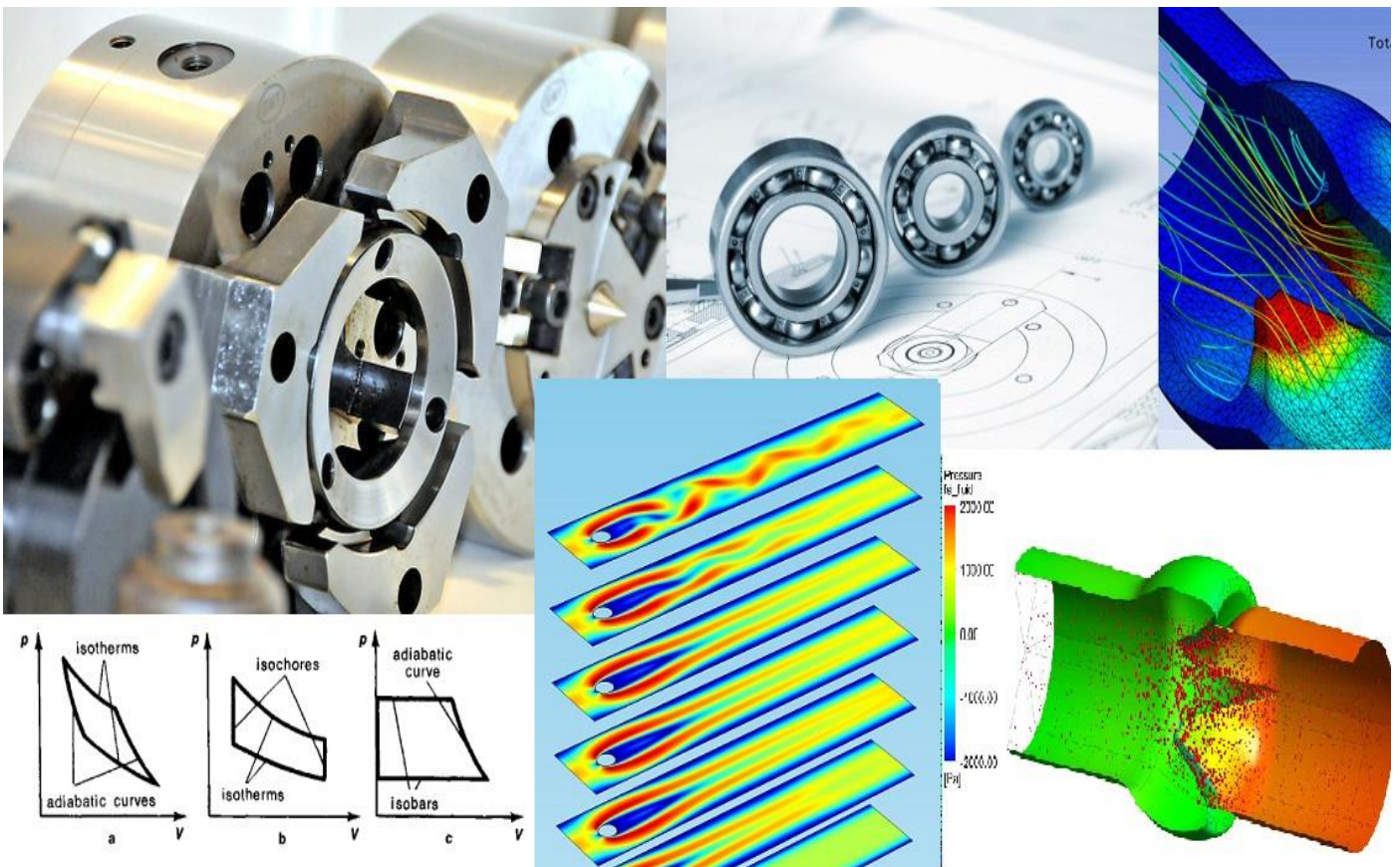


# Department of Mechanical Engineering





## About The Department

The Department of Mechanical Engineering at BITS-Pilani – Hyderabad Campus is one of the premier departments in the institute that provides a unique educational and research environment. Its various Bachelor's, Master's and Doctoral Programs namely B.E Mechanical Engineering, B.E Manufacturing Engineering, M.E. Thermal Engineering, M.E Design Engineering and Ph.D. (Mechanical Engineering) are designed with an aim to keep pace with the rapidly evolving mechanical industry that demands unwavering passion and urge to innovate. The department is one of the largest departments on campus and caters to the requirements of pre-requisite subjects like Thermodynamics, Mechanics of Solids, Engineering Graphics and Central Workshop. The broad spectrum of courses is taught by a group of highly experienced faculty members active in research work in the respective areas. The syllabus-rigorous in design and content- is in keeping with the latest developments in the industry.

The department has been funded by *UGC-DRS-CSIR and DST* and is in a continuous process of strengthening its University-Industry ties. Keeping this in mind, the department has focused on industry-defined problems for thesis work. Numerous collaborations and MoUs signed with various organizations like FMC, Bharath Dynamics Limited, etc. are testament to this commitment.

## Message from Head of the Department

“Mechanical Engineering Department of BITS Pilani, Hyderabad Campus offers broad based and up to date curriculum, with an optimum balance of theoretical and practical aspects of Mechanical Engineering. Students are imparted coaching in core areas of Mechanical Engineering, allowed to work on study oriented, Lab oriented and Design projects with total relevance to the course content they are exposed to in order to make them ready for the industry and also enable them to be entrepreneurs. Department feels pride that an ample number of our graduating students are placed well. ”



## **Programs Offered by the Department:**

- 1. B.E (Hons.) Mechanical Engineering**
- 2. B.E (Hons.) Manufacturing Engineering**
- 3. M.E Thermal Engineering**
- 4. M.E Design Engineering**
- 5. Ph.D. Mechanical Engineering**



### **B.E (Hons.) Mechanical Engineering**

Advanced Mechanics of Solids  
Kinematics and Dynamics of Machinery  
Prime Movers and Fluid Machines  
Computer Aided Design  
Fluid Mechanics  
Heat Transfer  
Production Techniques I  
Production Techniques II  
Material Science and Engineering  
Mechanics of Solids  
Applied Thermodynamics  
Machine Design and Drawing  
IC Engines  
Mechanical Vibrations  
Engineering Optimization

### **M.E Thermal Engineering**

Conduction and Radiation Heat Transfer  
Refrigeration and Air Conditioning  
Fluid Dynamics  
Convection Heat and Mass Transfer  
Energy System Engineering  
Thermal Equipment Design  
Computational Fluid Dynamics  
Computational Heat Transfer  
Turbo Machinery

### **Elective Courses**

Machine tool engineering  
Mechatronics  
Automobile engineering  
Lean manufacturing  
Precision engineering  
Renewable energy  
Gas Dynamics

### **B.E (Hons.) Manufacturing Engineering**

Material Science and Engineering  
Fluid Mechanics  
Mechanics of Solids  
Applied Thermodynamics  
Machine Design and Drawing  
Kinematics and Dynamics of Machinery  
Manufacturing Processes  
Manufacturing Management  
Mechanics and Automation  
Tool and Fixture Design  
Metal Forming and Machining  
Design of Machine Tools  
Casting and Welding  
Computer Aided Design  
Engineering Optimization

### **M.E Design Engineering**

Finite Element Methods  
Fracture mechanics  
Dynamics and vibrations  
Material testing and technology  
Theory of elasticity and plasticity  
Product design  
Computer aided analysis and design  
Tribology  
Mechanisms and robotics

Power Plant Engineering  
Computer Aided manufacturing  
Mechanical Vibrations and Acoustics  
Product Design and Development  
MEMS  
NDT techniques  
Solar thermal process engineering



### Labs and Facilities in the Department

The department has various labs aimed at providing practical knowledge to the students in different areas of mechanical engineering. State of the art machinery, numerous experimental set ups and workstations installed with advanced simulation software are some of the highlights here. The labs are established with best interest of the students in mind. The lab courses are introduced at appropriate stages of the engineering programmes enabling the thought process needed for the making of a good mechanical engineering graduate. The students gain practical knowledge which shall serve as a background for the complete understanding of their core subjects and somehow prepare them in a way so that they can face the industry world once they graduate. The labs are handled by the respective faculty in charge of the course and managed by a particular faculty as regards for periodic maintenance and improving the infrastructure from time to time. Highly qualified technicians and teaching assistants of the department help the faculty in charge for conducting the lab and student evaluation.

In addition to the basic academic labs, a few research labs and centres are also established in the department. The research labs houses advanced equipment for carrying out projects by the PhD scholars and higher degree students of the department under the supervision of the respective principal investigator from the department faculty. Research labs are also provided with licensed servers of sophisticated simulation software using which funded research projects as well as student course projects are carried out. A Centre of Excellence for Product Design and Realization is a recent addition to the list.

#### Academic Labs

Central Workshop  
Mechanical Engineering Lab  
Heat Transfer  
Refrigeration and air conditioning  
IC Engines  
Prime movers and fluid machinery  
CAD Lab

#### Research Labs

Tribology  
Material Testing Lab  
Robotics and Mechatronics  
Centre for Product Design and Realization  
Renewable Energy Lab  
CAM Lab





## Current Areas of Research

- Rapid Prototyping and Product Design
- Sheet Metal Forming and Metal working
- Tribology
- Electro-static lubrication and solid lubrication
- Computational fluid dynamics and heat transfer
- Mechanisms and Robotics
- Mechatronics and MEMS
- Friction-Stir Welding and advanced machining

## Sponsored Projects

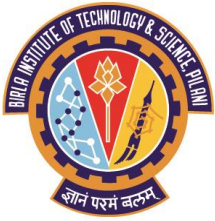
The department has been funded by several agencies (ABG Research seed grant, Additional Competitive Research Grant- BITS, BIRAC- DBT, BITS Pilani, CSIR, DAE, DRDO, DST, HBL Power Systems, L& N Structural Engineers (P) LTD, NSFC- China, SERC- DST, Tenova Delkor-India, UGC, UGC-RA), total worth of 408.9 Lac. Department is in a continuous process of strengthening its University-Industry ties. Keeping this in mind, the department has focused on industry-defined problems for thesis work. Numerous collaborations and MoUs signed with various organizations like FMC, Bharath Dynamics Limited, etc. are testament to this commitment.

## Student Activities:

### Mechanical Engineering Association (MEA)

MEA was established in 2009 mainly aimed at increasing student and faculty activities within the department. It focuses on interaction of students with various academic experts and industrial personnel. Majority of its activities, encourage students to actively involve themselves in organizing events. Since its existence, a number of guest lecture from renowned people in different fields of mechanical engineering have been conducted. Industrial visits are also arranged by the students in charge of the MEA, for the students so as to gain practical exposure.





# Birla Institute of Technology & Science, Pilani

## Hyderabad Campus

### **Society of Automotive Engineers (SAE) India Chapter – BITS, PILANI – Hyderabad Campus**

About hundred students (comprising all the first degree students) are registered members of SAE INDIA. Every year, different intramural competitions like technical quiz, modelling in Pro engineer etc are conducted. AUTO-FACTORY workshop has been conducted in the past. Our department students have been representing the college in different prestigious competitions of SAE India like SAE-BAJA, EFFI-Cycle, Autobot etc. A guest lecture was recently organized by inviting Professor P N Rao (University of Iowa).

### **Work Integrated Learning**

Apart from the regular academic and research activities, the Department faculty also make significant contribution towards WILP related courses pertaining to various programs by delivering online lectures and mentoring the students in their dissertation work. The department also conducts M.E (Mechanical Engg.) course for the benefit of working professionals.

### **Contact US:**

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