ANNAMACHARYA UNIVERSITY

EXCELLANCE IN EDUCATION; SERVICE TO SOCIETY
(ESTD UNDER AP PRIVATE UNIVERSITIES (ESTABLISHMENT AND REGULATION) ACT, 2016)
RAJAMPET, Annamayya District, AP – 516126, INDIA

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

INDUSTRIAL VISIT REPORT

Visit to Vikram Sarabhai Space Centre (VSSC), Thumba, Thiruvananthapuram, Kerala

Institution	Annamacharya University, Rajampet, Annamayya District, Andhra Pradesh - 516126
Department	Department of Computer Science & Engineering
Programme	IV B.Tech. CSE Industrial Visit
Place of Visit	Vikram Sarabhai Space Centre (VSSC), Thumba, Thiruvananthapuram, Kerala
Visit Schedule	Departure from college on 01-08-2026 at 03:00 PM; VSSC visit on 03-04-2026; return to campus on 05-08-2026 at 02:00 AM
Faculty and Students	172 Students and 9 Faculty members

1. Introduction

The Department of Computer Science & Engineering, Annamacharya University, organized an industrial visit to Vikram Sarabhai Space Centre (VSSC), Thumba, Thiruvananthapuram, Kerala, for IV B.Tech. CSE students to provide academic and industrial exposure to one of India's premier space research centres. The visit was intended to help students observe the working environment of a high-technology institution and understand the practical relevance of engineering concepts in real applications.

2. Objectives of the Visit

- To understand the role of Computer Science and software engineering in space technology and launch-vehicle systems.
- To gain exposure to flight software, programming languages, compilers and software tools developed for critical space applications..
- To understand how data processing, telemetry, communication and monitoring systems are used during space missions..
- To inspire students to apply their programming, problem-solving and innovation skills to real-world challenges in space science and technology. ISRO specifically recognizes Computer Science as an integral domain of space technology.

3. Tour Schedule Summary

According to the submitted route plan, the tour commenced from the college campus on 01-08-2026 at 03:00 PM. The travel route included Coimbatore, Thrissur, Kochi, Thiruvananthapuram, Kovalam, Suchindram, Kanyakumari, and Madurai, with the industrial visit to VSSC scheduled on 03-08-2026. The team returned to the college campus on 05-08-2026 at 02:00 PM after completing the educational tour.



Rocket Models and Campus View

During our industrial visit to VSSC, all the students were given an opportunity to explore various advanced technologies related to space research and satellite launch systems. The visit was highly informative and provided practical exposure beyond classroom learning.

1. Visit to Rocket Engine Sections

Students observed different types of rocket engines used in launch vehicles. These included:

- Solid propulsion systems
- Liquid propulsion engines
- Cryogenic engines

We learned how these engines generate thrust and how different stages of rockets work together to launch satellites into space



Space Shuttle Model Display

2. Exposure to Radar Systems

As part of the industrial visit, the Department of Computer Science and Engineering students were introduced to radar and tracking technologies used in space missions. The demonstration provided valuable insight into how computer-based systems process and analyze real-time information obtained from radar systems. These systems are used for:

- ❖ Tracking the position and velocity of launch vehicles
- ❖ Monitoring the flight trajectory in real time
- ❖ Supporting communication and mission-control operations
- ❖ Enhancing the safety, accuracy, and reliability of launches



VSSC Entrance Welcome Board

3. Documentation on Evolution of VSSC

The Department of Computer Science and Engineering students attended a detailed documentation and presentation session on the evolution of Vikram Sarabhai Space Centre (VSSC). The session highlighted the remarkable journey of VSSC from its early experimental activities to its present role in advanced space-technology development.

- The key aspects covered during the session were:
- The vision of Dr. Vikram Sarabhai and the establishment of India's early space research activities.
- The initial use of sounding rockets for scientific and atmospheric studies.
- The development of indigenous launch vehicles, including SLV, PSLV, and GSLV.
- The importance of automation, real-time data processing, communication, and control systems in modern space missions.

Usefulness of the Visit to Students

This visit was highly beneficial for all students in the following ways:

- **Practical Learning**

Students gained practical exposure to real-time computing, embedded systems, radar technology, communication systems, data processing, and software applications used in space missions.

- **Application of CSE Concepts**

The visit helped students relate academic concepts such as programming, computer networks, databases, operating systems, artificial intelligence, signal processing, and embedded systems to practical aerospace applications.

- **Exposure to Advanced Technology**

Students observed the use of avionics, telemetry, automation, tracking systems, sensors, control systems, and computer-based monitoring technologies in launch-vehicle operations.

- **Understanding of Mission-Critical Systems**

The visit demonstrated the importance of real-time processing, accuracy, reliability, fault tolerance, and system security in software and computing systems used for space missions.

- **Knowledge of Launch Vehicles**

Students were introduced to major launch vehicles such as PSLV and GSLV and learned how computer-based systems support navigation, guidance, control, communication, and monitoring throughout a mission.

- **Career Awareness**

The visit provided students with awareness of career opportunities in software engineering, embedded systems, AI and ML, data science, cybersecurity, robotics, automation, and aerospace computing.

4. Visit Highlights

The visit to VSSC provided CSE students with an opportunity to understand how computer science and information technology are integrated into space research and launch vehicle operations. The visit helped students connect concepts such as programming, data processing, communication networks, simulation, automation, and real-time systems with practical applications in the aerospace sector.





Students at VSSC Entrance (Canal Gate)

.

1. Application of Computer Technology in Space Systems
Students learned how computer systems are used in different stages of a space mission, including vehicle monitoring, data processing, simulation, communication, and mission control. This demonstrated the importance of CSE in modern space technology.

2. Real-Time Data Processing
Students gained an understanding of how large amounts of data generated during a launch are collected, processed, and analyzed in real time. They learned the importance of fast and reliable computing systems for monitoring vehicle performance.

3. Telemetry and Communication
The visit provided insights into how telemetry data is transmitted between launch vehicles and ground stations. Students related this process to computer networks, communication protocols, data transmission, and real-time information systems.

4. Simulation and Software Applications
Students were introduced to the use of computer-based simulation for analyzing and predicting launch vehicle performance. They understood how software models can be used to test different conditions before conducting an actual launch.

5. Tracking and Navigation Systems
Students learned how computer-controlled systems support the tracking of launch vehicles by processing information related to position, altitude, velocity, and trajectory. This helped them understand the practical application of algorithms, sensors, and data processing.

6. Automation and Control Systems
The visit demonstrated the role of automated systems in monitoring and controlling complex space missions. Students gained an understanding of how software and control mechanisms work together to improve accuracy, reliability, and safety.

7. Data Analysis and Monitoring
Students observed how mission-related information is continuously monitored and analyzed by technical teams. This provided an opportunity to relate classroom concepts such as databases, data visualization, analytical techniques, and computational methods to real-world applications.



Group Photo at VSSC with faculty

5. Learning Outcomes

The visit enhanced students' understanding of launch vehicle systems, interdisciplinary engineering integration, research culture, and the importance of precision in scientific institutions. For Electronics and Communication Engineering students, the experience was particularly useful in relating communication systems, embedded systems, instrumentation, control, and reliability engineering to aerospace applications.

6. Travel and Participation Details

Travel Agency	Sri Bhagavan Tours and Travels, Rly Kodur, Tirupathi (Dt.), A.P.
Travel Agent	E. Bhakthavasalam, Mobile: 9440941988
Transport Arrangement	4 non-A/C buses, 45 seating capacity per bus, 2 drivers per bus
Student Strength	172 students
Faculty Strength	9 Faculty members

7. Visit Schedule/Route Map

Date	Time	From	To	Activity	Stay/Halt
01-08-2026	02:00 PM	College Campus	—	Departure	—
01-08-2026	Night	—	—	Journey	Bus
02-08-2026	08:00 AM	—	Attirapalli	Arrival & Fresh Up	---
02-083-2026	10:00 AM	---	Attirapalli	Breakfast & Visit	---
02-08-2026	02:00 PM	—	Attirapalli	Lunch	
02-08-2026	03:00 PM	Attirapalli	Kochi	Visit	---
02-08-2026	05:00 PM	Kochi		Departure	Bus
03-08-2026	04:00 AM	----	Thiruvananthapuram	Arrival	—
03-08-2026	06:30 PM	—	Temple	Visit	---
03-08-2026	08:00 AM		—	Breakfast	—
03-08-2026	10:00 AM		VSSC (10:00AM)	Reporting	—
03-08-2026	10:30AM	VSSC	—	Industrial Visit	—
03-03-2026	01:30 PM	VSSC	—	Lunch & Departure	—
03-03-2026	05:00 PM	—	Kovalam		
03-03-2026	03:00 PM	Kovalam	—	Departure	—
03-03-2026	09:00 PM	—	Kanyakumari	Arrival	Night Stay (Hotel Triveni)
04-03-2026	09:00 AM		Vivekananda Rock	----	—
04-03-2026	01:00 PM		—	Lunch & Departure	Halt
04-03-2026	08:00 PM	—	Madurai	Visit Temple & Dinner	Halt
04-03-2026	10:00 PM	Madurai	—	Departure	Bus
05-03-2026	02:00 PM	—	College Campus	Arrival	Tour Ends

8 . Conclusion

The industrial visit to Vikram Sarabhai Space Centre (VSSC) organized by the Department of Computer Science and Engineering, Annamacharya University, was an enriching and insightful experience for the students. The visit helped students understand the practical applications of computer science, software engineering, embedded systems, automation, data processing, and advanced computing technologies in the space sector. It provided valuable exposure to the research, development, testing, and implementation of sophisticated technologies used in space missions. The interaction with the scientific and technical environment motivated students to enhance their technical skills, innovation, problem-solving abilities, and interest in research. Overall, the visit successfully connected CSE classroom concepts with real-world applications and encouraged students to explore future opportunities in emerging technologies and the space industry.

9.Submission Signatures

Prepared By	Faculty Coordinator	Head of Department
Dr.V.Sathyendra Kumar	Dr.V.Sathyendra Kumar	Dr.M.Subbarao