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Industrial Visit to Regional Remote Sensing Centre (RRSC)

The department of **Aerospace Engineering** organised an **Industrial Visit** titled **Regional Remote Sensing Centre (RRSC)** on **date in 06-11-2025** at **10:00 Am-04:00 PM**, in **ISRO, Bangalore**. The visit was designed to provide students with practical exposure to the applications of remote sensing, satellite data analysis, and geospatial technologies in aerospace and space research.

A total of 63 students from the V and VII semesters of Aerospace Engineering (26 from the V semester and 37 from the VII semester) participated in the visit, accompanied by faculty members Dr Prabhu S and Mr Shantanu S. G. from the department. The visit commenced in the forenoon session, during which officials from RRSC–ISRO briefed the students about the centre's mission, functions, and ongoing research initiatives.

Students were introduced to the fundamentals of satellite data acquisition, image processing, and GIS applications. They also gained insights into how remote sensing and spatial information systems are utilised for environmental monitoring, resource mapping, and disaster management. Interactive sessions with scientists and technical personnel helped students understand the interdisciplinary nature of remote sensing and its relevance to aerospace applications.

The visit enabled students to correlate their classroom learning with real-world applications in space technology, data interpretation, and research methodologies. It also inspired them to explore career paths in remote sensing, GIS, and satellite-based system development.

Objectives of the Event

The industrial visit aimed to enhance the students' understanding of remote sensing, satellite technology, and their applications in aerospace and Earth observation. The sessions were organised to bridge the gap between classroom learning and real-world applications of space technology.

Resource Persons

Three sessions were conducted by eminent scientists from the Indian Space Research Organisation (ISRO):

Dr Shyama Narendranath, Scientist, URSC, ISRO

Topic: Introduction to Lunar and Planetary Remote Sensing

Overview: Dr Shyama highlighted the scientific exploration missions of ISRO, emphasising lunar surface mapping and data interpretation from Chandrayaan C1 and C2 missions.

Dr Vinod P. V., Scientist, URSC, ISRO

Topic: AI and ML in Remote Sensing Applications

Overview: He discussed the applications of Artificial Intelligence and Machine Learning in remote sensing, explaining how these technologies enhance image analysis, pattern recognition, and data interpretation for efficient space-based observations.

Dr Rama Subramoniam, Scientist, RRSC, ISRO

Topic: Applications of Remote Sensing and GIS in Aerospace and Environmental Studies

Overview: His session focused on real-time applications of satellite data in mapping, environmental monitoring, and aerospace research.

Event Overview

Introduction to Remote Sensing and Space Applications: With the continuous evolution of satellite and space-based technologies, remote sensing has become an indispensable tool in aerospace, environmental, and geospatial research. It involves the acquisition and interpretation of data from satellites and airborne sensors to monitor and analyse various features of the Earth's surface. These technologies play a critical role in applications such as climate studies, urban planning, resource mapping, environmental management, and disaster response.

The Regional Remote Sensing Centre (RRSC) under the Indian Space Research Organisation (ISRO) serves as one of the country's leading hubs for remote sensing and geoinformatics activities. The centre focuses on satellite data processing, geospatial information system (GIS) development, and thematic mapping, supporting national-

level initiatives in sustainable development and space research.

The industrial visit to RRS-ISRO, Bangalore, provided students of the Department of Aerospace Engineering with an opportunity to understand the practical aspects of remote sensing operations and the significance of satellite-based observation systems in modern aerospace applications. The visit also emphasised the interdisciplinary connections between aerospace engineering, data science, and environmental technology-equipping students with insights into how spatial data supports both scientific research and societal development.

Figure 1: The fifth and seventh-semester Aerospace Engineering students boarded the bus at the MVJCE entrance.

Key Areas of Learning During the Industrial Visit:

Introduction to Remote Sensing and Satellite Technology: Students were introduced to the fundamental concepts of remote sensing, satellite data acquisition, and image interpretation. Experts explained how satellite sensors capture electromagnetic radiation reflected from the Earth's surface to generate valuable data for various scientific and commercial purposes.

Overview of RRSC-ISRO Operations: Officials provided an overview of the Regional Remote Sensing Centre's core functions, including data processing, geospatial map-

Figure 2: A brief introduction to ISRO's critical missions was delivered by Dr Shyama Narendranath, Senior Scientist, URSC, ISRO, Bengaluru.

Figure 3: A session on Remote Sensing delivered by Dr Rama Subramoniam, Scientist, RRSC, ISRO Bangalore, to the students.

ping, and satellite-based applications for national projects. Students learned about the workflow involved in transforming raw satellite data into meaningful geospatial information.

Satellite Data Processing and GIS Applications: The session included demonstrations of data handling, image enhancement, and thematic map generation. Students observed how Geographic Information Systems (GIS) integrate remote sensing data for applications in environmental monitoring, agriculture, and resource management.

Applications of Remote Sensing Across Domains: The resource persons elaborated on the use of satellite data in areas such as urban planning, water resource assessment, forest mapping, and disaster management. These case studies helped students connect remote sensing principles to real-world challenges.

Interaction with Scientists and Technical Experts: During the interactive session, students posed questions related to ISRO's ongoing missions, remote sensing satellites, and the scope for aerospace engineers in space research. The discussions inspired students to consider future career opportunities in space applications and data analytics.

Figure 4: Students during their visit to the RRSC Museum, ISRO, Bengaluru, along with the faculty members

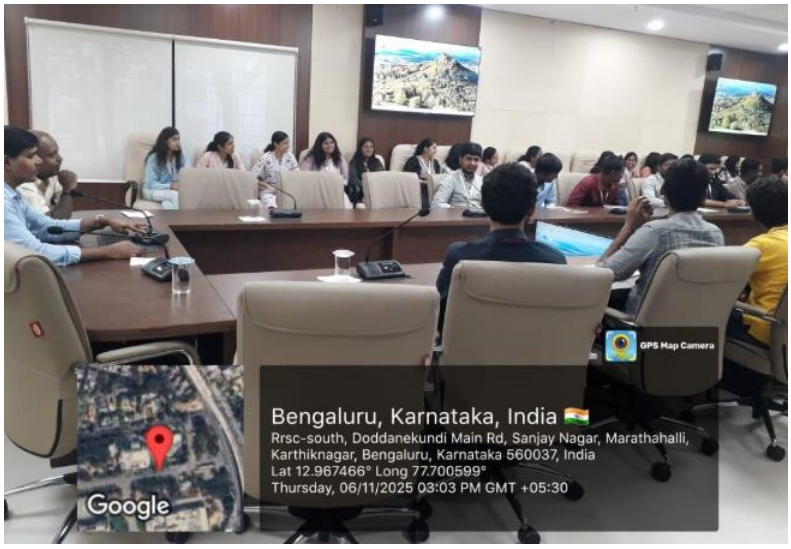

Figure 5: An interactive session on remote sensing between ISRO scientists and students.

Figure 6: A group photo with the scientists taken at the conclusion of the industrial visit.

Key Outcomes

The industrial visit to RRSC-ISRO, Bangalore, significantly enhanced the students' understanding of remote sensing and space application technologies. It provided them with direct exposure to the working environment of one of India's premier space research organisations and helped bridge the gap between academic learning and practical implementation.

Gained practical insight into satellite data acquisition, processing, and interpretation techniques.

Understood the interdisciplinary role of remote sensing and GIS in addressing real-world challenges such as environmental monitoring, resource management, and disaster mitigation.

Observed the workflow involved in transforming raw satellite imagery into meaningful geospatial information products.

Became aware of emerging career opportunities in remote sensing, space applications, and data analytics.

Conclusions

The industrial visit to Regional Remote Sensing Centre (RRSC) - ISRO, Bangalore, proved to be a highly beneficial learning experience for the students of the Department of Aerospace Engineering. It provided valuable exposure to the technological advancements and research initiatives undertaken by ISRO in the field of remote sensing, satellite data analysis, and geospatial applications. The visit effectively linked classroom learning with real-world practices, fostering a deeper understanding of space-based observation systems and their applications in national development.

The Department of Aerospace Engineering extends its sincere gratitude to the officials and scientists of RRSC, ISRO for their informative presentations, guidance, and hospitality throughout the visit. The department also acknowledges the manage-

ment of MVJ College of Engineering for their continuous encouragement and support in organising such industrial visits, which play a vital role in enhancing the professional competence and industry readiness of students.

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