Indian Institute of Engineering Science and Technology, Shibpur

Department of Mechanical Engineering





Departmental Brochure

Message from the Head of the Department

- The Department of Mechanical Engineering was established in 1921 (then under erstwhile Bengal Engineering College which was upgraded to BESU, Shibpur and subsequently converted to IIEST Shibpur) with the initiation of a diploma course programme in Mechanical Engineering.
- The first degree-level course in Mechanical Engineering started on 18th July 1930. Post-graduate courses in the department started in the year 1954. Over the years, through its high level of teaching and research in mechanical engineering, the Department has earned a name and fame for itself, making significant contributions to this important field of engineering with world-class laboratories and smart classrooms. The alumni of this department are spread across the globe.
- The Department offers 8-semester Undergraduate (UG) and 4-semester Postgraduate (PG) courses in Mechanical Engineering, with a current annual intake of 92 students in UG and 30 students in PG. Currently, the PG courses are available in four specializations, namely, Machine Design, Thermal Engineering, Manufacturing Science and Energy Technology.
- The department also has plans to introduce new courses in emerging fields such as advanced micro and nano-manufacturing, additive manufacturing, biomedical engineering, hydrogen energy, zero-emission vehicles, robotics. Most of the graduated students are working in industries and R&D laboratories, Many students also choose to do higher studies and research in India and abroad.
- The department also runs a full-time PhD program, where currently about 45 research scholars are engaged.



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Precursory of the Department

- Established in more than a century (1921)
- The First Degree level course was offered in 1930.
- The First Postgraduate Degree course was offered in 1954.
- Served as a mentor Institute during establishment of IIT Kharagpur 1951.
- Way back in 1951 this Institute produce India's first women mechanical engineer (Ila Majumdar)
- The department celebrated its 'Birth Centenary' in 2021 with a year-long Centenary Lecture Series hosting an enormous number of established alumni worldwide.
- The department has eminent presences of alumni worldwide

Vision and Mission of the Department

To emerge as an internationally acclaimed and globally recognized department creating Mechanical Engineers and researchers of high quality who can contribute towards the development of the nation and the world.

- Continuous development of the undergraduate and postgraduate programs, creating high-quality graduates and postgraduates of Mechanical Engineering who can take the challenges in real-life situations in the industrial world.
- To infuse creativity and innovation into the students and inspire them to take up research and higher studies in different national and international organizations.
- To make the students aware of professional ethics, social responsibilities, and environmental impacts.
- To improve the communication and presentation skills of the students so that they can interact effectively within and outside the engineering community.

Academics for Masters Degree

- Programmes:
 - **4** Semester M.Tech. in three specializations
 - 1. Machine Design: Intake 20
 - 2. Advanced Manufacturing Technology: Intake 20
 - 3. Thermal Science and Energy Technology: Intake 20

1. Specialization: Machine Design

Potential Research Area:

- Ultrasonic NDT, Composite Materials, Ultrasonic Tomography, Fractal Analysis in NDE
- Dynamics, Vibration and Control
- Fracture Mechanics, Non-Conventional Machining, Engineering Ceramics, CAD/CAM
- Computational and Experimental Biomechanics
- Advanced Materials (FGM, Biomaterials, Composites) Additive Manufacturing
- Dynamics and Vibrations, Non-linear systems and Time delayed systems
- Computational Plasticity, Damage Analysis, Material Modelling Optimization

Machine Design Infrastructure





3D Non-Contact Profilometer



Ultrasonic Testing of Rubber & Composite

TRIBOMETER WITH 1000°C RECIPROCATING LINER DRIVE

Machine Design Infrastructure



Pendulum

2. Specialization: Advanced Manufacturing Technology

Potential Research Area:

- Cutting Tools Development using Advanced Materials
- Modelling and Optimization of Manufacturing Processes
- Robust Manufacturing, Surface Coatings, Additive Manufacturing
- Advanced Machining, Fluid Flow, Micro and Nano Manufacturing
- Metal Additive Manufacturing, Laser Material Processing, Electro Depositions, Biomaterial Coatings
- Welding, Non-Conventional Machining, Material Characterization and FEA, Neural Network-based Modelling

and Optimization, AI &ML based modelling in manufacturing

- Conventional and Non-Conventional Machining, FEM and CFD Optimization,
- Material Characterization and Optimization, Tribology

Manufacturing Laboratories



Manufacturing Laboratories



MIG-TIG Welding Die-Sinking (EDM) Wire EDM

Additive Manufacturing Facility

□ Resin based DLP system

- □ Pre & Post processing included
- Lab infrastructure is used for
 - UG, PG & PhD research work





3. Specialization: Thermal Science and Energy Technology

Potential Research Area:

- Combustion, Alternative Fuel for IC Engine, CFD and Numerical Heat Transfer, Refrigeration Combined Cycle
- Advanced power Generation, Renewable Energy, Energy System Modelling, Clean Coal Technology,

Greenhouse Technology

• Solar Thermal and PV System, Solar Hydrogen Systems, Desiccant Based Cooling System, Refrigeration, IC

Engine

- Combustion, Heat Transfer and Fluid Flow Analysis
- Alternate Fuels, Thermochemical Conversion Solar Energy, Artificial Intelligence
- Biological Flow Systems, Convection Heat Transfer

Thermal Engineering Infrastructure



Double Acting Air Compressor



Lister Diesel Engine





Air-Conditioning System

Thermal Engineering Infrastructure

Ultrasonic Flow



Detector



Training and Placement

- The students and scholars, from this illustrious department, are present worldwide through excellence
- Around 90% of the eligible students are placed in industry (in India and Abroad) through campus placement, whereas, the rest are interested in academics (in India and Abroad) for higher study.
- Summer Training (for UG) and Internships (paid/unpaid) are mandatory. Some industry/Institute offers placement to the trainees and interns based on their performance and sincerity.
- Research Project collaboration (for Final year M-Tech) with Industry offered with additional stipend sponsored by Industry.

Some Major Recruiters

Maruti Suzuki, Aditya Birla Group, L&T, Tata Power, CESC, Tata Steel, Haldia Petrochemical, Vedanta, Tega Industries, Bajaj Auto, Arcelor Mittal Design, Price Waterhouse Coopers, PwC India, CGI Information, TCE, Tata Projects, Tata Bluescope Steel, Tata Bhushan Steel, MN Dastur, DCPL, Hyundai Elegant Marine Services, Bridge & Roof, SMS India, Ernst & Young, TCS, Infosys, Cognizant, Capgemini, Reliance, Kion Dematic, Primetals & Financial Institutions (ICICI, HDFC, SBI, HSBC, AXIS bank etc.)

Society and Membership of ME Dept

