

An aerial photograph of the IIT Tirupati campus is shown on the right side of the page. It features a large, modern building with a central courtyard, a wide road, and a flagpole flying the Indian national flag. The campus is surrounded by greenery and trees. The image is partially obscured by a large, white, diagonal shape that contains the text.

Executive M.Tech. in Intelligent Manufacturing Systems

*Department of Mechanical Engineering,
IIT Tirupati*
(From Jan 2027)

Why MTech in Intelligent Manufacturing Systems?

Manufacturing is undergoing a rapid transformation driven by digitalization, automation, and intelligent technologies, creating a growing demand for upskilling experienced professionals. The Executive Master of Technology (M.Tech.) in Intelligent Manufacturing Systems is designed to equip working professionals with advanced knowledge in smart manufacturing, additive manufacturing, digital factories, robotics, and intelligent automation while enabling them to continue their careers. The curriculum integrates advanced manufacturing, precision metrology, automation, and digital manufacturing through hands-on laboratories, campus immersion modules, and industry-oriented projects.

The program emphasizes application-driven learning, simulation tools, and interdisciplinary electives to develop competencies in designing, optimizing, and implementing next-generation manufacturing systems. Through a structured two-phase project, participants gain practical experience in solving real-world industrial challenges and are prepared to lead digital transformation initiatives across manufacturing industries, R&D organizations, and technology-driven enterprises.

Why IIT Tirupati?

IIT Tirupati is emerging as a leading centre for advanced manufacturing, intelligent automation, robotics, and digital engineering. The institute is committed to addressing the evolving needs of modern manufacturing industries through cutting-edge research, interdisciplinary education, and strong collaborations with industry and government organizations. With state-of-the-art laboratories, expertise in smart manufacturing technologies, and a focus on Industry 4.0 and Industry 5.0, IIT Tirupati provides an ideal environment for professionals to enhance their technical knowledge and leadership skills.

The Executive M.Tech. in Intelligent Manufacturing Systems is designed to equip working professionals with advanced competencies in automation, industrial robotics, digital manufacturing, additive manufacturing, artificial intelligence, machine vision, industrial IoT, digital twins, and data-driven manufacturing, enabling them to lead the digital transformation of manufacturing enterprises.

“Be ready to lead the next generation of smart factories and drive India’s transformation towards intelligent, sustainable, and globally competitive manufacturing.”

Program Highlights:

1. No GATE score required
2. Complete the degree in just 3 semesters (1.5 years)
3. Live online classes on weekdays (after 5:00 PM) and Saturdays
4. Hands-on laboratory sessions during on-campus residency
5. Industry-oriented curriculum covering Additive Manufacturing, Smart Manufacturing, Robotics, Automated Inspection, Metrology, AI/ML, Digital Manufacturing, and other emerging technologies
6. IIT Tirupati Executive M.Tech. degree upon successful completion

Program Objectives:

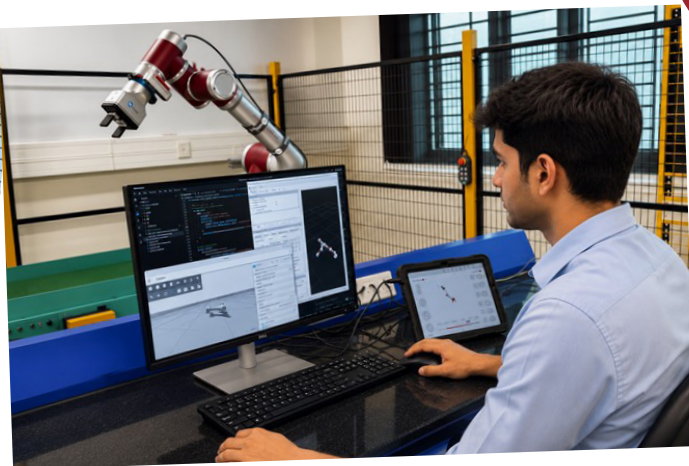
Upon successful completion of the program, graduates will be able to:

1. Build expertise in advanced manufacturing, additive manufacturing, smart manufacturing, and AI-enabled production systems.
2. Apply precision metrology, robotics, automation, computer vision, and machine learning to design and optimize intelligent manufacturing systems.
3. Utilize analytical, simulation, and AI-based tools to solve complex manufacturing problems through laboratory and industry-oriented projects.
4. Implement Industry 4.0/5.0 technologies, including digital twins, cyber-physical systems, predictive maintenance, and data-driven manufacturing.
5. Lead innovation and digital transformation through interdisciplinary problem-solving, ethical engineering practices, and technology commercialization.

Program Summary:

Program duration	1.5 years
Number of credits	44
Theory core course credits	15
Lab courses credits	8
Project credits	12
Program Electives Credits	6
Free Electives Credits	3

“Note: The programme duration is flexible, considering the needs and professional commitments of working professionals.”



Eligibility Criteria

1. Candidates must be employed in an industry/ R&D Labs with a minimum of two years of relevant experience. Employer sponsorship is desirable but not mandatory.
2. Applicants should hold a B.Tech degree in Mechanical, or Production, or Material Science, or Mechatronics, or Aerospace, or Smart Manufacturing, or allied engineering disciplines.
3. A minimum of 55% aggregate marks or equivalent CGPA in the qualifying degree is required.

Curriculum

Target Students

Working professionals (engineers, technologists, and managers) from manufacturing, automation, robotics, and allied industries seeking advanced skills in smart manufacturing, digitalization, and Industry 4.0 while continuing their careers.

Selection Procedure

1. Maximum number of seats will be 25.
2. Eligible candidates will be shortlisted by the selection committee through additional screening criteria, including an interview.

Executive MTech in Intelligent Manufacturing Systems (For Industry Professionals): Online + Campus Immersion

#	Course name
Semester - I (Core Foundation)	
1	Advanced Manufacturing Processes
2	Metrology and Computer-Aided Inspection
3	Machine Learning for Mechanical Engineers
4	Advanced Manufacturing Laboratory
5	Metrology and Computer-Aided Inspection Laboratory
Semester - II (Applied Skills)	
1	Additive Manufacturing
2	Smart Manufacturing
3	Program Elective I
4	Industrial Automation Laboratory
5	Digital Manufacturing Laboratory
Semester - III	
1	Project
2	Program Elective II
3	Free Elective

#	Course Name
Program Elective 1 - Manufacturing	
1	Introduction to Robotics: Kinematics and Dynamics
2	Sustainability and Green Manufacturing
3	Sensors for Intelligent Manufacturing and Condition Monitoring
Program Elective 2 - Data analytics	
1	Industrial IoT and Cloud Manufacturing Systems
2	Quality Engineering
3	Data-Driven Manufacturing Systems
Free Electives (Indicative)	
1	Supply Chain Management
2	Project Management
3	Engineering Economics and Sustainability
4	NPTEL courses (Counts for Credit calculation but not for the CGPA calculation)

Program Structure

1. Program Duration: 1.5 years (3 semesters)
2. Mode: Online lectures, Campus immersion for two weeks in a semester during the first two semesters.
3. Classes will be conducted on weekdays (after 5:00 PM) and Saturdays
4. Minimum residency: 2 weeks each in semester I and II
5. Labs will be conducted during the residency period
6. A free elective course can be completed through the NPTEL platform. The choice of course is to be made in consultation with and with the approval of the program coordinator
7. Evaluation: Written exams, lab reports, project reviews
8. Early Exit option: A minimum of 26 course credits for PG Diploma
9. The students will be eligible to apply for the Ph.D. program after completing the Executive M.Tech. program.

Guidelines for MTech Project

1. Projects will be executed in the respective industry.
2. Regular engagement of a faculty member from IIT Tirupati as a thesis supervisor is mandatory.
3. A student can reach out to any faculty to guide the thesis in the chosen area.
4. The project should be presented and published at the end of the MTech program.
5. Evaluation of the Project will be as per the norms of the Institute.

Fee Structure

1. Sponsorship Fee: Rs. 6 lakhs per student (for the entire program)
2. Boarding and accommodation during the residency period will be provided by the Institute.
3. Project expenses (consumables/ contingencies) will be borne by the Industry.

Webpage:
Executive M.Tech. in
Intelligent Manufacturing Systems.



Webpage:
IIT Tirupati -
CDO office website



भारतीय प्रौद्योगिकी संस्थान तिरुपति



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