ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

(AUTONOMOUS)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

INDUSTRIAL VISIT REPORT

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

Institution	Annamacharya Institute of Technology and Sciences, Rajampet, YSR Kadapa District, Andhra Pradesh (Autonomous)
Department	Department of Electrical and Electronics Engineering
Programme	IV B.Tech. EEE Industrial Visit & Educational Tour
Place of Visit	Vikram Sarabhai Space Centre (VSSC), Thumba, Thiruvananthapuram, Kerala
Visit Schedule	Departure from college on 11-08-2026 at 04:00 PM; VSSC visit on 13-08-2026; tour concluded with return journey to Rajampet from 14-08-2026
Faculty and Students	113 Students and 7 Faculty members

1. Introduction

The Department of Electrical and Electronics Engineering, Annamacharya Institute of Technology and Sciences, Rajampet, organized an Industrial Visit and Educational Tour for IV B.Tech. EEE students to Vikram Sarabhai Space Centre (VSSC), Thumba, Thiruvananthapuram, Kerala, one of India's premier space research centres. The visit was intended to give students academic and industrial exposure, allowing them to observe the working environment of a high-technology institution and understand the practical relevance of electrical and electronics engineering concepts, such as power systems, control systems, and communication systems, in real-world aerospace applications.

2. Objectives of the Visit

- To enhance practical engineering knowledge by bridging the gap between classroom learning and industrial applications through exposure to advanced engineering technologies, industrial safety, automation, quality control, and research activities at VSSC.

- To promote professional and technical skills such as teamwork, leadership, communication, problem-solving, analytical thinking, discipline, punctuality, and professional ethics through collaborative learning and industrial interaction.
- To encourage innovation and career development by motivating students to interact with industry professionals and scientists, fostering interest in higher education, research, innovation, entrepreneurship, and emerging engineering technologies.
- To relate theoretical EEE subjects such as Power Systems, Control Systems, Power Electronics, and Electromagnetic Field Theory to practical systems used in advanced aerospace environments.
- To foster social, cultural, and environmental awareness by encouraging appreciation of India's cultural heritage, local traditions, responsible tourism, and sustainable practices while exploring Kerala and Tamil Nadu.
- To provide recreation and holistic development through sightseeing, boating, and cultural experiences, promoting mental well-being, relaxation, and overall personality development alongside academic learning.

3. Tour Schedule Summary

The tour commenced from Annamacharya Institute of Technology and Sciences, Rajampet, on 11-08-2026 (Tuesday) at 04:00 PM by tourist bus. The travel route covered Athirappilly, Kochi, Thiruvananthapuram, Kovalam, Azhimala, Kanyakumari, and Madurai, with the industrial visit to VSSC scheduled on 13-08-2026 (Thursday). The total distance covered from Rajampet to Thiruvananthapuram was approximately 919 km. Along with the industrial visit, the tour included sightseeing at Athirappilly Waterfalls, boating at Kochi, the Padmanabha Swami Temple, Kovalam Beach, Azhimala Siva Temple, the Glass Bridge at Kanyakumari, and the Meenakshi Amman Temple at Madurai, before the team began its return journey to Rajampet.



Students and Faculty with Launch Vehicle Models at VSSC

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

1. Power Systems and Energy Storage in Spacecraft

Students were introduced to the design and operation of power generation, storage, and distribution systems used in spacecraft, including solar panels and batteries. The session covered how power systems are engineered for high reliability, redundancy, and fault-tolerant operation to withstand the extreme conditions of space missions.

2. Control, Instrumentation and Communication Systems

Students visited sections showcasing control systems, sensors, and embedded systems used in rocket guidance, navigation, and control. Exposure to communication technologies used for telemetry, tracking,

and command in space missions helped students understand how real-time data and instrumentation are used to monitor and control launch vehicles.



Reusable Launch Vehicle (RLV) Model Display at VSSC

3. Documentation on Evolution of VSSC

A detailed presentation and documentation session was conducted about the history and growth of VSSC, covering its establishment under the leadership of Vikram Sarabhai, the initial sounding rocket experiments, the development of launch vehicles such as SLV, PSLV, and GSLV, and the expansion into advanced space research and indigenous technology development. This session gave students a clear understanding of how India progressed from basic experiments to becoming a major space power.

Usefulness of the Visit to Students

- **Practical Knowledge:** Students gained real-time understanding of concepts such as power systems, control systems, instrumentation, and satellite launching, which are otherwise studied theoretically.

- **Industry Exposure:** It helped students understand how electrical and electronics engineering concepts are applied in real-world space research organizations.
- **Career Inspiration:** The visit motivated students to pursue careers in organizations like the Indian Space Research Organisation (ISRO).
- **Technical Awareness:** Students became aware of advanced instrumentation, power electronics, and communication technologies used in aerospace systems.
- **Research Orientation:** The visit encouraged interest in innovation, research, and development in the field of electrical, electronics, and aerospace engineering.
- **Introduction to Launch Vehicle Systems:** Students were given an overview of different launch vehicles developed at VSSC, such as PSLV and GSLV, including their multi-stage structure, power distribution, and mission objectives.
- **High-Reliability Engineering:** The importance of reliability, redundancy, and fault-tolerant design in critical aerospace electrical systems was explained in detail.



Group Photo with Faculty near Launch Vehicle Models

4. Visit Highlights

During the visit, students observed launch vehicle models, a reusable launch vehicle display, institutional campus features, and formal entry areas associated with the VSSC campus. These observations provided practical insight into space science infrastructure and created a meaningful connection between classroom concepts and advanced electrical and electronics engineering systems.



Students at VSSC Entrance

- **Power Systems and Energy Storage:** Students observed how solar panels, batteries, and power distribution units are designed and integrated for reliable spacecraft operation.
- **Control Systems and Automation:** Demonstrations covered how control systems, sensors, and embedded systems are applied in rocket guidance, navigation, and stage separation.
- **Telemetry and Communication Systems:** Students learned how data from rockets is transmitted to ground stations in real-time for monitoring and control purposes.
- **Advanced Instrumentation:** Exposure to advanced measurement systems and testing equipment used in space research and development.

- **Simulation and Testing:** Exposure to simulation techniques and rigorous testing procedures, including vibration testing, thermal testing, and failure analysis, used to ensure reliability before launch.
- **Integration and Assembly Process:** The process of assembling different rocket stages and integrating electrical and electronic subsystems was explained, highlighting the precision and coordination required in space missions.
- **Historical Evolution and Achievements:** A detailed session covered the growth of VSSC from early sounding rockets to advanced launch vehicles, showcasing India's progress in space technology.
- **Interaction with Scientists/Engineers:** Students had the opportunity to interact with experts, ask questions, and gain insights into real-world challenges and innovations in space research.

5. Learning Outcomes

After the visit to Vikram Sarabhai Space Centre (VSSC), the students were able to:

- **Understand Space Technology Applications:** Gain knowledge about the role of electrical and electronics engineering in launch vehicles, satellites, and space missions.
- **Analyze Power Systems in Space Applications:** Understand the design and operation of power generation, storage (batteries/solar panels), and distribution systems used in spacecraft.
- **Explore Control Systems and Automation:** Learn the application of control systems, sensors, and embedded systems in rocket guidance, navigation, and control.
- **Understand Communication Systems:** Acquire insights into communication technologies used for telemetry, tracking, and command systems in space missions.
- **Learn About High-Reliability Systems:** Understand the importance of reliability, redundancy, and fault-tolerant design in critical aerospace electrical systems.
- **Exposure to Advanced Instrumentation:** Observe advanced measurement systems, testing equipment, and instrumentation used in space research and development.
- **Understand Safety and Quality Standards:** Gain awareness of strict safety protocols, quality assurance, and standard procedures followed in aerospace industries.

- **Bridge Theory and Practice:** Relate academic concepts (EMFT, Power Systems, Control Systems, Power Electronics) with real-time applications at VSSC.
- **Develop Professional and Ethical Responsibility:** Understand the importance of discipline, teamwork, and ethical responsibility in high-end engineering environments.
- **Enhance Career Awareness:** Get exposure to career opportunities, research domains, and higher education prospects in ISRO and the space technology sector.
- **Improve Observation and Technical Reporting Skills:** Develop the ability to observe industrial practices and document technical learnings effectively.
- **Understand Renewable Energy Usage in Space:** Learn the application of solar energy systems and energy efficiency techniques in space missions.

6. Travel and Participation Details

Travel Agency	Bhagwan Travels, Nellore, Andhra Pradesh
Bus Owner	E. Hari Swaroop, Mobile: 9885890370
Transport Arrangement	3 Non-A/C buses (Reg. Nos. AP16TH2266, AP04TX3466, AP16TH0777; seating capacity 45, 45 and 41 respectively), with 5 drivers
Student Strength	112 Students
Faculty Strength	7 Faculty members

Bus Driver Details

S.No.	Bus Reg. Number	Driver Name	Contact Number	Seating Capacity
1	AP 16 TH 2266	Subbramanyam	9346093662	45
2	AP 04 TX 3466	B. Vamsi	8341819980	45
3	AP 16 TH 0777	Praveen C	9989982570	41
4	(Additional Driver)	Dinesh	7330934194	--
5	(Additional Driver)	Jagadish	9182113255	--

7. Visit Schedule / Route Map

Date	Time	From	To	Activity	Stay/Halt
11-08-2026	4:00 PM	Annamacharya University, Rajampet	--	Departure	--
11-08-2026	4:00-8:00 PM	--	--	Journey by bus; Dinner en route	Bus
11-08-2026	8:00 PM onwards	--	--	Overnight journey	Bus
12-08-2026	6:00-8:00 AM	--	Athirappilly	Arrival, fresh up & breakfast	Halt

Date	Time	From	To	Activity	Stay/Halt
12-08-2026	8:00 AM-12:00 PM	Athirappilly	--	Visit Athirappilly Waterfalls	Halt
12-08-2026	12:00-1:00 PM	--	--	Lunch - Athirappilly	Halt
12-08-2026	1:30-5:00 PM	Athirappilly	Kochi	Journey to Kochi	--
12-08-2026	5:00-7:00 PM	--	Kochi	Boating and shopping	Halt
12-08-2026	7:30-8:30 PM	--	--	Dinner - Kochi	Halt
12-08-2026	8:30-11:00 PM	Kochi	Trivandrum	Journey to Trivandrum	--
12-08-2026	11:00 PM	--	Trivandrum	Check-in at Classic Highway Side Hotel	Night Stay
13-08-2026	3:00-7:00 AM	--	--	Padmanabha Swami Temple visit	--
13-08-2026	7:00-7:30 AM	--	--	Breakfast - Trivandrum	--
13-08-2026	7:30-8:30 AM	Trivandrum	VSSC	Journey to VSSC	--
13-08-2026	8:30 AM-12:00 PM	VSSC	--	Industrial Visit to VSSC	--
13-08-2026	12:30-1:30 PM	--	--	Lunch - Trivandrum	--
13-08-2026	1:30-2:30 PM	Trivandrum	Kovalam	Journey to Kovalam Beach	--

Date	Time	From	To	Activity	Stay/Halt
13-08-2026	3:30-4:30 PM	--	Kovalam	Beach visit	--
13-08-2026	4:30-5:30 PM	Kovalam	Azhimala	Journey & refreshments at Azhimala Siva Temple	--
13-08-2026	6:00-10:00 PM	Azhimala	Kanyakumari	Journey to Kanyakumari	--
13-08-2026	10:00 PM	--	Kanyakumari	Check-in at Triveni Hotel; Dinner	Night Stay
14-08-2026	6:00-7:00 AM	--	Kanyakumari	Sunrise view	--
14-08-2026	7:00-8:00 AM	--	--	Breakfast - Kanyakumari	--
14-08-2026	8:00-11:00 AM	--	Kanyakumari	Visit Glass Bridge	--
14-08-2026	12:00-1:00 PM	--	--	Lunch - Kanyakumari	--
14-08-2026	1:00-6:00 PM	Kanyakumari	Madurai	Journey to Madurai	--
14-08-2026	6:00-8:30 PM	--	Madurai	Meenakshi Amman Temple	--
14-08-2026	8:30 PM	--	--	Dinner	--
14-08-2026	9:30 PM	Madurai	Rajampet	Return journey to college campus	Tour Ends

8. Program Outcomes (PO) Mapping

The industrial visit to VSSC, ISRO, was mapped to the programme outcomes as follows:

Program Outcome (PO)	Mapping Level	Justification for Industrial Visit to VSSC, ISRO
PO1 - Engineering Knowledge	3 - High	Students observe the application of mathematics, science, and engineering principles in launch vehicle design, propulsion systems, and aerospace technologies.
PO2 - Problem Analysis	2 - Moderate	Understanding real-world engineering challenges such as reliability, thermal management, structural integrity, and mission requirements.
PO3 - Design/Development of Solutions	2 - Moderate	Exposure to the design and development of launch vehicles, subsystems, and engineering solutions for space missions.
PO4 - Investigation of Complex Problems	2 - Moderate	Learning about testing, simulation, validation, failure analysis, and experimental investigations carried out before launches.
PO5 - Modern Tool Usage	3 - High	Familiarization with advanced CAD/CAE tools, simulation platforms, control systems, testing facilities, and automation used in aerospace engineering.
PO6 - The Engineer and Society	2 - Moderate	Understanding how space technology contributes to communication, disaster management, weather forecasting, navigation, agriculture, and national development.
PO7 - Environment and Sustainability	2 - Moderate	Awareness of sustainable engineering practices, environmental safety, and efficient utilization of resources in space programmes.
PO8 - Ethics	2 - Moderate	Observing professional ethics, confidentiality, quality culture, safety standards, and responsibility in strategic national projects.

Program Outcome (PO)	Mapping Level	Justification for Industrial Visit to VSSC, ISRO
PO9 - Individual and Team Work	2 - Moderate	Understanding interdisciplinary teamwork among scientists and engineers from multiple domains working on integrated projects.
PO10 - Communication	2 - Moderate	Interaction with scientists and technical experts enhances professional communication and technical presentation skills.
PO11 - Project Management and Finance	1 - Low	Exposure to planning, scheduling, resource utilization, risk management, and execution of large-scale engineering projects.
PO12 - Life-long Learning	3 - High	Inspires students to pursue higher education, research, innovation, and continuous learning in advanced engineering and space technologies.

9. Sustainable Development Goals (SDG) Mapping

The industrial visit also aligned with the following United Nations Sustainable Development Goals:

SDG	Title	Contribution of the Industrial Visit
SDG 4	Quality Education	Provides experiential learning, industry exposure, and encourages research and innovation.
SDG 9	Industry, Innovation and Infrastructure	Demonstrates advanced technologies, aerospace innovation, and national infrastructure development.
SDG 11	Sustainable Cities and Communities	Highlights the role of satellites in urban planning, navigation, disaster management, and public safety.
SDG 12	Responsible Consumption and Production	Creates awareness of efficient resource utilization, quality systems, and sustainable engineering practices.
SDG 13	Climate Action	Illustrates the use of remote sensing and Earth observation satellites for climate monitoring and disaster prediction.

SDG	Title	Contribution of the Industrial Visit
SDG 16	Peace, Justice and Strong Institutions	Reinforces ethics, transparency, national responsibility, and quality culture in strategic organizations.
SDG 17	Partnerships for the Goals	Encourages collaboration between academia, industry, and national research organizations for technological advancement.

10. Conclusion

The industrial visit to Vikram Sarabhai Space Centre was highly informative and academically enriching. It provided IV B.Tech. EEE students of Annamacharya Institute of Technology and Sciences with direct exposure to the environment of a nationally important research institution and strengthened their understanding of the practical relevance of electrical and electronics engineering education. The visit also encouraged professional motivation, teamwork, and interest in advanced technological careers, while the accompanying educational tour fostered cultural awareness, recreation, and holistic personality development among the students.

11. Submission Signatures

Prepared By	Faculty Coordinator	Head of Department
	Mr. R. Madhan Mohan	Dr. S. Sarada