

Department of Mechanical Engineering

Indian Institute of Technology Kanpur



SESSION 2024-2025

PLACEMENT BROCHURE

The Recruiter's Guide
Students' Placement Office,
Indian Institute of Technology Kanpur



VISIT US AT <https://www.iitk.ac.in/me>



Welcome Message from the HoD

“

The hallmark of IITK has continued commitment for achieving excellence on all frontiers of our activities

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It is my pleasure to welcome you for the placement session of our institute for this year. I take this opportunity to thank you for visiting us with the aim of employing the very best from among the talent pool available in the country.

Indian Institute of Technology Kanpur (IITK) takes pride in not only its rigor and quality of teaching, but in overall development of its students. We have done pioneering work in the delivery of holistic education in the past and continue our rich traditions to bolster the engineering and technology education canvas of our country. Our recently concluded Golden Jubilee reminds us of our continued commitment for achieving excellence on all frontiers of our activities.

I am very happy to present before you this batch of young and vibrant mechanical engineers, trained by us in the last four years. As you may be aware, our curriculum lays a strong emphasis on basic sciences, engineering, as well as humanities. This pioneering combinational approach is an integral part of our pedagogical philosophy, which has consistently proved to be effective in producing competent engineers and scientists, not only leaders in their specialization, but sensitive and concerned for human values and their environment.

The Student Placement Office (SPO) strives to provide an interactive platform to facilitate interaction between our students and potential employers. We believe in an open atmosphere so as to establish the connect, where goals, objectives, and aspirations of all stakeholders' match. We understand the vital role of human resources in an organizational eco-system and are sure that you will find the most suitable candidate, from among our pool of highly trained mechanical engineers. We are confident that our students will further the objectives of your organization in terms of products, services, and technology, at the national as well as international markets.

We are proud of the past placement records of our department; the data is a testimony to the continued faith that the worldwide employers have on our graduates. I am sure you will go back completely satisfied from our campus and our flag bearers, your future employees, will shine in your respective organizations, in turn, providing us the necessary strength to continue our journey of achieving excellence in human resources development.

Welcome to IIT Kanpur!

PROF. ASHISH DUTTA, PHD
Head of Department
Department of Mechanical Engineering
Indian Institute of Technology Kanpur

About Us

Welcome to the Department of Mechanical Engineering at IIT Kanpur. We started our journey in the year of 1960. Over the last six decades, we have grown our expertise and competence in the core Mechanical Engineering curriculum and research.

The Department of Mechanical Engineering at IIT Kanpur is one of the founding departments with a legacy of its own and played a leading role in evolving the 'Engineering Spectrum' based curriculum and served as a model for many engineering institutes in the country.

Being one of the most prestigious departments in India, it has an extensive contribution in ground breaking research work in the country. Nurturing the best minds of the nation, both in the form of faculty and students, is the key motto of the department. The professional program of the department includes a deeper study on a number of engineering, theoretical, and experimental solutions to physical problems, and design of systems relevant to the contemporary industrial world.

48
Faculty

450+
UGs

250+
MTechs

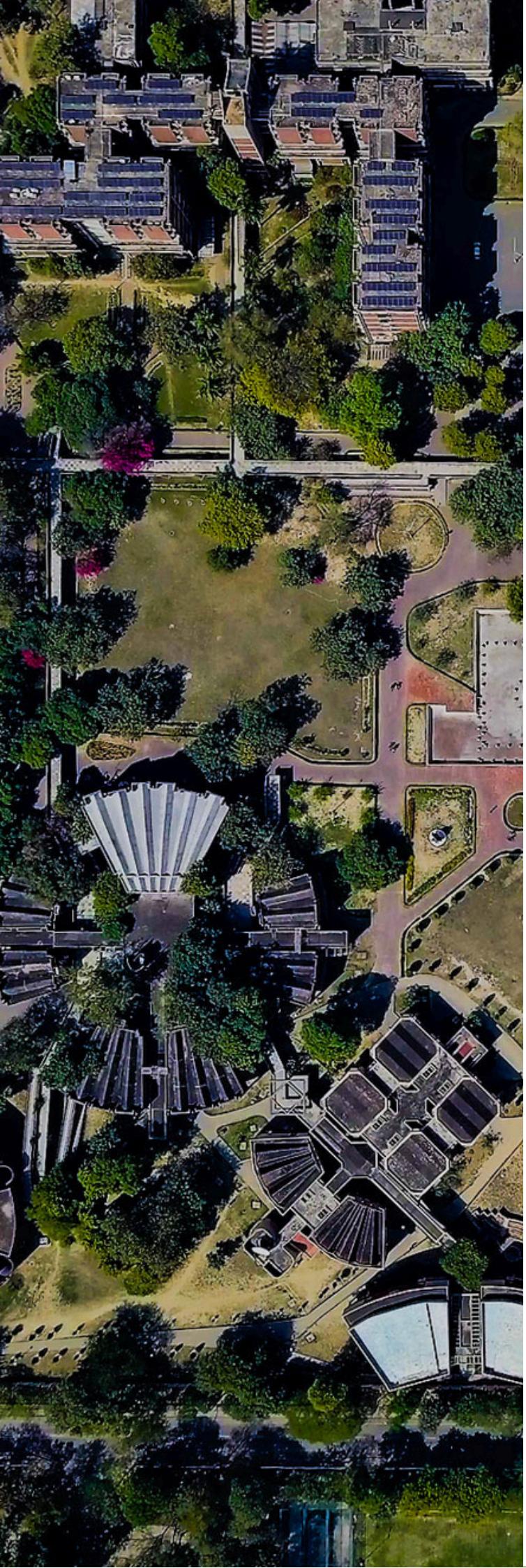
200+
PhDs

100+
Books

200 +
**Journal
Publication***

30+
**Advanced
Laboratories**

*For Academic Year
2024-25



MAJOR DEGREE PROGRAMS

MECHANICAL ENGG., IITK

B. TECH

4 YEAR / 5 YEAR PROGRAM

4 Year - Regular Program, 5 Year - Double Major Deep Study of number of engineering courses where students are introduced to core curriculum relevant to contemporary industries

BT-MT DUAL 5 YEAR PROGRAM

Both B.Tech and M.Tech degrees awarded at the end of five years. Students are introduced to core curriculum in bachelors and then they contribute towards research for an year.

M.TECH 2 YEAR PROGRAM

Comprises of rigorous coursework followed by an year of research. Courses often include advanced level group projects and/or individual research project.

M.S.(R) 2 YEAR PROGRAM

Similar to M.Tech, with more emphasis on research. Involves fewer course credits and more research/thesis credits. Besides fundamental research, students work on many challenging industrial oriented projects.

PH.D

5 YEAR PROGRAM

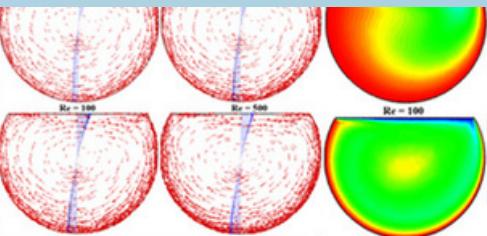
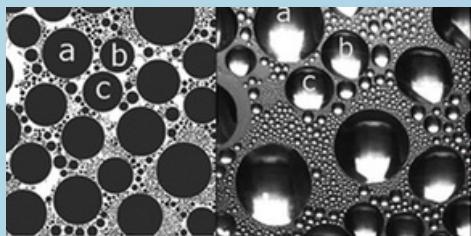
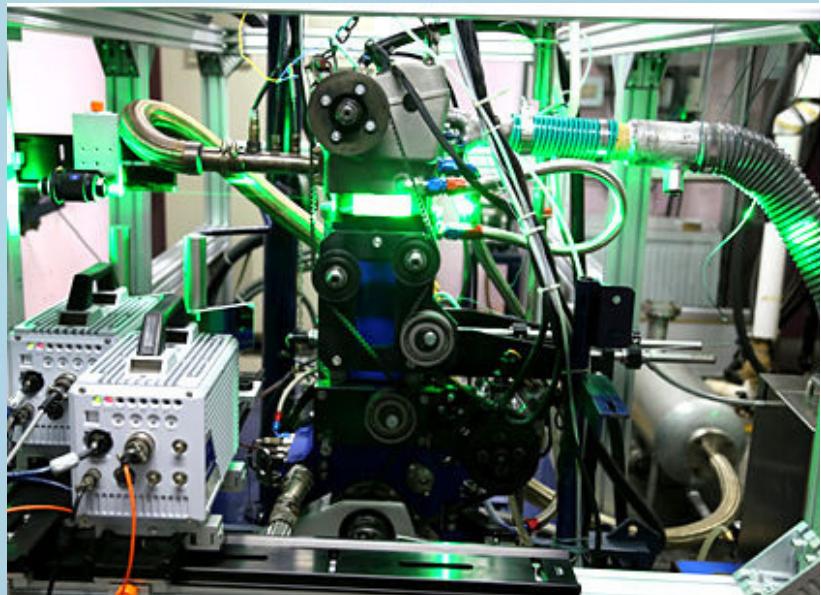
Highest degree awarded by the department for students interested in research careers. Its focus, unlike other degrees, is more towards generating new knowledge than learning extant knowledge.

Aerial view of IITK campus



FLUID AND THERMAL SCIENCES

Besides the traditional research areas in thermodynamics, fluid dynamics, heat transfer, multiphase flows, turbulence and combustion, this group is engaged in a broad range of research activities in experimental fluid dynamics, computational fluid dynamics and heat transfer, flow in porous media, turbomachinery, electrochemical energy conversion, IC engines, alternate fuels, laser diagnostic techniques, microfluidics and heat transfer, boiling heat transfer, condensation, heat pipes, thermal management, sprays, turbulent combustion, hydrodynamic instabilities, vortex dynamics, energy storage materials, atomic scale computation, etc.



ALTERNATE FUEL AND INTERNAL COMBUSTION ENGINES

Alternate Fuels and Internal Combustion Engine The alternate fuels and internal combustion engine area aim to develop state-of-art experiments related to Internal Combustion Engines and vehicles apart from Emission and engine related Tribological Investigations.

COMBUSTION AND ENERGY SYSTEMS

The Combustion and Energy Systems area seeks to focus on technologies for efficient energy conversion, storage, and utilisation, which aim to meet the urgent challenge of a safe, reliable and sustainable energy solutions in the face of ever-growing demand.

GAS TURBINES ENGINEERING AND TECHNOLOGY

The objective is to keep pace with the recent technological advancement in the field of fluid mechanics and Gas Turbine. Besides emphasis on simulations and measurements , the researchers are also involved in development of micro gas turbines.

SOFTWARE SKILLS

MATLAB, COMSOL, OpenFOAM, Fluent, Mathematica, Solidworks, PTC Creo, Maple, Ansys

TRANSPORT PHENOMENA AND MULTI-PHYSICS SIMULATIONS

Researchers in the Transport Phenomena and Multi - Physics Simulations track work in the areas of theoretical, experimental and numerical methods for fluid flow and heat transfer related applications to provide a deeper insight on the phenomena which are relevant in nature and industry

RESEARCH AREAS

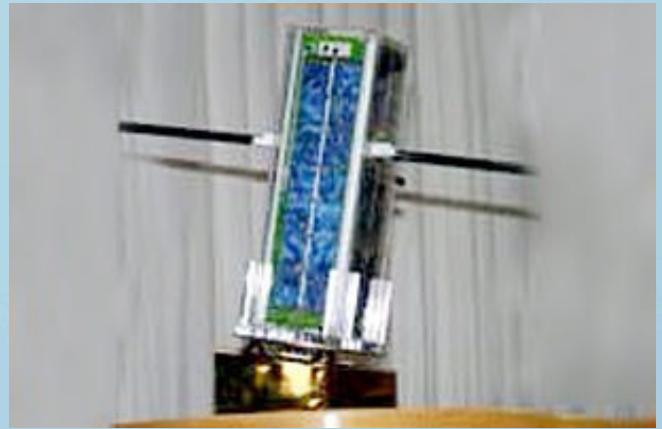
- CFD applied to Turbomachinery
- Renewable energy resources: solar, biomass-to-fuel via thermal conversion techniques
- Heat transfer during boiling and condensation
- Geophysical flows
- Li-ion batteries, battery thermal management
- LES/DNS for complex transitional and turbulent flows.
- Solar-assisted water-splitting for H₂generation: prototype development
- PEM Fuel cell
- Combustion in Gas Turbines and IC Engines, Alternative Fuels, Biodiesel Research
- Engine Noise and Vibration, Laser Ignition
- Computational fluid dynamics and heat transfer
- Experimental fluid dynamics and heat transfer

SOLID MECHANICS AND DESIGN

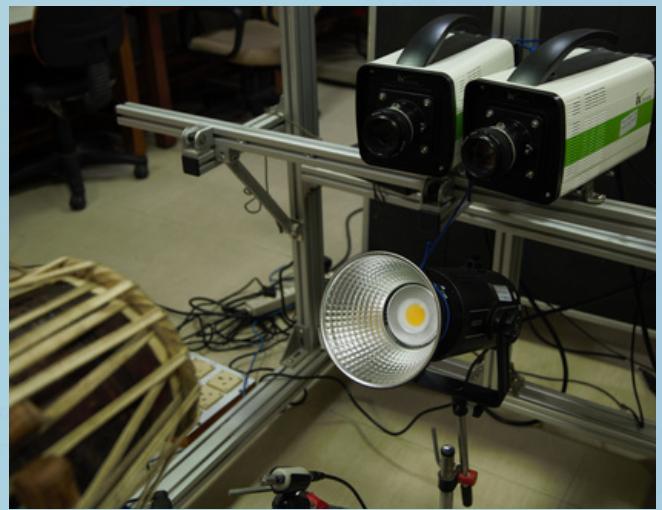
Research covers all aspects of dynamics and vibration, nonlinear dynamics, rotor dynamics, continuum and granular mechanics, plastic instability, robotics, intelligent control systems, microsensors and actuators, CAD, machine dynamics, smart structures, active and passive vibration control, composite materials, non-destructive testing, finite element method, multiscale modelling of solids, acoustics and noise control, mechanics of fracture, functionally graded composites, mechanics of biological membranes, mechanics of nanomaterials, and mechanical behaviour of polymers.



Rocker Bogie Mechanism



JUGNU IITK mini satellite



Vibrational analysis of TABLA membrane using highspeed cameras

ACOUSTICS, DYNAMICS AND VIBRATION

Research expertise of our faculties lies in areas related to structural vibration, vibration control, noise control, acoustics, stability, bifurcation & chaos, pattern formation, non-smooth systems, time-detailed systems.

RESEARCH AREAS

- Linear and nonlinear modeling of electrodynamic systems
- Effect of nonlinearities on the system behavior
- Vibration characteristics of continuous systems
- Machine-tool vibrations
- Time-delayed systems
- Reduced order modeling
- Domain Mapping for surface modelling, motion planning
- Protein docking through shape complementarity of molecular surfaces
- Multimodal optimization: Recursive Perturbation Approach (RePAMO).
- Multi-objective optimization: Fourier series parameterization of Pareto-sets.
- Applied Mechanics
- Computational Mechanics
- Mechanics of Defects and Heterogeneities
- Mechanics of Materials
- Smart Materials, Structures and Systems
- Visual Vibrometry

MECHANICS OF SOLIDS

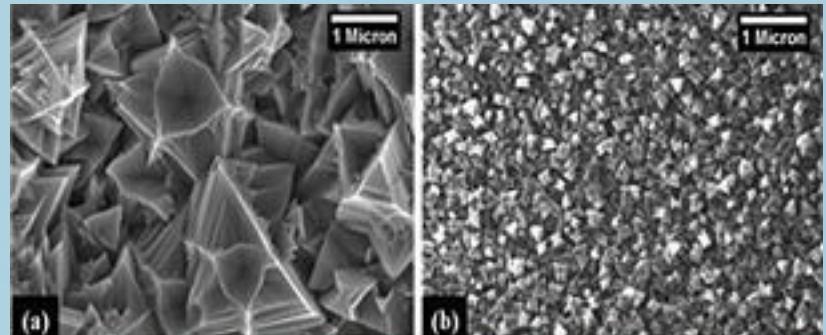
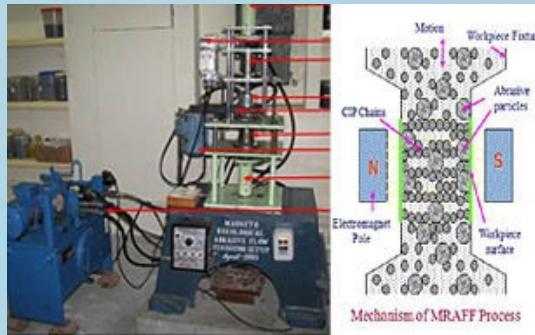
The research activities in this track involve theoretical, experimental and numerical techniques applied to a wide range of materials. Research spans from structural dynamics, nonlinear solid mechanics, mechanics of defects and heterogeneities, structural health monitoring

SOFTWARE SKILLS

Matlab, Ansys, COMSOL, OpenFOAM, Fluent, Mathematica, Solidworks, PTC Creo, Abaqus, LabVIEW, MoldFlow, Maple, ACTRAN, PATRAN, Adams.

MANUFACTURING SCIENCE

"Research is focused on the following key areas: manufacturing systems, manufacturing processes, advanced machining processes, micro/nano fabrication and finishing, nanotechnology, bioengineering, nano-composites, MEMS, laser/plasma surface coating technologies, large deformation systems, CAM of advanced engineering materials, polymer processing and rheology, lab on chip, vibration control of machine tools, adaptive control system, unconventional machining, solid-liquid phase change (melting/solidification)."



ADVANCED MANUFACTURING PROCESSES

In this area, various nano-finishing processes and strategies like Magnetorheological Abrasive flow finishing (MRAFF) is utilized to develop surface finishes less than 100nm used for prosthetics, implants, nuclear reactors, etc.

MEMS FABRICATION

The researchers in MEMS fabrication area develop microscale technologies for applications in the physical and biomedical sciences .

METAL REMOVING AND FORMING

Experimental investigations are performed on the effect of different single and multiple layers of materials on cemented carbide inserts and optimum conditions of machining are evolved for a high level of surface finish

SOLIDIFICATION AND PHASE CHANGE

ENERGY SYSTEMS

In this area, the multi scale phenomena of micro structure and chemical compositions formation in solidification processing (casting, welding) are studied,

SOFTWARE SKILL

Matlab, COMSOL, OpenFOAM, Fluent, Mathematica, Solidworks, PTC Creo, LabVIEW, CutPro-Modal Analysis, Maple

MICRO/NANO-TEXTURING

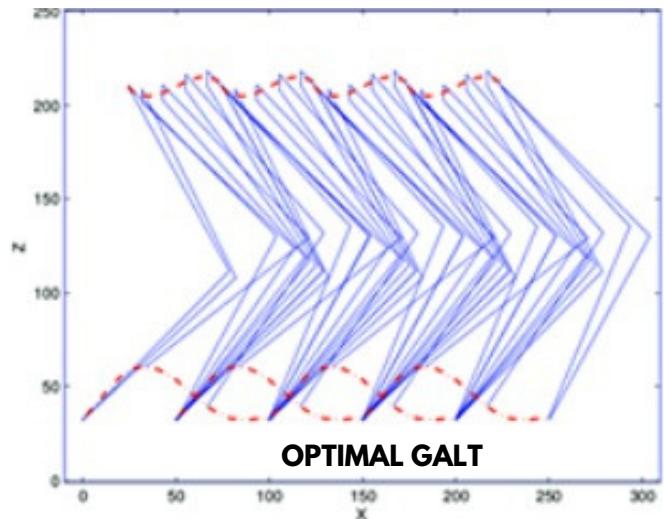
The major research focus is on nano/meso scale patterning in metals and polymers for developing different surfaces which differ in adhesion and friction coefficients for tribological applications .

RESEARCH AREAS

- Micromachining of channels using ECDM processes, nanofinishing using MRAFF, and MAF processes
- Utilization of coated tool inserts for optimized machining
- Optimization of die shape in hot/cold extrusion
- Estimation of residual stresses in rolling and forging
- Modeling of multi-pass rolling by including anisotropy
- Prediction of Earing and optimization of initial blank shape for the prevention of earring
- Prediction of flange wrinkling in deep drawing using a bifurcation criterion
- MEMS fabrication for microfluidics and integrated micro/ nano sensing
- Microtexturing on metals, polymers and semiconducting surfaces through Laser processes and using CVD growth
- Solidification processing, thermal spray coating, and solid-liquid phase change energy systems.

ROBOTICS AND AUTOMATION

The Robotics and Mechanisms area seeks to promote research and develop technologies that enable systems to exhibit intelligent, goal-oriented behavior, and developing innovative instruments to monitor, manipulate, and control systems. Overall, our research spans the following areas: humanoid robots, intelligent control systems, flexible manipulators, mechanism theory, microsensors and actuators, and compliant mechanism. We focus on enabling technologies that necessitate novel design solutions in terms of development of new methods of synthesis, analysis & optimization of novel robots and mechanisms.



PIPE HEALTH MONITORING ROBOT



RESEARCH AREAS

- Analysis, synthesis and motion planning of robots and mechanisms
- Biped Locomotion: Design and experimentation of optimal energy efficient biped robots with compliance at foot, knee joints, etc.
- Exoskeleton: Human motion based design and development of a three finger 10 DOF exoskeleton robot hand for rehabilitation of stroke patients.
- Intelligent control systems: Design, development and path planning of 14 DOF Lunar rover on 3D terrain.
- Kinematics and redundancy resolution for performing tasks with arm on rover.
- Micro Sensors and Actuators: Ionic Polymer Metal Composite (IPMC) based grippers and mechanisms for robotic micro assembly.
- Smart compliant mechanisms

SOFTWARE SKILLS

Matlab, Simulink, Maple, COMSOL, Mathematica, Solidworks, PTC Creo, Arduino-IDE, Abaqus, Ansys

ADVANCED LABORATORY FACILITIES

The Department maintains the following laboratories for instruction and research: Experimental Stress Analysis, Vibration and Control, Material Testing, Machines and Mechanisms, Fluid Mechanics, Energy Conversion, Heat Transfer, Refrigeration and Air Conditioning and Manufacturing Science. Besides this, the faculties are actively involved in many advanced research laboratories written below.

- Acoustics Laboratory
- Advanced Fluid Mechanics Laboratory
- Advanced Nano Engineering Materials Laboratory
- Applied Solid Mechanics Laboratory
- CAD and RP Laboratory
- CAM & Manufacturing Science Laboratory
- CFD Laboratory
- Compliant and Robotics Systems (CARS) Lab
- Computational Manufacturing Systems Laboratory
- Center for Mechatronics
- Combustion and Energy Conversion Systems Laboratory
- Computational Mechanics Laboratory
- Computational Turbomachinery Laboratory
- Divya Drishti
- Energy Conversion and Storage Laboratory
- Engine Research Laboratory
- Gas Hydrate Research Laboratory
- Gas Turbine Heat Transfer Laboratory
- Manufacturing Laboratory
- Metrology Laboratory
- Micro systems Fabrication Laboratory
- Micro-scale transport laboratory
- NDT Lab
- Nonlinear Mechanics Laboratory
- Phase-change Thermal Systems Laboratory
- Robotics Laboratory
- SEM Laboratory
- Smart Materials & Structures Lab
- Solidification Laboratory
- Tribology and Surface Engineering Lab
- Vibration Laboratory



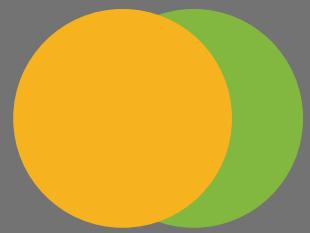
Research activities in the Department of Mechanical Engineering, both fundamental and applied research, are at the forefront of innovation, advancing knowledge and technological developments in the multifaceted disciplines of mechanical engineering, and several cognate areas.

Ongoing Sponsored Projects

- Engineering Fibers For Fog Harvesting And Interfacial Solar Water Purification
- Experimental Study Of Flow Characteristics Of Elevated Jet In Crossflow At Moderate Reynolds Numbers
- Investigations On Drag-Reduction Characteristics By Bio-Inspired Micro-Textured Surface For Varying Flow Environment
- Fine-Grained Porous Media Convection At High Rayleigh Numbers
- Dropwise Condensation Of Water Vapor Over Patterned Surfaces
- Novel Micro Dbd Plasma Actuators For Enhancement Of Wind Turbine Performance
- Low-Temperature Combustion(Ltc)And Conventional Diesel Combustion(Cdc)Engine Development Using Modified Piston And Variable Swirl Control Strategies
- Multi-Axis Multi-Material Wire Arc Additive Manufacturing(Mamm-Waam)
- Valorization Of Oily Sludge From Petroleum Industries Based On Bubbling Fluidized Bed Pyrolysis
- Dynamics And Stability Of Hose-Drogue System Used In Aerial Refuelling
- Magnetic Field Assisted Extreme Fast Charging Of Lithium -Ion Batteries
- 3237_Impact Creating Induced Re-Surfacing On Minor Bodies Constraints From An Integrated Theoretical, Experimental And Observational Assessment
- Development Of A Low Cost Ultrasensitive Rapid Test For The Simultaneous Diagnosis Of Hepatitis A And E Infection
- Fabrication Of An Electronic Test Card Capable Of Screening Rna Impedimetrically
- Practical Modeling Aspects Of Thermomechanical Nde And Vibrothermography
- Fluid Mechanics Lab
- Development Of Uhmwpe Fibers And Disentangled Melt For Impact Mitigation
- Investigation Of Turbulence Over Porous Walls
- Noise Mitigation Strategies For Stealth Enhancement Of Unmanned Aerial Vehicles
- Experimental Determination Of Afterburner Liner Impedance
- Water Filtration Using Graphene Based Membranes : Molecular Dynamics Studies
- Biofuel Production From Carbon Dioxide (Co2) And Utilization In Transport Sector For Reducing Greenhouse Gas (Ghg) Emissions
- Fog Harvesting For Water: Exploring Droplet Condensation On Mesh-Type Surfaces
- Next-Generation Optimally Damped Precision Tooling System Design And Development
- Technology Demonstration,Cfd Simulation, And Machine Learning Studies Of Ch4 Recovery
- Development Of Metal Oxide Incorporated Boron Nitride-Pvdf Mixed Matrix Membrane Pilot Unit For Remediation Of Textile Industry Wastewater
- Nano Finishing Of Cylindrical Camshafts Powered With Machine Learning Tools With Surface Roughness Measurement Using Fiber Bragg Grating Sensors
- Development Of A Microstructure-Sensitive Computational Framework To Predict Ductile To Brittle Transition In Metals And Alloys
- Developing Parameters For Manufacturing Of Multi-Stage Single-Crystal Turbine Blades
- Utilizing Machine Learning As Surrogate Models For The Sub-Grid Scale Parameterization In The North Indian Ocean
- Design And Development Of A Model Cargo-Hyperloop Using Pipe Following Robot
- Development Of Acoustic Materials For Controlling Vibration-Induced Damage In Space Structures
- Selective Heat Assisted Incremental Forming Of Free Form Surface For Space Application
- Stability And Dynamics Of Granular Minor Planets During Their Formation And Break-Up
- Experimental Characterization Of Flame Stabilization In A Jet Engine Afterburner
- Effect Of Brain Computer Interface Based Hand Exoskeleton For Neuro-Rehabilitation In Stroke Patients. A Randomized Controlled Phase II Trial
- Design And Development Of A Smart Electric Stubble-Harvester And Integrated Baler Toward Sustainable Agro-Residue Management
- Development Of A Super Cavitating Model Torpedo



Products and Technologies Developed



- LES Solver
- Three-pad foil air bearing
- Cyclone separator
- Diesel Vaporizer using Waste Engine Exhaust Heat for HCCI Applications
- Integrated Pilot Plant for Producing Bio diesel
- Integrated system for Using Straight Vegetable Oils as Fuels for Diesel Engines
- Synthetic Jet Actuator for Drag Reduction of Underwater Vehicles
- Micro-holographic particle image velocimetry development for biomedical and MEMS application
- A novel 3-D soft lithography technique
- Production of high surface area nano metal oxides
- Reusable PCR amplification system and method
- Shock wave and power generation using on chip nano-energetic materials
- Development of Abrasive Flow Machine
- Nano-finishing of Helicopter Bearing
- Nano-finishing of sculptured/free form surfaces
- An independent stair climbing wheel chair
- Synthetic Jet Actuator for Drag Reduction of Underwater Vehicles
- Pulsating heat pipe passive heat exchangers for nuclear engineering applications
- An Electronic Fuel Injection System for a 4-stroke Locomotive Diesel Engine of Indian Railways
- Nanosatellite JUGNU
- In bore dynamics of projectile moving through a rifled 105 mm barrel
- Design and fabrication of a actively controlled brain retractor system
- Topology Optimization of Large Displacement Compliant Mechanisms with/without Contact
- Topology Optimization with Hexagonal meshes, Negative masks and Boundary smoothing
- Inference of Tendinous Structures
- Design and Development of a three finger exoskeleton for cooperative translation and rotation
- Unified Synthesis of Fully/Partially Compliant and Rigid Body Linkages
- Pipe Health Monitoring Robot
- Autonomous Play-Robot to Facilitate Learning in Children.
- A Pond Cleaning Robot
- Method of manufacturing of carbon nano tube coated glass fibers/fabric and its hybrid Nanocomposites
- Spherical crystalline nano-hydroxyapatite and method of manufacture from calcium oxide
- Functionally graded magnetic materials and a method for preparation of the same.
- Application of vortex generators and oval tubes to enhance performance of air-cooled condensers
- LES of transitional flow over a low pressure turbine blade and effects of wake passing on turbine blade film cooling
- Diesel Vaporizer using Waste Engine Exhaust Heat for HCCI Applications
- Micro-holographic particle image velocimetry development for biomedical and MEMS application
- Method of manufacturing of carbon nano tube coated glass fibers/fabric and its hybrid Nanocomposites
- Spherical crystalline nano-hydroxyapatite and method of manufacture from calcium oxide
- Functionally graded magnetic materials and a method for preparation of the same.
- Shear banding in alloy D9
- Deformation and damage evolution in austenitic stainless steels
- Developing control strategies for friction-induced vibrations using time-delayed feed-back
- Understanding of parametric instability of thin-walled cylindrical shells
- Technology Mission for Railway Safety
- State-of-Art Instrumentation and Diagnostic Tools for Thermal Power Plant Monitoring
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AND MUCH MORE

PAST RECRUITERS



Honeywell

JINDAL
STEEL & POWER



Reliance
Industries Limited



Dr. Reddy's

Hero



NUTANIX

EATON NATIONAL
INSTRUMENTS™



Schlumberger



JOHN DEERE

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Save money. Live better.



AIRBUS

BOSCH



CITI



JPMORGAN
CHASE & CO.

Goldman
Sachs

AMERICAN
EXPRESS

Ansys
ExxonMobil

BOEING

AIRBUS

DISTINGUISHED ALUMNI

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Dr. Pawan Kumar Goenka

Managing Director & Chief Executive Officer,
Mahindra & Mahindra

Dr. Anil Rajvanshi

Founder and Director Nimbkar Agricultural
Research Institute (NARI)

Late Mr. Anil Agarwal

Former Director, Centre for Environment, New
Delhi

Mr. Gautam Khanna

Chief Executive Officer,
PD Hinduja Hospital and Medical Research Centre

Mr. Dinesh Kumar Jain

Chief Secretary, Maharashtra Government

Mr. Deepak Garg

Founder,
Rivigo

Mr. Kuldeep Narayan

Private Secretary, MoS Ministry of Health and Family
Welfare, Govt.of India

Mr. Naresh Ratansi Shah

Partner & MD, Apollo Industrial Corp.

Mr. Ravindra Kumar Ahuja

Founder & Chief Operating Officer, Optym

Mr. Gunjan Bagla

Founder & Managing Director, Amritt Inc.

Mr. Saurabh Kumar

Indian Ambassador,
Republic of the Union of Myanmar

Dr. Sanjay G. Dhande

Former Director,
Indian Institute of Technology Kanpur

Mr. Shantanu Srivastava

Technical Consultant for India-Vietnam
economic relation to Govt. of India

Mr. Rakesh Gangwal

Co-Founder,
IndiGo Airlines

Mr. David B.K. Thomas

Chairman & Chief Functionary Officer,
India Nirman Sangh (NGO, women empowerment)

Mr. Yashwant Kanetkar

Entrepreneur & Pioneer
IT Education in India

Late Mr. Lalit Kishore Chaudhary

Plant Director,
Fairfield Atlas Limited

Dr. Ravi Sethi

President
Avaya Labs

Dr. Arun Shukla

Distinguished Professor,
University of Rhodes Island

Mr. Vikas Vaibhav

DIG, Anti-Terrorism Squad
Bihar Police, Govt. of Bihar

Mr. Mahesh Gupta

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INDUSTRY



ACADEMIA



ENTREPRE-
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