

Industrial Visit Report

Institution: U R Rao Satellite Centre

Date of Visit: 12/06/2025

Department: Applied Sciences

Duration: 09:30 AM - 04:30 PM

On 12th June 2025, the First-year B.E students from The Department of Applied Sciences had the remarkable opportunity to visit the U R Rao Satellite Centre (URSC), ISRO's premier satellite development hub is in Bengaluru. The experience was both enlightening and deeply inspiring, offering us a profound insight into India's extraordinary achievements in space science and technology.

The session commenced with an engaging presentation by a senior ISRO scientist. She traced India's space journey from its humble origins to its current stature as a global leader in space exploration. Highlighted missions included Chandrayaan 1, 2, and 3; Mangalyaan (Mars Orbiter Mission); Aditya-L1 (India's solar mission); and the upcoming Gaganyaan mission, which aims to send Indian astronauts into space. The presentation instilled a strong sense of pride as we witnessed how India has steadily risen to become one of the world's top space agencies. As the session progressed, we explored detailed satellite models and witnessed live demonstrations showcasing the processes involved in satellite design, assembly, and testing. One of the standout exhibits was the Remote Sensing Satellite, vital for applications such as weather forecasting, agricultural planning, and disaster management. A

particularly captivating part of the session was the explanation of the Gravity Well concept. It was presented in a clear and accessible manner, helping us understand the gravitational forces acting on satellites in the orbits.

During our visit to the U R Rao Satellite Centre (URSC) on 12th June 2025, we encountered a wealth of knowledge and inspiration that deepened our appreciation for India's space achievements. One of the highlights was discovering the **Augmented Reality Sandbox**—a cutting-edge interactive tool that vividly demonstrated how remote sensing works. It allowed us to engage with terrain mapping and satellite imagery in a hands-on, intuitive way, making

complex concepts easier to grasp.

Among the many fascinating topics covered, we learned about ISRO's key launch vehicles. The **PSLV (Polar Satellite Launch Vehicle)**, often referred to as the "Workhorse of ISRO," has been instrumental in launching numerous satellites into orbit.

We also explored the **GSLV Mk III**, the launch vehicle designated for the upcoming **Gaganyaan** human spaceflight mission. Additionally, we were introduced to the **HRLV** (**Human-Rated Launch Vehicle**), designed to safely carry astronauts into space.

The tour also shed light on some of ISRO's legendary satellites such as

- APPLE (Ariane Passenger Payload Experiment) India's first experimental communication satellite.
- ARYABHATA India's first satellite, launched in 1975, weighing around 360 kg.
- GSAT-9 (South Asian Satellite) A symbol of regional cooperation in space technology.
- GEOSAT Dubbed the "Jewel" of India's satellite program for its strategic importance.
- IRNSS-1H / NVS-01 Part of the NavIC system, providing precise navigation services across India and nearby regions.

We also gained insight into ISRO's growing international collaborations, including partnerships with countries like **Oman (MUSCAT)**. The discussion also touched on the evolving global space economy, with private players like **SpaceX** reshaping the landscape through innovative technologies and frequent launches.

One of the most valuable takeaways from the visit was understanding the **collaborative nature of satellite missions**. The scientist explained how various teams—handling electronics, thermal systems, mechanical structures, and communication systems—work in unison to design, build, and launch satellites. This multidisciplinary synergy is crucial to the success of every mission.

Overall, the visit to URSC was far more than an educational tour—it was a transformative experience. It not only enriched us with technical knowledge but also ignited a sense of purpose and motivation. Seeing ISRO's work up close and interacting with the brilliant minds behind these missions made us realize the immense potential we hold as future engineers. This visit was a glimpse into the future we aspire to shape.

