

Velammal Institute of Technology

Velammal Knowledge Park

Department of Mechatronics Engineering

Mechatronics- A Multidisciplinary Approach

Mechatronics Engineering is a universal solution with the aim of streamlining and managing various processes involved across multiple verticals heavily reliant on manufacturing, designing, processing and analytics. It includes a combination of robotics, electronics, computer, telecommunications, systems, control, and product engineering. A mechatronics engineer unites the principles of mechanics, electronics, and computing to generate a simpler, more economical and reliable system. An industrial robot is a prime example of a mechatronics system; it includes aspects of electronics, mechanics, and computing to do its day-to-day jobs.

Significance of Mechatronics Engineering

1. Maintaining sustainable ecosystems through smarter & connected devices to create and capture activity data.
2. Integration of the wider range of systems from coffee makers to robotic systems.
3. Ensuring the product makers to change the way, they design and create the adaptive systems.
4. Merging mechatronics made a major shift in designing smart machines from consumer products to aerospace.
5. It contributes to the development of new technologies, automation, good practices in the industry, innovation of processes, products and systems.
6. Micro-electromechanical systems are the basis of technological trends and market requirements. e.g. reduced fuel consumption and emission for automotive technology.

Opportunities- A Variant of the Field

- Advanced manufacturing & robotics
- Automotive control
- Defence Services
- Telecommunication & Information services
- Precision farming & food processing industries
- Medical Equipment design
- Renewable energy
- Transportation and Logistics

Physical Implementations

The Laboratory course is designed with the following learning objectives:

- Provide students an overview of mechatronic systems and their applications.
- Provide students instructions on various mechatronics systems, sensors, actuators and their applications to engineering problems.

- Provide students hands-on experience on identification and usages of electrical and electronic components and test equipment.
- Provide students hands-on experience on signal conditioning circuits such as amplifiers, D/A and A/D converters, sensors and actuators.
- Provide students hands-on experience for interfacing sensors and actuators for data acquisition and control using various software.

Students are trained in many applications of mechatronics, such as:

- Machine vision
- Automation and robotics
- Servo-mechanics
- Sensing and control systems
- Automotive engineering, automotive equipment in the design of subsystems such as anti-lock braking systems
- Computer-machine controls, such as computer driven machines like IE CNC milling machines
- Medical mechatronics, medical imaging systems
- Structural dynamic systems
- Computer aided and integrated manufacturing systems
- Engineering and manufacturing system

Mechatronics- A Realisation in Current Scenario

- Traditional degrees leading directly to closely aligned positions in industry are a thing of the past.
- Tomorrow needs individuals with advanced technical competencies capable of engaging in interdisciplinary research and industry applications.
- It is a faster way for companies to produce goods with the quality and speed modern consumers have come to expect.
- Graduates of Velammal Institute of Technology are sought after applied researchers and entrepreneurs, revitalizing the India and global economies in advanced manufacturing and automation.
- Advised by industrial advisory board members and other industry contacts to meet industry needs and to develop career pathways.
- Our university curriculum addresses the need for skilled advanced manufacturing technologies for industrial demands.
- Learning core and advanced design skills with implementation/instrumentation skills used in design and manufacturing of control systems.