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(UGC AUTONOMOUS INSTITUTION)

School of Engineering

Department of Electronics and Communication Engineering

Date: 13th September, 2025

A Report on Industrial Visit

to

India Meteorological Department (IMD) – Begumpet, Hyderabad

Program Particulars:

Date Organized	Venue/Organization	Attendees
12th September 2025 (Friday)	Indian Meteorological Department (IMD), Begumpet, Hyderabad	B. Tech. ECE II yr I sem. Section B (54 Students) and 2 faculty members

Purpose of Visit:

The Department of Electronics and Communication Engineering, in association with the Industry Institute Interaction Cell (IIIC), the Institute of Electrical and Electronics Engineers (IETE) Student Forum (ISF), and e-SPARK organized an industrial visit for the II B.Tech ECE students. The visit was conducted on 12th September 2025 at the Indian Meteorological Department (IMD), located in Begumpet, Hyderabad. The students were accompanied by Dr. V. Sravan Kumar, Associate Professor, and Ms. G. Soumya, Assistant Professor from the ECE department. This visit was aimed at providing students with exposure to practical industry operations related to their field.

The Indian Meteorological Department (IMD), which functions under the Ministry of Earth Sciences, Government of India, is the central body responsible for meteorology, weather forecasting, and seismology in the country. The purpose of the visit was to help students understand the processes involved in weather monitoring and forecasting. They also learned about the advanced technological infrastructure and systems used by the IMD in delivering meteorological services. The experience gave students valuable insights into how electronics and communication technologies are applied in real-world meteorological operations.

Objectives of the Visit:

1. To understand the working principles of meteorological instruments and observation techniques.
2. To gain knowledge of weather forecasting methods using radar, satellite, and numerical models.
3. To explore the role of IMD in disaster management, aviation, agriculture, and public safety.

Sections Visited:

1. Radiosonde-Radiowind (RS/RW) Section:

The Upper Air Observatory, also referred to as the Radiosonde Section of the Indian Meteorological Department, is tasked with monitoring atmospheric conditions at higher altitudes, typically up to 20 to 30 kilometers above the Earth's surface. This is done using radiosonde balloons—large, helium or hydrogen-filled balloons carrying lightweight instruments. As these balloons ascend, they collect data on temperature, pressure, humidity, and wind speed and direction at various heights. The information is then transmitted back to the ground via radio signals.

An Official explaining the Surface Observatory System

2. Radar and Communication Section:

During the visit, the functioning of the Doppler Weather Radar located in Hyderabad was demonstrated to the students. The staff detailed how the radar system detects the intensity of rainfall, monitors thunderstorm activity, and tracks cyclones. The communication team also explained the rapid dissemination of weather warnings via media outlets, SMS alerts, and digital platforms. The Doppler Weather Radar utilizes the Doppler effect to identify both the presence and movement of weather phenomena.

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A Glimpse of IMD Visit

Doppler radars provide additional information on wind speed and direction within storms. This capability makes them invaluable for real-time monitoring of cyclones, thunderstorms, heavy rain, hailstorms, and squalls. The Indian Meteorological Department has deployed a comprehensive network of Doppler Weather Radars across key coastal and inland cities, including Chennai, Kolkata, Mumbai, and Delhi. Data from these radars plays a vital role in generating nowcasts (forecasts for 0 to 3 hours) and issuing short-term warnings that support effective disaster preparedness and timely responses

3. Surface Observatory Section:

During the visit, students watched how meteorologists develop short-range and medium-range weather forecasts by utilizing numerical weather prediction (NWP) models in combination with satellite data. The session also introduced earthquake monitoring and explained its role in disaster alert systems. The forecasting team collects information from multiple sources, such as surface observatories, Doppler radars, satellites, and upper-air balloons. This data is then processed through advanced numerical weather prediction models that replicate atmospheric dynamics. Based on these model outputs, meteorologists generate forecasts that range from immediate nowcasts to long-term seasonal outlooks.

Outcomes of the Visit:

At the end of the visit, the students have learnt

1. The basic functioning of meteorological instruments and the techniques used for weather observation.
2. The weather forecasting methods using radar, satellite, and numerical models.
3. The role of IMD in disaster management, aviation, agriculture, and public safety.

A individual feedback was taken from every student attended the visit, through a Google Form link and a consolidated feedback report was prepared to make the outcome of the industrial visit purposeful.

In-Charge **HoD-ECE**

Koustubh Kulkarni **Dr. B.Ravi**

Assistant Professor *Associate Professor*