

## **B. Tech - Mechanical Engineering (Specialization in AI and ML)**

### **Vision:**

To be the epitome of academic excellence in the mechanical and manufacturing stream, nurturing human values, pioneering contemporary research and innovations, driving industry advancements, and shaping a sustainable, technology-driven future.

### **Mission:**

- To provide a dynamic, inclusive learning environment that stimulates creativity and research, along with leadership qualities.
- To foster the passion of life-long learning by preparing students for a productive career in a sustainable competitive, dynamic, and technologically based society.
- To equip students with contemporary skills to inculcate meaningful contributions to industry and society through impactful solutions.
- Instilling ethical principles and moral values in education, fostering a culture of respect, inclusivity and social responsibility.

### **Programme Educational Objectives**

**PEO-1** Prepare graduates to have knowledge in mathematics, science and engineering to develop problem solving skills necessary for the career advancement in mechanical and allied disciplines.

**PEO-2** Organize graduates to have strong practical and theoretical knowledge in Mechanical Engineering, contributing through interdisciplinary research, innovation, entrepreneurial skills, and leadership to design and develop products.

**PEO-3** Inculcate teamwork, communication, interpersonal skills and ethical approach adapting to changing environments of engineering, technology and society.

**PEO-4** Impart critical thinking skills with deep concentration to develop initiatives and innovative ideas for R&D, Industry and societal requirements.

*Signature*

JSPM University Pune  
Faculty of Science and Technology  
School of Mechanical and Manufacturing Sciences

**Program Outcomes**

**PO 1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

**PO 2: Problem analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles mathematics, natural sciences and engineering sciences.

**PO 3: Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal, and environmental considerations.

**PO 4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO 5: Modern tool usage:** Create, select, and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO 6: The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO 7: Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO 8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO 9: Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO 10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.



**PO 11: Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO 12: Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context to technological change.

**Program Specific Outcome (PSOs)**

**PSO1:** Apply engineering principles and computational tools to design, analyze, and optimize mechanical systems, ensuring functionality, safety, and sustainability.

**PSO2:** Implement modern manufacturing techniques to enhance efficiency, quality, and innovation, considering economic and environmental impacts.

**PSO3:** Analyze and optimize thermal systems for energy efficiency and performance, addressing challenges in energy conservation and sustainability.

**PSO4:** Integrate AI/ML with mechanical engineering to develop advanced solutions in design, manufacturing, and thermal systems.

  
Programme Coordinator

  
Director