

(045-CMC-09-02) Mechanical Engineering (Industry Integrated)

Significance of Mechanical Engineering (Industry Integrated):

In today's dynamic world, traditional mechanical engineering programs might not fully equip students with the specialized skills and industry knowledge needed for immediate career success. Therefore the proposed Mechanical Engineering course with Industry Integration holds significance in bridging the gap between theoretical knowledge and practical application. By incorporating a substantial 30% of labs and theory courses directly conducted within relevant industries, students gain firsthand experience in real-world scenarios, cultivating a comprehensive understanding of industrial practices. Their emphasis on practical knowledge, industry-specific skills, and career preparedness provides a significant advantage in the competitive job market. This innovative approach not only enhances the students' academic learning but also equips them with the practical skills and insights crucial for success in the dynamic field of mechanical engineering. The integration of industry experiences ensures that students are well-prepared to meet the evolving demands of the modern industry 4.0.

Career Options:

With a blend of theoretical understanding and practical experience gained directly from industry settings, students become highly employable across a spectrum of roles.

- **Automotive Engineer:** Design and develop components and systems for automobiles, motorcycles, and other vehicles.
- **Aerospace Engineer:** Design and develop aircraft, spacecraft, and related technologies.
- **Robotics Engineer:** Design, develop, and program robots for various applications.
- **Mechatronics Engineer:** Combine mechanical engineering principles with electronics and computer science to design and develop smart systems.
- **Biomechanical Engineer:** Apply engineering principles to solve problems in medicine and healthcare
- **HVAC (Heating, Ventilation, and Air Conditioning) Engineer:** Designs systems for controlling indoor environments in buildings, focusing on energy efficiency and comfort.
- **Energy Engineer:** Works on renewable energy projects, optimizing energy systems, and developing sustainable solutions in areas like wind, solar, or thermal energy.

Program Objectives: The graduate of mechanical engineering shall be able to

1. Equip graduates with the fundamental principles and analytical skills of mechanical engineering.
2. Develop strong problem-solving and critical thinking abilities to address industry-specific challenges.
3. Cultivate practical skills in design, analysis, manufacturing, and project management relevant to chosen industries.

Outcomes of the Program: The graduate of mechanical engineering will be able to

1. Apply fundamental mechanical engineering principles to solve real-world problems.
2. Design and analyze mechanical components and systems using industry-standard software and tools.
3. Understand and apply various manufacturing processes and techniques.
4. Manage and execute engineering projects effectively, considering cost, time, and quality
5. Contribute to the development and implementation of innovative solutions in their chosen industries.

Major Course Outlines:

1.CNC Machines and Programming	2.3D Printing and Design	3. Robotics
4.Non-Destructive Testing	5.Biomedical Engineering Design	6. Condition Monitoring of rotating machines
7.Heating, Ventilation, and Air Conditioning	8.Solar Energy Technologies	9.Automobile Engineering
10. Advanced Foundry Technologies	11. Finite Element Analysis	12.Advanced Welding Technologies
13. Propulsion Systems	14. Computational Fluid Dynamics	15. Modern methods in steel making
16. Reliability Engineering	17. Acoustics and Noise Vibration Harshness	18.Aerospace Structures
19. Artificial Intelligence and Machine Learning Algorithms for Mechanical Engineers		