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Industrial Visit to Government Tool Room and Training Centre

The department of **Electronics and Communication Engineering** organised an **Industrial Visit to Government Tool Room and Training Centre (GTTC)** on **10-09-2025**. GTTC is a premier institute known for its contributions to skill development and industrial training in Karnataka. A total of 78 students and 4 faculty members from the ECE Department participated in this Industrial Visit. The visit was organised to provide students with practical exposure to advanced manufacturing technologies, automation systems, renewable energy setups, and industrial instrumentation.

Objective of the Event

The objective of the visit was to provide students with hands-on exposure to industrial-grade equipment and technologies in the domains of Rapid Prototyping, CNC Machining, Robotics, PLC Systems, Renewable Energy, Mechatronics, and Industrial IoT.

Event Overview

The visit was structured to cover multiple specialised labs, each focusing on a different domain of engineering and technology. Students were divided into two batches for efficient learning and guided by experienced professionals. The Rapid Prototyping Lab offered a glimpse into additive manufacturing, where students witnessed the functioning of 3D printing machines and understood how rapid prototyping accelerates product development by enabling quick iterations of design. In the Robotics Lab, students were introduced to an educational robot from FANUC, equipped with six axes and servo motors. They observed its applications in material handling and various welding techniques such as plasma, MIG, TIG, and spot welding, learning how automation enhances efficiency and precision in industrial tasks.

The visit also included the Mechatronics and Industrial IoT Lab, where students explored the integration of mechanical systems with electronics and control logic. They interacted with Siemens S7-1200 PLCs and observed the functioning of modular stations like the Feeder Station, Inspection Station, and Buffer Station. Using software tools like Siemens TIA Portal and S7 Professional, they understood how

programmable logic controllers are used to automate industrial processes. Finally, in the Renewable Energy Lab, students were introduced to sustainable energy technologies. They examined hardware such as solar panels, wind turbines, and simulation kits, and interacted with the Festo Solar/Wind Energy Training System Panel, which included 28 devices. Software tools like LVDAC-EMS and Grid-Tied Systems Simulation were used to demonstrate energy generation, conversion, and smart grid integration. This comprehensive exposure provided students with a holistic understanding of how traditional and emerging technologies are applied in real-world industrial settings.

The photos captured during the industrial visit to GTTC Bengaluru showcase a dynamic and immersive learning experience for the ECE students of MVJCE. They document key moments across various advanced labs, including hands-on sessions with CNC milling machines, precision measurement using profile projectors and coordinate measuring machines, and demonstrations of 3D printing in the rapid prototyping lab.

Figure 1: Students attending an orientation session on GTTC's industrial training programs and facilities

Figure 2: Faculty from GTTC explaining the functionality of various machines and systems during the lab tour

The robotics lab images highlight the operation of a FANUC educational robot performing welding and material handling tasks. Students are also seen engaging with Siemens PLCs and mechatronics stations, gaining insights into automation workflows. In the renewable energy lab, the photos reflect their interaction with solar and wind energy setups, simulation kits, and the Festo training panel. Group photos and candid shots of students listening to expert guidance from GTTC faculty further captured the enthusiasm and educational value of the visit.

Figure 3: Students gaining hands-on insights into precision measurement techniques during a metrology session led by a GTTC expert

Figure 4: Hands-on training with Siemens S7-1200 PLCs, using TIA Portal software for automation control

Figure 5: A group photo capturing the students and faculty members from MVJCE during the industrial visit.

Outcomes and Impact

The industrial visit to GTTC Bengaluru was a highly enriching experience for the students of the Electronics and Communication Engineering (ECE) Department at MVJ College of Engineering. It provided a valuable platform for students to bridge the gap between academic learning and industrial practices. Through hands-on exposure to advanced technologies such as CNC machining, metrology, rapid prototyping, robotics, PLC systems, renewable energy, and industrial IoT, students gained a comprehensive understanding of real-world engineering applications.

The visit enhanced their technical knowledge, problem-solving abilities, and awareness of industry standards. Students were particularly engaged in sessions involving Siemens PLC programming, FANUC robotics, and renewable energy simulations using the Festo training system. These experiences not only deepened their conceptual understanding but also sparked interest in emerging fields like automation

and sustainable energy.

A significant outcome of the visit was that students were offered internship opportunities at GTTC, opening doors for practical training and industry exposure in a professional environment. This opportunity is expected to further strengthen their skills and prepare them for future careers in core engineering domains. Overall, the visit aligned perfectly with the department's vision of producing industry-ready graduates equipped with both theoretical knowledge and practical expertise.

Conclusions

The industrial visit to GTTC Bengaluru provided the ECE students of MVJ College of Engineering with a valuable opportunity to explore real-world applications of engineering concepts across diverse domains such as CNC machining, metrology, rapid prototyping, robotics, mechatronics, PLC systems, and renewable energy. Through expert-led sessions and hands-on demonstrations, students gained practical insight into advanced technologies and industrial workflows. A key highlight of the visit was the offer of GTTC-supported internship opportunities, which will further enhance the students' exposure to industry practices and skill development. Overall, the visit successfully enriched their academic experience and strengthened their readiness for future careers in core engineering fields.

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