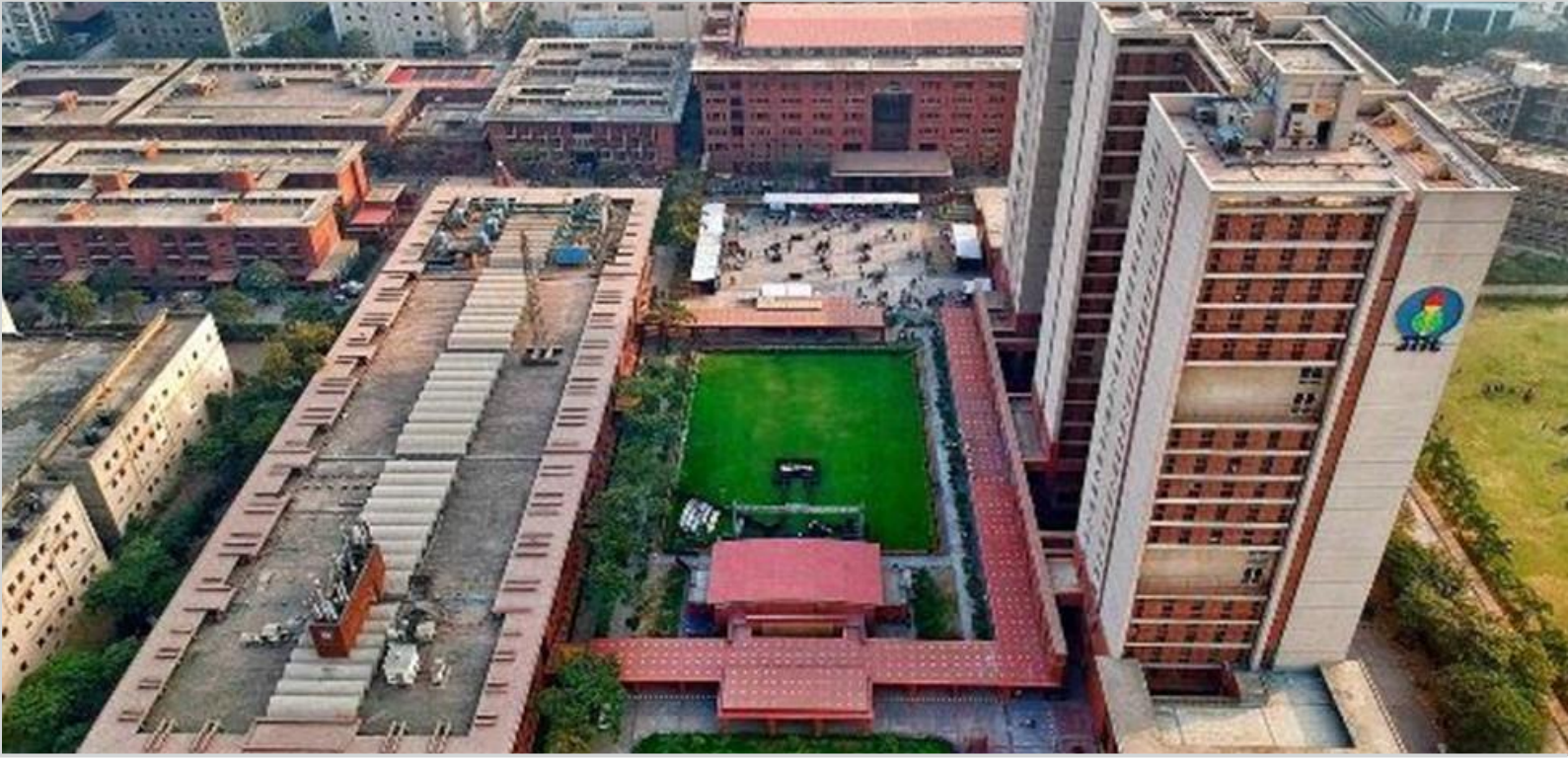
JAYPEE INSTITUTE
OF INFORMATION TECHNOLOGY, NOIDA

Department of

Mechanical Engineering and Design

Decade of Innovation 2021-2031

DRIVING ADVANCEMENT WITH ACCURACY AND PASSION - JIIT MECHANICAL



About The Department of Mechanical Engineering & Design

The Department of Mechanical Engineering & Design (MED) emphasizes creativity, innovation, and problem-solving in product development and industrial design. It combines engineering principles with aesthetics, ergonomics, and sustainability to create efficient and user-friendly designs. Design and innovation are crucial for industries and organizations to go beyond their conventional functions and boundaries. The MED department fosters professionals with an ability to produce products that are adaptive, aesthetically enticing, sustainable and user friendly.

The MED department is also established at JIIT Noida with an aim to integrate the emerging fields of Robotics, AI and Automation to equip students with critical knowledge of mechatronics, intelligent systems and industrial automation. This amalgamation fosters innovation in automated explanations for real-world industrial and societal challenges.

The curriculum is designed to promote a strong foundation on innovation and industry-based application, addressing anticipated challenges while sustaining congruence with the most recent technology breakthroughs. Graduates, postgraduates and research scholars are going to have an assortment of possibilities for employment in the sectors such as robotics, AI, automation, the design business, or as independent designers, and various other sectors of interdisciplinary and emerging sectors of engineering.

Message from the HOD

Welcome to the Department of Mechanical Engineering and Design (MED) at Jaypee Institute of Information Technology, Noida. The department is built on a strong foundation of academic excellence, research-driven innovation, and a commitment to creating an inclusive and inspiring learning environment.

MED department offers academic programs that reflect the evolving needs of modern industry: B.Tech in Robotics & AI, M.Des (Master's in Design), and Ph.D. programs across various specializations of Mechanical Engineering. These programs are supported by a highly qualified faculty whose expertise spans robotics, automation, materials science, manufacturing, energy systems, and design.

At MED, we aim to advance transformative teaching and research that shape the future of our students. The curriculum emphasizes robotics, automation, materials science, manufacturing, green energy, and design. Graduates of JIIT will be equipped with the skills required to support "Make in India," Industry 4.0, green manufacturing, and the growing aerospace sector.

Advanced facilities and vibrant research ecosystem at the MED department equip students to excel academically and stand out in their professional careers.

Professor (Dr.) Arti Noor
Dean and Head of Department
Dept. of Mechanical Engineering and Design

DEPARTMENT OF MECHANICAL ENGINEERING & DESIGN

Vision

To be a center of excellence in education, training and research in Mechanical Engineering and Design to foster technically competent professionals to address the complex challenges across industries, academia, and society.

Mission

Mission 01: To impart education through contemporary, future-focused, and flexible curricula, integrating innovative teaching methods and hands-on training in state-of-the-art labs.

Mission 02: To conduct cutting-edge research in emerging areas of Mechanical Engineering and Design.

Mission 03: To nurture technical and entrepreneurial skills in professionals, enabling them to create socially responsible and sustainable solutions.

Salient Features

The MED department at JIIT Noida is developing itself as an extensive research and instructional platform that combines the principles of mechanical engineering with creative design thinking and automation. The department has laid down the following noteworthy core strengths & salient features of the department:

Comprehensive Course Structure: The core team at JIIT Noida has developed a comprehensive curriculum that blends fundamentals of mechanical engineering with deep-rooted cutting-edge technology and critical design thinking.

Interdisciplinary Approach: The department has blended the interdisciplinary approach by integrating mechanical engineering with the field of Robotics, AI and Automation and fundamentals of design principles to solve complex challenges.

State of the Arts Lab: Presently equipped with modern design labs and prototyping facilities such as 3D printer, 2D/3D modelling software's and advanced robotics lab.

Solving Real-World Issues: The course structure is designed to address and solve real world issues in the sectors like energy, manufacturing, robotics, AI, and consumer-based products.

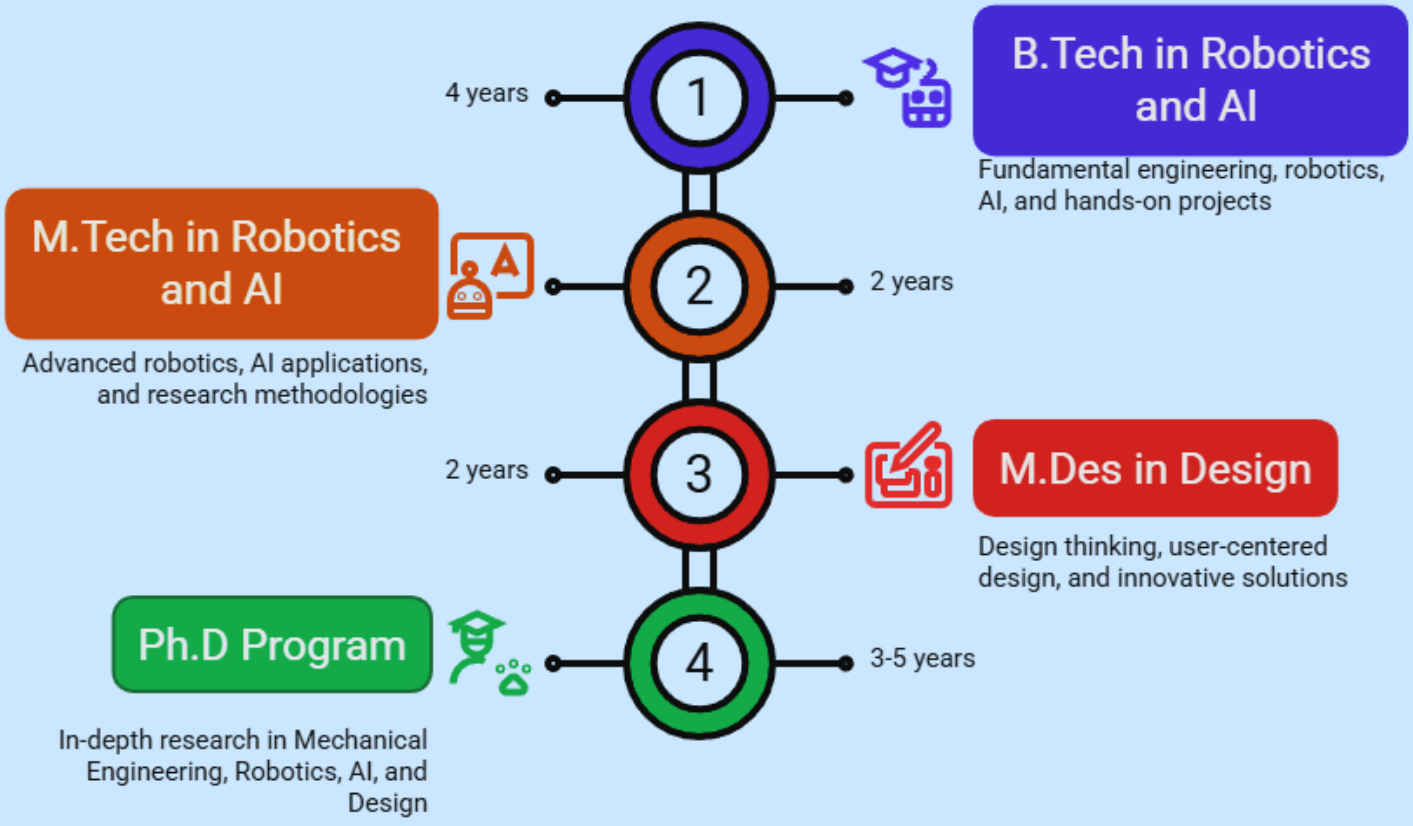
Curriculum-Integrated Industrial Training: The department has integrated a mandatory industrial training model for its graduates and post graduates students to gain hands-on exposure in R&D labs, industrial and manufacturing environment.

Flexible Electives: Offers flexible electives that permit students to specialize in emergent field based on market need and personal benefits.

Project Based Learning/Final Year Projects: Focuses on final projects and project-based learning that foster design, research, and creativity, frequently resulting in publications.

Experienced Faculty: The faculty members in the department are highly experienced and qualified with degrees from institutes of national importance. Students are constantly mentored by these faculties resulting in cutting-edge research.

Programs Offered



B.Tech in Robotics and Artificial Intelligence (R&AI)

Program Educational Objectives (PEOs)

PEO1:

To provide strong foundation in Robotics and Artificial Intelligence to pursue professional career, entrepreneurship and higher studies.

PEO2:

To develop capability to analyze, design and develop feasible solutions to real world problems.

PEO3:

To inculcate professional ethics, managerial and communication skills to develop ingenious solutions for benefit of society and environment.

Program Specific Outcomes (PSOs)

PSO1:

To identify the engineering problems and develop solutions in the area of robotics, artificial intelligence, drone technologies, control systems and automation.

PSO2:

To demonstrate proficiency in utilization of software and hardware tools along with analytical skills to arrive at appropriate solutions.

M.Tech in Robotics and Artificial Intelligence (R&AI)

Program Educational Objectives (PEOs)

PEO1:

To provide profound knowledge of modern design tools to solve real-life problems in the field of Robotics and Artificial Intelligence.

PEO2:

To inculcate research skills with ethical attributes for academia and industry.

PEO3:

To develop entrepreneurial skills as per industry requirements for providing sustainable solutions to the society

Program Specific Outcomes (PSOs)

PSO1:

Students will be able to design, analyze, and implement advanced models and algorithms to address real-world challenges in robotics and artificial intelligence.

PSO2:

Students will be able to demonstrate research, entrepreneurial skills and ethical principles.

Master of Design (M.Des.)

Program Educational Objectives (PEOs)

PEO1:

To equip students with advanced design tools and methodologies for solving real-world challenges in design and emerging area.

PEO2:

To foster research skills with a strong ethical foundation, preparing graduates for impactful contribution in academia and industry.

PEO3:

To cultivate entrepreneurial abilities aligned with industry needs, enabling and development of sustainable solution for society.

Program Specific Outcomes (PSOs)

PSO1:

To apply state-of -the art tools and techniques to conceptualize, design, and introduce new products, process, systems and services.

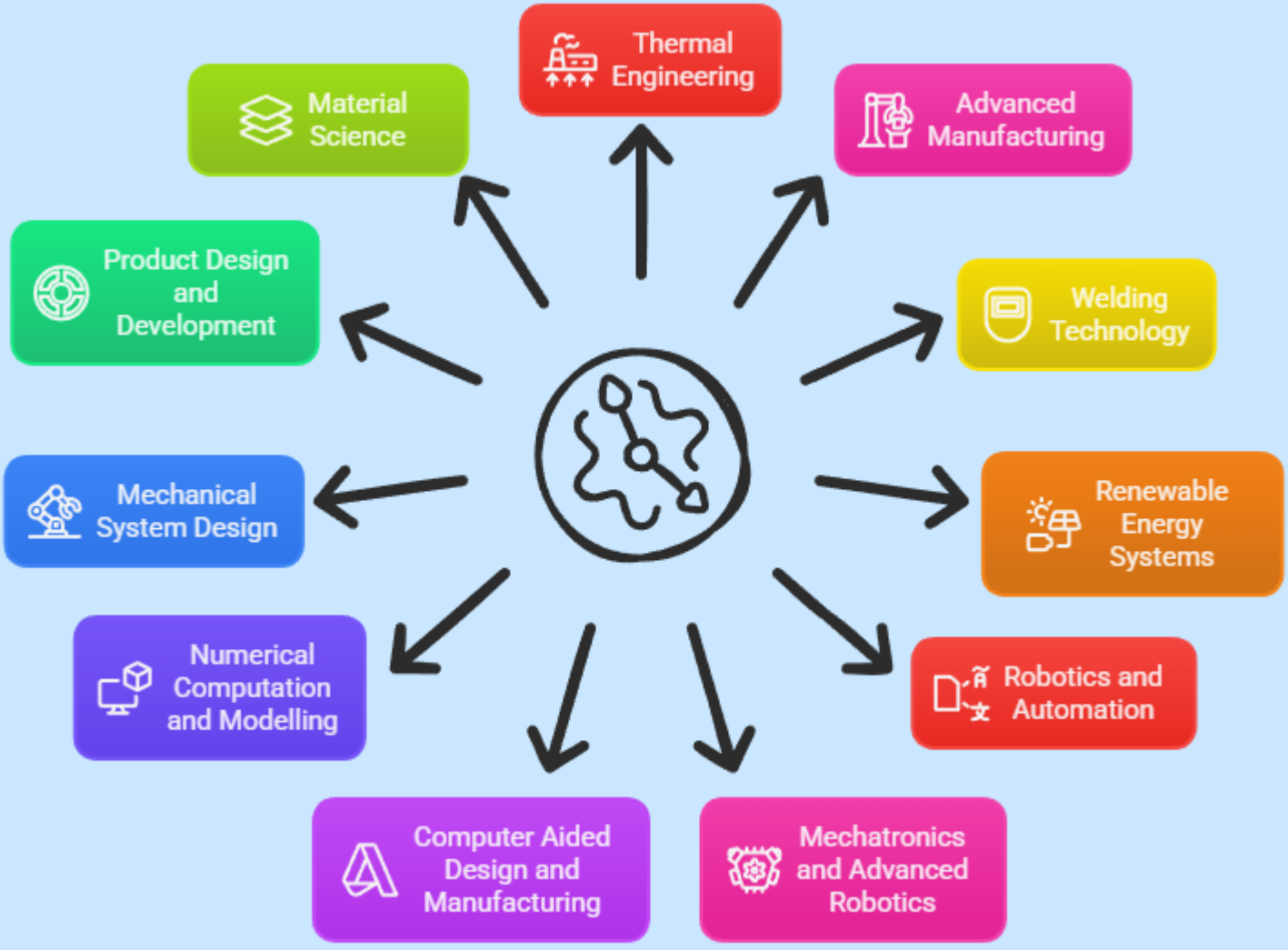
PSO2:

Students will possess the necessary skills, knowledge, and mindset to successfully launch and operate their own start-ups.

PSO2:

Students will be equipped with the knowledge, skills, and competencies necessary to pursue advanced studies in design-related fields.

Research Areas



The MED department at JIIT Noida places an extreme priority on industry-relevant invention and research driven teaching. To promote the vision of the department, the department has established important research areas to meet national priorities and develop new technology. This fosters interdisciplinary education, cutting-edge research, and hands-on skill development among scholars and educators.

Research areas:

- Thermal Engineering
- Advanced Manufacturing
- Welding Technology
- Renewable Energy Systems
- Robotics and Automation
- Mechatronics and Advanced Robotics
- Computer Aided Design and Manufacturing
- Numerical Computation and Modelling
- Mechanical System Design
- Product Design and Development
- Material Science

Research Facilities

Advanced Robotics and AI Lab

The Department of Mechanical Engineering and Design is well-endowed with state-of-the-art laboratory and research facilities for supporting sophisticated learning and innovation. These facilities cross boundaries between theory and practice in major thrust areas. Right from manufacturing workshops to specialized laboratories in CAD/CAM, thermal engineering, and robotics, the department promotes hands-on learning. Such facilities support students and faculty in undertaking state-of-the-art research and industry-oriented projects.

The Robotics and AI Lab is established at JIIT Noida as high-tech laboratories for hands-on skills and research. Various robotics platforms and supporting components such as Arduino kits, sensor-actuator systems, and embedded controllers are installed. Students and researchers can pursue applications in machine learning, deep learning, autonomous systems, robotic arms and intelligent control. The laboratory promotes cross-disciplinary research in mechatronics, automation, and intelligent manufacturing. The facility promotes developing practical skills as well as innovation-led research for faculty and students.

Center of Excellence AICTE-IDEA Lab

Center of Excellence AICTE-IDEA Lab is being established at JIIT, Noida under the supervision of AICTE. This lab is a cutting-edge facility to expertise young engineers in design, innovation, product development, and prototyping. This laboratory shall expose students to practical experience in state-of-the-art design tools, rapid prototyping, and fabrication methods, encouraging a culture of innovation and technology development. It will be contributory in empowering M.Des scholars with the skills obligatory for industrial design and research-based innovation. The lab is expected to promote interdisciplinary learning and enhance JIIT's emphasis on entrepreneurship and industry-academia partnerships.

Computer Aided Design and Modelling Lab

The CAD Centre was established at JIIT Noida with an aim to provide a high class virtual environment to faculty and students to carry out sophisticated 3D modeling, simulation, and design optimization. It helps in quick prototyping via 3D printing and computer-based testing of mechanical devices. Researchers are advantageously exposed to hands-on use of industry-oriented tools for research and thesis projects. It also aids interdisciplinary and collaborative research with practical applications. The CAD Center is equipped with a multicolor projector, whiteboard, and computer systems with advanced configurations having Drafting and Design Software.

Manufacturing/ Engineering Workshop Lab

The manufacturing/workshop lab enables students to carry out fabrication of prototypes and experimental validation. It delivers hands-on skill with various shops such as machining, fitting, welding, carpentry, and fitting to train in assembling tools and raw material for mechanical research. Researchers have the option to validate their CAD model by creating the corresponding physical model for analysis and performance testing. This lab encourages invention in product design and aids in material and process research. It also facilitates multidisciplinary projects including automation, robotics, and mechanical systems.

Design Studio

The Design Studio at JIIT is more than just a physical space; it is dedicated to nurturing the artistic and technical skills of students in various design fields, including graphic design, product design, user experience (UX) design, and more.

The Design Studio is equipped with state-of-the-art facilities and resources that support various design activities. It serves as a collaborative space where students can engage in hands-on projects, workshops, and design challenges, allowing them to apply theoretical knowledge in practical scenarios.

JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY

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