NALLA NARASIMHA REDDY
Education Society's Group of Institutions - Integrated Campus
(Approved by AICTE & PCI, New Delhi & Affiliated to JNTUH, Accredited by NAAC with A+ Grade)
Chowdariguda (V), Korremula 'X' Roads, Ghatkesar (M), Medchal-Malkajgiri Dist., Hyderabad, T.S. - 500 088.
(UGC AUTONOMOUS INSTITUTION)

School of Engineering

Department of Electronics and Communication Engineering

Date: 09th October, 2026

A Report on Industrial Visit

to

Indian Railways Institute for Signal Engineering & Telecommunication (IRISET) – Tarnaka, Secunderabad

Program Particulars:

Date Organized	Venue/Organization	Attendees
06th October 2026 (Tuesday)	Indian Railways Institute for Signal Engineering & Telecommunication (IRISET) – Tarnaka, Secunderabad	B. Tech. ECE selected students (54) & 2 faculty/staff.



Event Banner

Purpose of Visit:

The Department of Electronics and Communication Engineering, in collaboration with the Industry Institute Interaction Cell (IIIC), the Institute of Electronics and Telecommunication Engineers (IETE) Student Forum (ISF), and e-SPARK, organized an industrial visit for the B.Tech. II Year ECE students to the Indian Railways Institute of Signal Engineering and Telecommunications (IRISET), Tarnaka, Secunderabad, on 6th October 2026 (Tuesday). A total of 54 students participated in the visit, accompanied by Mrs. Bindu Tushara and Dr. V. Sravan Kumar. The visit was organized to bridge the gap between theoretical concepts and practical applications by familiarizing students with railway signalling systems, telecommunication technologies, and industrial engineering practices. It also provided an opportunity for students to gain insights into the functioning of railway communication and signalling systems and understand their relevance to Electronics and Communication Engineering.

During the industrial visit, the B.Tech. II Year students of the Electronics and Communication Engineering (ECE) department explored various sections associated with railway signalling, telecommunication, and railway safety systems. The visit provided students with an excellent opportunity to gain practical knowledge of the technologies, equipment, and operational procedures involved in railway engineering. They were introduced to the basic principles of railway signalling and its importance in ensuring the safe, efficient, and reliable movement of trains. The students also gained insights into the functioning of different signalling systems, including indoor signalling arrangements, relay interlocking, and electronic interlocking systems, which play a vital role in controlling train movements and preventing operational conflicts. In addition, the visit helped them understand the significance of railway telecommunication networks in facilitating effective communication between railway stations, control centres, and other operational units. The students were also introduced to modern railway safety technologies, including the Kavach automatic train protection system and its essential modules, which are designed to enhance railway safety and reduce the possibility of accidents caused by human error or signal violations. The technical explanations and demonstrations provided by the concerned personnel helped students understand how these systems are implemented and maintained in real-world railway operations. Furthermore, the industrial visit enabled the students to interact with industry professionals, clarify their technical doubts, and develop a better understanding of the practical challenges involved in railway signalling and communication. Overall, the visit was an informative and enriching learning experience that bridged the gap between theoretical concepts





Visuals of Student participants during Kavach Unit Demonstration

taught in the classroom and their practical implementation in the railway industry. It also enhanced the students' technical awareness, encouraged their interest in emerging technologies, and provided valuable exposure to the professional practices and safety standards followed in modern railway engineering.



Visuals of student participants in Relay Interlocking Labs

The demonstration of Kavach equipment and its associated modules offered valuable insights into India's indigenous train protection system. Students gained an understanding of its basic architecture, working principles, and role in preventing train collisions and improving the overall safety of railway operations.

Students observed the relay-based circuits and understood how different relays work together to implement the required interlocking conditions. They also learned how the system provides fail-safe operation for railway signaling.

Students learned that electronic interlocking requires less space and wiring compared with conventional relay interlocking and provides better monitoring, diagnostics and flexibility.

Students examined relay-based signalling circuits and learned how multiple relays coordinate to establish interlocking conditions and ensure safe train movements. They also understood the importance of fail-safe operation, which helps maintain railway signalling safety even when faults or equipment failures occur.

The students were further introduced to electronic interlocking systems and their advantages over conventional relay-based systems. They learned that electronic interlocking requires comparatively less installation space and wiring while offering improved system monitoring, fault diagnosis, and operational flexibility.



Group Photo

Objectives of the Visit

1. To familiarize students with the fundamental principles and operation of railway signalling systems.
2. To provide an understanding of the Indoor Signalling Lab (IDS) and its significance in railway signalling operations.
3. To study the working principles of relay interlocking and electronic interlocking systems and understand their role in ensuring safe train movements.
4. To introduce students to the indigenous Kavach train protection system, its major components, and its contribution to railway safety.

Sections Visited

During the industrial visit to the Indian Railways Institute of Signal Engineering and Telecommunications (IRISET), students were introduced to the following laboratories and technical sections:

1. Indoor Signalling Lab (IDS): Students learned about signalling equipment and the basic principles involved in controlling and monitoring railway signalling operations.
2. Interlocking Systems: Students explored relay-based and electronic interlocking systems, focusing on their working principles, safety mechanisms, and role in preventing conflicting train movements.
3. Kavach Units and Modules: Students gained insights into the components, architecture, and operational principles of the Kavach train protection system and its importance in enhancing railway safety.

Outcome

Before the industrial visit, individual reports were collected from the students to assess their existing knowledge, expectations, and interests regarding railway signalling and safety technologies. Following the visit, feedback was obtained from all participating students through a Google Form. The responses were consolidated into a feedback report to evaluate the effectiveness of the visit and its contribution to student learning.

The industrial visit provided students with valuable practical exposure to indoor signalling systems, relay and electronic interlocking technologies, and Kavach-based train protection mechanisms. It helped them connect theoretical concepts from Electronics and Communication Engineering with their practical implementation in railway signalling, communication, and safety-critical applications. The visit also enhanced students' technical awareness, understanding of industrial practices, and appreciation of the role of advanced technologies in ensuring safe and efficient railway operations. Furthermore, the experience encouraged students to explore career opportunities in core engineering sectors and emerging technological fields.

