Industrial Visit Report

Department of Electronics and Communication Engineering

(Advanced Communication Technology)

Akhil Bhartiya Maratha Shikshan Parishad's

Anantrao Pawar College of Engineering & Research Parvati , Pune

Visit to: *IIT Bombay & Semix – A Semiconductor Revolution*

Date: 25th – 26th September 2025

1. Acknowledgement

We are extremely thankful to **ABMSP's Anantrao Pawar College of Engineering and Research, Pune**, for providing us the opportunity to visit two premier institutions — **IIT Bombay** and **Semix – A Semiconductor Revolution** — as part of our academic curriculum.

We express our sincere gratitude to our **Principal, Head of Department (ECE[ACT])**, and all our **faculty coordinators** for organizing this educational and industrial visit. Their valuable guidance and encouragement made the entire experience meaningful and productive.

We also convey our special thanks to the **faculty members and research staff of IIT Bombay** and the **engineers and managers at Semix** for their time, effort, and hospitality. Their expert sessions and demonstrations provided us with deeper insights into the field of **nanoelectronics and semiconductor technologies**.

Finally, we extend our appreciation to all our classmates for their active participation and teamwork, which made the visit both enjoyable and educational.

2. Introduction

Industrial visits are a crucial part of engineering education as they allow students to connect theoretical concepts with real-world practices. This visit to **IIT Bombay** and **Semix** was organized for the **Third-Year Electronics and Communication Engineering** students of **ABMSP's APCOER** on **25th and 26th September 2025**.

The objective was to provide students with exposure to **nano materials used in semiconductor manufacturing**, understand **fabrication techniques**, and gain knowledge about the **applications of nanoelectronics** in modern electronic systems.

Through this visit, students experienced the environment of a **research-oriented institute** (IIT Bombay) and a **semiconductor manufacturing company** (Semix). The blend of academic and industrial learning provided a holistic understanding of how nanoelectronics drives innovations in the semiconductor sector.

3. Objectives of the Visit

1. To understand the synthesis and application of **nano materials** in semiconductor devices.
2. To study the **fabrication and testing** of nano-scale electronic components.
3. To observe the **integration of theoretical semiconductor concepts** into practical design and manufacturing.
4. To gain exposure to **industrial standards, equipment**, and **cleanroom environments** used in nanoelectronics.
5. To interact with industry professionals and researchers for better career and research guidance.

4. Institution Profile (IIT Bombay)

The **Indian Institute of Technology Bombay (IITB)** is one of India's leading institutions in the field of engineering, science, and technology. Established in 1958, IIT Bombay is known globally for its cutting-edge research in **semiconductors, nanotechnology, materials science, and electronic design automation (EDA).**

The **Centre for Research in Nanotechnology and Science (CRNTS)** and the **Electrical Engineering Department** at IIT Bombay are equipped with state-of-the-art laboratories for nano-material synthesis, thin film deposition, semiconductor characterization, and device fabrication.

During the visit, students attended an orientation session that explained the current research projects in nanoelectronics and semiconductor device physics. They were also taken on a laboratory tour, which showcased instruments such as:

1. **Atomic Force Microscope (AFM)** for surface topology measurement.
2. **Scanning Electron Microscope (SEM)** for structural analysis.

6. Observations and Learnings

Through this industrial visit, students gained valuable practical exposure in the following areas:

1. **Nano Material Applications:** Understanding how nano-scale materials are integrated into semiconductor devices for improved performance and reduced power consumption.
2. **Fabrication Technology:** Learning about photolithography, doping, thin-film deposition, and packaging methods used in the semiconductor industry.
3. **Device Characterization:** Observing how electrical, thermal, and structural parameters of semiconductor devices are tested using precision instruments.
4. **Research Orientation:** Witnessing how academic research at IIT Bombay contributes directly to industrial applications.
5. **Industry-Academia Collaboration:** Understanding the importance of partnerships between universities and industries for innovation and skill development.
6. **Future Trends:** Awareness of upcoming technologies like **quantum computing, nano transistors**, and **2D materials** in electronics.

7. Outcomes of the Visit

1. Enhanced technical understanding of semiconductor materials and nanoelectronics.
2. Exposure to research-grade equipment and industrial production environments.
3. Improved appreciation for interdisciplinary research in physics, materials science, and electronics.
4. Motivation to pursue careers or projects related to semiconductor design, fabrication, and testing.
5. Development of teamwork, observation, and technical reporting skills.

8. Conclusion

The industrial visit to **IIT Bombay** and **Semix – A Semiconductor Revolution** was a highly enriching educational experience. It provided a real-world perspective on the theories learned in the classroom and exposed students to advanced technologies driving the semiconductor industry.

The combination of academic depth at IIT Bombay and industrial practicality at Semix helped bridge the gap between research and application. The visit also motivated students to explore higher studies and careers in **Nanoelectronics, VLSI design,** and **Semiconductor Fabrication.**

Overall, the visit achieved its objectives by enhancing students' technical knowledge, analytical thinking, and awareness of the technological future of electronics engineering.

Photographs

	Akhil Bharatiya Maratha Shikshan Parishad's Anantrao Pawar College of Engineering & Research	
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Team @ACT at Semix Event

Location: VCC Central Hall , Indian Institute of Technology (IIT) Bombay Powai Mumbai.

Date: 8/10/2025

Student coordinator

Gaudhi 8/10/2025

Head of the Department

Principal 13-10-25