Thrust Areas of Research

The faculty members of the Department of Mechanical Engineering are involved in basic and interdisciplinary work which creates tremendous opportunities for students to carry out novel and independent research at the forefront of science and engineering. The goal of the Department is to provide efficient solutions to different engineering problems and contribute towards sustainability of environment, industry, and society. The thrust areas of research in the Department of Mechanical Engineering are:

1. **Advanced Computational Mechanics**

   - Computational Solid Mechanics
   - FEM, XFEM and Meshfree Methods
   - Fracture and Fatigue in Structures
   - Large Deformation Analysis
   - Elasto-Plastic Analysis

2. **Robotics and Mechatronics**

   - Closed loop Multibody System Dynamics
   - Impedance based Haptic Systems
   - Parallel Robots

3. **Thermal & Fluid science**

   - Heat Transfer and Thermal Management
   - Hydrogen Storage Systems
   - Nanofluids
   - Heat Transfer Augmentation
   - Solar Energy
   - Thermal Energy Storage
   - Computational Fluid Dynamics and Heat Transfer

4. **Advanced Manufacturing Processes and Maintenance**

   - Tribology and Maintenance
   - Micro-Structure characterization
   - Corrosion Control of Porous Materials