



MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE
(Deemed to be University)

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NBA Accredited - B.Tech. (CIVIL, CSE, ECE, EEE, MECH, CST), MBA & MCA



A Report on One-day Industrial Visit to
“Government Tools and Training Centre (GTTC), Bangalore”
Organized by Department of CSE (Artificial Intelligence and Machine Learning)
In Association with Industry Relations Cell
on 14.05.2026



Report Submitted by: Mr. Udayakumar.P, Assistant Professor, Department of CSE (AI and ML)

No. of Students: First Year AIML Students- 39 No's(C-Section)

Faculties Accompanied: Mr. P. Udayakumar, Assistant Professor, Department of CSE (AI and ML), and Dr.N. Reddeppa Assistant Professor, Department of Physics MITS

Mode of conduct: Offline

Report Received on 29.05.2026.

Introduction:

On 14th May 2026, the Department of CSE (Artificial Intelligence and Machine Learning), MITS Deemed to be University, Madanapalle, Andhra Pradesh, organized a one-day industrial visit to the **Government Tools and Training Centre (GTTC), Bangalore** for the undergraduate students of the department.

Industrial visits play a vital role in engineering education by providing students with opportunities to observe real-time industrial operations and understand the practical implementation of theoretical concepts learned in classrooms. The visit to GTTC was organized with the objective of exposing students to advanced manufacturing technologies, industrial automation systems and modern engineering practices followed in industries.

GTTC, established in 1972, is one of the premier institutions in India for tool engineering, precision manufacturing and industrial training. The institution is widely recognized for its excellence in technical training, advanced manufacturing solutions and skill development programs in emerging industrial technologies. The centre provides expertise in areas such as Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), CNC machining, industrial robotics, Internet of Things (IoT), embedded systems and automation technologies.

The industrial visit was highly relevant for AI&ML students as modern manufacturing industries increasingly depend on Artificial Intelligence, Machine Learning, robotics, automation and data-driven technologies to improve productivity, quality and operational efficiency. Through this visit, students gained an understanding of how intelligent systems and automation are integrated into industrial environments to support smart manufacturing processes. The visit also provided students with exposure to industrial infrastructure, production workflows, safety standards and quality assurance practices followed in modern industries. It created awareness among students regarding current technological advancements, industrial expectations and career opportunities in manufacturing and automation sectors.

Objectives of the Visit:

The major objectives of organizing the industrial visit were:

- To provide students with practical exposure to industrial environments and manufacturing processes.
- To help students understand the applications of Artificial Intelligence, Machine Learning and automation technologies in industries.
- To familiarize students with modern manufacturing systems such as CNC machining, CAD/CAM and robotic automation.

- To provide knowledge about industrial quality standards, testing procedures and production management practices.
- To create awareness about Industry 4.0 technologies and smart manufacturing concepts.
- To enable students to observe the integration of IoT and embedded systems in industrial automation.
- To bridge the gap between theoretical academic learning and practical industrial implementation.
- To motivate students towards research, innovation and higher studies in emerging technological domains.
- To improve students' understanding of industrial safety standards, workplace ethics and professional practices.
- To provide guidance regarding industrial career opportunities and skill requirements in manufacturing and automation industries.

Details of the Visit:

The industrial visit commenced with the students and faculty members arriving at the GTTC campus, Bangalore, where they were welcomed by the officials and technical experts of the organization. An introductory session was conducted to brief the students about the history, objectives, training activities and industrial contributions of GTTC.

The experts explained the importance of precision engineering, automation and advanced manufacturing in present-day industries. Students were informed about the role of GTTC in providing technical training, research support and industrial consultancy services for various engineering sectors.

Following the introductory session, the students were guided through different laboratories, workshops and manufacturing units within the centre. The major sections visited during the industrial tour included:

- **CAD/CAM Laboratory:** The students observed how Computer-Aided Design (CAD) software is used for designing mechanical components and industrial products with high precision. Experts demonstrated the process of 2D drafting and 3D modelling used in product development. The CAM section explained how computer-generated designs are converted into manufacturing instructions for automated machines. Students gained insights into the importance of CAD/CAM integration in reducing production time, improving design accuracy and enhancing manufacturing efficiency.
- **CNC Machining Section:** Students visited the CNC machining unit where they observed advanced Computer Numerical Control (CNC) machines used for precision manufacturing. The experts explained the working principles of CNC turning, milling and drilling operations. The students learned how automated machining systems help industries achieve high accuracy, repeatability and mass production capabilities. The role of programming, automation and digital control systems in CNC operations was also explained in detail.
- **Robotics and Automation Laboratory:** The robotics laboratory attracted significant interest among the students. Industrial robotic arms and automated systems used in manufacturing operations were demonstrated by the experts. Students observed robotic movements, automated material handling systems and robotic programming techniques. The experts explained how robotics improves industrial productivity, minimizes human error and enhances operational safety. The role of Artificial Intelligence and Machine Learning in robotic decision-making, predictive maintenance and industrial automation was also discussed during the session.
- **IoT and Embedded Systems Laboratory:** In this section, students were introduced to Internet of Things (IoT) applications used in industrial environments. Demonstrations were provided on sensor-based monitoring systems, embedded devices and real-time data communication technologies. The experts explained how IoT devices are integrated with industrial systems for monitoring machine performance, controlling operations and collecting production data. Students gained knowledge about smart manufacturing concepts and data-driven industrial processes.
- **Quality Control and Testing Section:** Students visited the quality inspection and testing units where they learned about industrial quality assurance procedures and testing methodologies. The experts explained various measurement instruments, calibration procedures and quality standards followed during manufacturing processes. Students understood the importance of maintaining product quality, accuracy and safety standards in industries.
- **Interaction Session with Industrial Experts:** An interactive session was conducted at the end of the visit where students had the opportunity to interact directly with industrial experts and trainers.
- The experts discussed:
 - Current trends in industrial automation and smart manufacturing
 - Career opportunities in manufacturing industries
 - Required technical and professional skills for engineering graduates
 - The importance of innovation, continuous learning and industry-oriented skills

Students actively participated in the discussion and clarified their doubts regarding industrial technologies, career growth and higher education opportunities.

Learning Outcomes of the Visit:

The industrial visit provided several valuable learning experiences for the students. Through this visit, students were able to:

- Understand the real-time applications of engineering and automation technologies in industries.
- Gain practical exposure to CAD/CAM systems, CNC machining and industrial robotics.
- Learn about the integration of AI, Machine Learning and IoT technologies in smart manufacturing systems.
- Understand industrial workflows, production planning and quality assurance procedures.
- Develop awareness regarding industrial safety standards and workplace discipline.
- Enhance their technical knowledge and problem-solving abilities through practical observations.
- Gain exposure to modern manufacturing technologies and Industry 4.0 practices.
- Improve their confidence and professional understanding of industrial environments.
- Explore career opportunities and future prospects in manufacturing, automation and AI-driven industries.

Sustainable Development Goal (SDG) Mapping:

Focus Area	Description	Related SDG
Quality Education	The industrial visit enhanced experiential learning by providing students with practical exposure to advanced industrial technologies and real-world engineering applications.	SDG 4
Industry, Innovation and Infrastructure	Students gained exposure to modern manufacturing systems, industrial robotics, smart automation and innovation-driven industrial infrastructure.	SDG 9
Affordable and Clean Energy	The visit created awareness regarding energy-efficient industrial operations, optimized machine utilization and sustainable manufacturing technologies.	SDG 7
Responsible Consumption and Production	Students understood sustainable production practices, quality control mechanisms and efficient resource utilization methods followed in industries.	SDG 12
Climate Action	The industrial experts explained environmental safety measures, pollution control systems and sustainable industrial practices adopted in manufacturing units.	SDG 13

Conclusions:

The one-day industrial visit to Government Tools and Training Centre (GTTC), Bangalore was highly informative, educational and beneficial for the students of the Department of Artificial Intelligence & Machine Learning.

The visit successfully provided students with practical exposure to advanced manufacturing technologies, industrial automation systems and modern engineering practices. It enabled them to understand how theoretical concepts learned in academics are implemented in real-world industrial environments.

Students gained valuable insights into robotics, CNC machining, CAD/CAM systems, IoT applications and quality control mechanisms used in industries. The interaction with industrial experts also motivated students to enhance their technical skills and prepare themselves for future industrial and research opportunities.

Overall, the industrial visit served as an excellent platform for improving students' industrial knowledge, professional awareness and technical competencies. The experience will significantly contribute to their academic growth, career development and understanding of emerging technologies in the field of Artificial Intelligence and smart manufacturing.

Acknowledgments:

We express our sincere gratitude to our Chancellor, Pro Chancellor, Vice Chancellor, Registrar, Principal, Vice-Principal Administration, Dean (School of Engineering), Head of the Department of CSE (AI and ML) and Industry Relations Cell for their continuous encouragement, support and permission to organize this industrial visit successfully.

We also extend our heartfelt thanks to the management, technical experts and staff members of the Government Tools and Training Centre (GTTC), Bangalore for their warm hospitality, valuable guidance and cooperation throughout the visit.

Finally, we appreciate the enthusiastic participation, discipline and active involvement of all the students, which contributed greatly to the success of the industrial visit.