



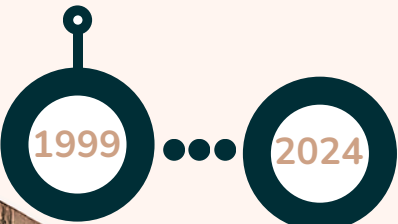
# DEPARTMENT OF MECHANICAL ENGINEERING

Department of Mechanical Engineering started the journey in 1999, and successfully completed 22 years with excellence. Presently, the department is the largest in the institute having 46 faculty members. The department offers two UG courses, one in Mechanical Engineering and another in Mining Machinery Engineering. Faculty members of the department have guided more than 200 PhD students so far. The UG and PG students are working with the faculties in the field of microfluidics, aero-acoustics, bubble dynamics, biomechanics, robotics, renewable energy, tribology, refrigeration, modern-manufacturing, fluid power, mining machinery along with conventional thermal engineering and machine design. The department has more than 20 R&D projects ongoing (worth INR 3100 lakhs approx).



Courses	Strength
B. Tech in Mechanical Engineering	120
B. Tech in Mining Machinery Engineering	45
M. Tech in Mechanical Engineering	80
Ph.D	124

Department  
Established



Specializations  
in M. Tech are  
introduced.

## DOMAINS OF STUDY

- Thermal and Fluids
- Material Science
- Design
- Manufacturing

## LABORATORIES - UG, PG

- Solid Mechanics Lab
- Fluid Mechanics and Machines Lab
- Thermodynamics and Heat Transfer Lab
- Machine Dynamics and Solid Modelling Lab
- Refrigeration Lab
- Manufacturing Workshop
- Biofluids Research Lab
- Polymer Science Lab
- Non - traditional Machining Lab
- Vibration Lab
- Micro Fabrication Lab
- Gas Sorption and Rheology Lab
- Fluid - Structure Interaction Lab

## PLACEMENTS & INTERNSHIPS

### Placement Statistics

Max CTC 51.03 L  
Avg. CTC 14.17 L  
(per annum)

### Internship Statistics

Max Stipend 1.5 L  
Avg. Stipend 40 K  
(per month)

### Past Recruiters



### Research Internships





# RESEARCH AND DEVELOPMENT

## MEET OUR HOD



### Prof. SOMNATH CHATTOPADHYAYA

(Professor)

2023 - Present

PhD- BIT-Mesra, Ranchi

MTech- IIT (ISM) Dhanbad

Primary Areas of Research

Manufacturing

Foreign University Experience

AALTO University Finland, Institute of Geonics Czech Republic, UPM Madrid, Technical University of Kosice Slovakia.



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### Achievements

- Received award of the best team paper in international conference held in University of Novi Sad, Serbia, held in 2018.
- Recipient of the Best Researcher Award instituted by Canara Bank Ltd.

## DEPARTMENTAL RESEARCH AND PROJECTS

1. Control of Sprays and Thermoacoustic Oscillations Through an Acoustic Driven Fuel Injector: Passive and Active Control Strategy," led by **Prof. Rabindra Nath Hota**, has received funding of **151.91 lacs** from **DST-SUPRA, New Delhi**.
2. **Prof. A.R. Dixit** is researching a novel biomedical application involving pulsating liquid jets for cement removal from the femoral canal in revision total hip arthroplasty. This project, titled "Biomechanical Analysis on the Use of Pulsating Liquid Jet in Cement Removal from the Femoral Canal in Revision Total Hip Arthroplasty," has received funding of **55.29 lacs** from **DST-SERB, New Delhi**.
3. **Prof. Kalyan Kumar Singh** is leading a research initiative on developing and experimentally studying fiber-reinforced polymer (FRP) solid rock bolts to enhance underground mine support systems. This project has been awarded **96.99 lacs** in funding by the **Ministry of Mines (MoM), Government of India, New Delhi**.
4. The research project titled "Performance Evaluation of Nanolubricants in Cryogenic Environment for Low Temperature Applications" is being conducted with funding of **48.83 lacs** from **DRDO, Kanpur**, under the leadership of **Prof. Subrata Kr. Ghosh**.
5. Funded by **Tata Steel Limited, Jamshedpur**, with **42.79 lacs**, the research led by **Prof. L.A. Kumaraswamidhas** focuses on assessing rock mass rippability through geotechnical investigations. This study aims to determine the suitable ripper and its operating parameters for sandstone formations in the West Bokaro Mine.
6. **Prof. Sachin Kumar Singh** is leading a project to develop a wind turbine condition monitoring system. This endeavour, supported by **SERB in New Delhi** with a grant of **40.3 lacs**, involves the utilisation of signal processing and machine learning techniques.
7. **Prof. Ajay Bhandari** received funding of **27.61 lakhs** from **DST-SERB, New Delhi** for investigating the human retinal vasculature. This research has significant implications for biomedical research, particularly in early prognosis of microaneurysm regions. By understanding retinal blood supply patterns, we can potentially detect and prevent vascular diseases more effectively.
8. **Prof. Sandipan Kr. Das** leads the Naresh Vashisht Centre for Hydrogen and Carbon Capture, Utilization, and Storage Technologies with a total funding of **1000 lakhs**.
9. A project led by **Prof. Aditi Sengupta** is currently underway, concentrating on data reduction and surrogate modeling of the transition to turbulence to Rayleigh-Taylor instability data obtained by DNS. This research, supported by **DST (Centre Franco Indien pour la Promotion de la Recherche Avancée)**, has been awarded a grant of **39.09 lacs**.





# STUDENT ACTIVITIES, ALUMNI & MORE

## ACTIVE STUDENT CLUBS



Clubs conduct workshops, sessions and competitions. Teams participate in competitions such as Pi - EV, Robowars on behalf of our college.

### Achievements

- **National Winners** in Robofest Gujarat 2023-24 winning **INR 10 Lakh Prize money**.
- E-Yantra Robotics Competition **IIT-Bombay 2022-23 Finalists**
- In 2023, PI-EV **3rd overall** in the competition. 1st in the FMEA Report category, 3rd in the Procurement Strategy category and 3rd in the Engineering Design Presentation category.

### Projects

Swarm of Autonomous Drones, Autonomous Battery Swapper Robotic Arm, Self Driving Car Simulation, Autonomous Crop Spraying Drone and Battery Swapping Arm Simulation and more...

### Industry Collaborations

- Tata Steel Limited, Jamshedpur.
- Coal India Limited.
- Steel Authority of India Limited.
- Janatics India Private Limited, Coimbatore.
- Normet India Private Limited.
- Ekin Techprudent Private Limited.

### GATE - 2024 RESULTS

- Yogesh - 108 AIR
- Niranjana - 208 AIR
- Agnibh Banik - 554 AIR

### Major Equipment

- Abrasive Waterjet Machine - MAXIEM 1515
- Metal 3D Printer (Powder Bed Fusion based) - DMP FLEX 200
- Universal Testing Machine - Instron 8801
- Digital Micro Vickers Hardness Testing Machine - HM220
- AVL Exhaust Gas Analyzer
- Semi high speed Cryogenic assisted Micro Machining
- Vapor absorption refrigeration system
- Fabrication & 3D- Printing Facility
- CNC Milling
- Vertical Milling
- Lathe Machine
- CNC Lathe

### Alumni Network:

- Swati Pandey, a co-founder and CEO of Arboreal, graduated from the 2010 Batch in Mechanical Engineering.
- Shri Adarsh Srivastava, co-founder and director of DeHaat, received the Young Achiever Award 2021 graduated from 2011 batch Mechanical Engineering.
- Ravi Raj, an alumnus from the 2011 batch of Mechanical Engineering at IIT (ISM) Dhanbad, is currently serving as the Deputy Director at Coal India Ltd.
- Shri. B P Singh Batch of 1989, Mining Machinery Engg. has been appointed the Director in-charge of SAIL's Burnpur and Durgapur Steel Plants.