Transfer
- ❖ Hydraulic and Pneumatic Lab
- ❖ IC Engine
- ❖ Machining & Metrology Lab
- ❖ Manufacturing Lab
- ❖ Mechatronics Lab
- ❖ Rapid Prototyping & Manufacturing Lab
- ❖ Solid Mechanics Lab



Computing Facilities:

- ❖ High end workstations equipped with extensive scientific and engineering softwares such as ANSYS, MATLAB, FLUENT, MAPLE, Solid Edge, Unigraphics, Hyperworks, ADAMS, LMS Virtual Lab, VA One etc.
- ❖ A state-of-the-art High Performance Computing cluster is also available to perform computationally intensive research

Faculty & Research Areas



Vinayak Eswaran

Specialization: Fluids & Energy Systems

Areas of Interest: Computational Fluid Mechanics and Heat transfer.



Abhay Sharma

Specialization: Integrated Design & Manufacturing

Areas of Interest: Manufacturing, Process Modeling and Optimization, Welding.



Ashok Kumar Pandey

Specialization: Mechanics & Design

Areas of Interest: Linear and Nonlinear Vibration, MEMS, NEMS, BIOMEMS, QNEMS, Microfluidics and Nanofluidics .



Chandrika Prakash V.

Specialization: Mechanics & Design

Areas of Interest: Structural Dynamics, MEMS, Delay Differential Equations, Parameter Identification, and Optimization



Harish Nagaraj Dixit

Specialization: Fluids & Energy Systems

Areas of Interest: Interfacial fluid mechanics, Vortex dynamics, Hydrodynamic stability theory, Geophysical flows.



Nishanth Dongari

Specialization: Fluids & Energy Systems

Areas of Interest: Microfluidics, Rarefied Gas Dynamics, Compressible Gas Flows, Thin Film Coatings, Molecular Dynamics, Direct Simulation Monte Carlo and Extended Hydrodynamics.



Prasanth Kumar R.

Specialization: Mechanics & Design

Areas of Interest: Multibody Dynamics, Legged Robotics, Control Theory, and Mechatronics.



Karri Badarinath

Specialization: Fluids & Energy Systems

Areas of Interest: Experimental fluid mechanics, high-speed imaging, bubble dynamics and cavitation.



Raja Banerjee

Specialization: Fluids & Energy Systems

Areas of Interest: Multiphase Flow, Heat and Mass Transfer, Thermodynamics, CFD.



Ramji M.

Specialization: Mechanics & Design

Areas of Interest: Optical Methods in engineering, Finite Element Analysis and Boundary Element Methods, Fracture Mechanics, Inverse problem in solid mechanics.



Suryakumar S.

Specialization: Integrated Design & Manufacturing

Areas of Interest: Rapid Prototyping, CNC machining, Manufacturing.



Venkat Reddy N.

Specialization: Integrated Design & Manufacturing

Areas of Interest: Analysis of Manufacturing Processes (emphasis on Metal Forming and Generative Manufacturing) at Multi-scales; Development of Integrated Product and Process Design Systems (IPDS); Manufacturing processes for Mass Customization; CAD/CAM



Venkatasubbaiah K.

Specialization: Fluids & Energy Systems

Areas of Interest: Computational Fluid Dynamics (CFD) and Heat transfer, Stability Analysis of Flows with and without heat transfer, Cooling of Electronic Devices and Aerodynamics.



Venkatesham B.

Specialization: Mechanics & Design

Areas of Interest: Vibrations, Technical acoustics, Industrial Noise control, Acoustic-Structural Coupled Systems, Dynamics, and Plastic Gear Design



Venkatesham B.

Specialization: Mechanics & Design

Areas of Interest: Vibrations, Technical acoustics, Industrial Noise control, Acoustic-Structural Coupled Systems, Dynamics, and Plastic Gear Design



Pankaj Kolhe

Specialization: Fluids & Energy Systems

Areas of Interest: Alternative fuels, combustion, and optical diagnostics in dynamic flows.

Admission Process: Who can Apply?

	Background	Specializations Allowed
Candidates with a BTech/BE in	Mechanical engineering	All specializations
	Aeronautical/Aerospace engineering	(a) Fluids & Energy Systems (b) Mechanics & Design
	Automobile engineering	(a) Fluids & Energy Systems (b) Mechanics & Design
	Manufacturing engineering	Integrated Design & Manufacturing
	Production engineering	Integrated Design & Manufacturing
and having a valid GATE score in	Mechanical Engineering (ME)	All specializations
	Aerospace Engineering (AE)	(a) Fluids & Energy Systems (b) Mechanics & Design
	Production and Industrial Engineering (PI)	Integrated Design & Manufacturing

How to apply?

Interested candidates can apply through the following online portal of IITH: <http://www.iith.ac.in>



Specializations

Integrated Design & Manufacturing

The growing complexity of the challenges in Industry and Research these days demand an interdisciplinary approach. It can be easily observed that industry today prefers workforce versatile in both the analysis and practical implementation; in component as well as system design; in theoretical as well as computational approaches. The conventional M.Tech. pedagogy of small number of courses (8-10) in the short duration of one year limits the implementation of the foregoing. The fractal program in Integrated Design & Manufacturing aims to address this problem by fractalizing the courses into modules of varying credits between 1-3. The student can then gain a wide knowledge base through one or two credits' modules and greater depth through the electives.

The compulsory courses include Manufacturing Processes, Design for Manufacturability & Assembly, FEM, Computational labs related to FEM and CFD analysis, Material Science & Material Selection, Scaling Laws & Multi-scale Manufacture, Computer Integrated Manufacturing, Elasticity & Plasticity, Fluid Mechanics & Heat Transfer, Process Control & Optimization, Artificial Intelligence. The students can choose a core manufacturing elective from advance courses in material removal, joining and generative process. In addition, open electives can be chosen from the following list of tentative electives: Automation & Robotics, Additive Manufacturing, Micro-Manufacturing, Measurement Science & Techniques, Reliability & Fault Diagnostics, Fatigue, Fracture & Life Cycle Estimation etc. (Note: most of these courses are 1-credit i.e., one-third of duration of a normal course).

Fluids & Energy Systems

Fluid flow and energy conversion, utilization and its efficient management are important aspects in almost all engineering applications. In this discipline the students are exposed to fundamentals and advanced concepts in fluid flow and energy systems through course work and research. The students learn the basic concepts through course work and get hands-on experience through laboratory work and their thesis research. Every effort is made such that the graduating student are trained in skills that are highly appreciated by the industry. Additionally, students who are interested in further

studies have the necessary technical background to undertake cutting edge research in India and abroad.

Initially students take fundamental courses like advanced fluid mechanics, heat transfer, CFD, combustion, along with a math course which act as a springboard to advanced courses in the field. These include advance courses in CFD, Turbulence, Reacting Flows, Thermodynamics, Combustion, Optical Diagnostics, Compressible Flow, IC Engines, etc. Students also get hands-on experience in using the Wind Tunnel, Advanced heat transfer experimental test rigs and CAE tools as part of their laboratory course work. In their second year, the spend time dedicated for their thesis research where they get a change to implement some of the advanced topics that they learned during their course work. Several times these research topics maybe externally funded projects and therefore the students get a chance to work on industrially relevant live problems

Mechanics & Design

This program aims at preparing the students for an exciting career in engineering analysis and design, paving way for an exiting career in several automotive, aerospace, energy, and defense sectors. GE, Mercedes-Benz, Mahindra and Mahindra, Infotech, Eaton, and TCE are some of the companies who have participated in the placements in the past. This program also prepares the students for a research career if the students is interested in pursuing Ph.D. The students will take the following compulsory courses: advanced mechanics of solids, finite element analysis, dynamics and vibration. Elective courses include: fracture mechanics, advanced finite element analysis nonlinear oscillations, engineering noise control, multibody dynamics, vehicle dynamics, and advanced mathematical tools. State of the art computational and experimental facilities are available for carrying out thesis work.

Contact Details:
MTech Admissions
Department of Mechanical Engineering
Indian Institute of Technology Hyderabad
Ordnance Factory Estate
Yeddumailaram-502205
Andhra Pradesh
Phone: 040-23017070
Email: me_admissions@iith.ac.in

