



Sandip University, Nashik (MS), India
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Report on ICT Tool: FOSSEE - Spoken Tutorial (eSim)

Conducted for

Second Year Students – Electrical Engineering (EE) and Electronics &
Telecommunication Engineering (E & TC)

Duration

20 January 2025 to 20 April 2025

(Every Thursday and Friday)

Conducted By

Ms. Shraddha Zanjat,

Assistant Professor,

Department of Electrical & Electronics Engineering



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1. Introduction

The Department of Electrical & Electronics Engineering at Sandip University successfully conducted a comprehensive ICT-based training program utilizing the FOSSEE Spoken Tutorial platform on eSim (Electronic Simulation Tool) from January 20, 2025, to April 20, 2025. This initiative was launched as part of the department's ongoing commitment to integrating open-source software tools into the engineering curriculum and promoting digital empowerment among students.

The training was specifically designed to enhance the practical knowledge of second-year students from both the Electrical Engineering (EE) and Electronics & Telecommunication (E & TC) programs. It focused on equipping students with essential circuit simulation and design skills using eSim—an open-source EDA (Electronic Design Automation) tool developed as an alternative to proprietary software like OrCAD, PSpice, and MATLAB-Simulink.

2. Objectives

- To introduce open-source simulation software eSim to undergraduate students.
- To bridge the gap between theoretical circuit analysis and practical implementation.
- To promote ICT-enabled learning in compliance with NEP 2020.
- To enhance students' ability to simulate, analyze, and design electronic circuits.



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3. Program Conduction Details

Tool Used:

Platform:

The training was delivered via the **Spoken Tutorial platform**, a project initiated by IIT Bombay that offers self-paced, audio-video tutorials in multiple Indian languages. The platform provides structured learning modules with quizzes and certification support, making it ideal for ICT-enabled education.

Mode of Delivery:

The program followed a **Blended Learning** approach:

Online Component: Students accessed curated video tutorials on eSim from the Spoken Tutorial website. These tutorials covered basic to advanced topics in circuit design, component modeling, and simulation analysis.

Offline/Hands-on Sessions: Complementing the online learning, physical lab sessions were organized every Thursday and Friday. These sessions provided real-time support, additional practice, and doubt-solving opportunities under faculty guidance.

Group:

The primary beneficiaries of this training were **Second Year students** enrolled in the **Electrical Engineering (EE)** and **Electronics & Telecommunication (E & TC)** programs at Sandip University. The training was incorporated as a skill-enhancement activity aligned with their curriculum.

Training Duration and Schedule:

- **Dates:** From **20th January 2025 to 20th April 2025**
- **Weekly Schedule:** **Every Thursday and Friday**
- **Time Slot:** **2:00 PM to 4:00 PM**

Coordinator:

The training was conducted and coordinated by **Ms. Shraddha Zanjat**,



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Assistant Professor in the Department of Electrical & Electronics Engineering (EEED), Sandip University. She monitored weekly progress, conducted assessments, and facilitated lab support to ensure successful implementation of the program.

4. Weekly Schedule (Sample Weeks)

Week	Dates	Topics Covered
1	23 Jan 2025 - 24 Jan 2025	Introduction to eSim and GUI Setup
2	30 Jan 2025 - 31 Jan 2025	Basic Circuit Design and Simulation
3	06 Feb 2025 - 07 Feb 2025	Use of Components and Libraries
4	13 Feb 2025 - 14 Feb 2025	Analysis Tools and Transient Simulations
5	20 Feb 2025 - 21 Feb 2025	Op-amp and Amplifier Circuit Simulations
6	27 Feb 2025 - 28 Feb 2025	RC, RL and RLC Circuit Simulations
7	06 Mar 2025 - 07 Mar 2025	Diode and Zener Diode Applications
8	13 Mar 2025 - 14 Mar 2025	BJT and FET Simulations
9	20 Mar 2025 - 21 Mar 2025	Oscillator Circuits and Signal Generation
10	27 Mar 2025 - 28 Mar 2025	Filter Design and Frequency Response
11	03 Apr 2025 - 04 Apr 2025	Digital Logic Simulation and VLSI Tools in eSim



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5.Participation Overview

The ICT-based training program on eSim received an encouraging response from students across both Electrical Engineering and Electronics & Telecommunication departments. The details of participation are as follows:

- **Total Participants:**

Electrical Engineering (EE): 33 students

Electronics & Telecommunication (E & TC): 86 students

Total: 119 students

- **Attendance:**

The program witnessed strong student engagement throughout the training period.

- **Overall attendance exceeded 85%**, indicating consistent interest and active participation in both online tutorials and offline hands-on sessions.

eSim (Electronic Simulation Tool) developed by the FOSSEE (Free/Libre and Open Source Software for Education) project at **IIT Bombay**. eSim is an open-source EDA tool based on Ngspice and KiCad, aimed at replacing proprietary simulation tools. It is used for schematic capture, PCB design, and simulation of electronic circuits.



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6. Learning Outcomes

The eSim training program significantly contributed to the technical development of second-year students. The following key learning outcomes were observed:

- **Proficiency in Circuit Simulation:**
Students gained hands-on experience in designing and simulating basic to intermediate-level analog and digital circuits using eSim.
- **Industry-Relevant Tool Usage:**
Exposure to eSim familiarized students with simulation environments used in professional and research applications, enhancing their industry readiness.
- **Blended Learning Engagement:**
The combination of self-paced online tutorials and instructor-led lab sessions improved knowledge retention and fostered independent learning.
- **Project Initiation:**
Several students utilized the training as a foundation to start **mini-projects** using eSim, demonstrating applied understanding and creativity.

7. Feedback Summary

Feedback was collected from participants at the end of the program to assess its effectiveness and relevance. The results were highly encouraging:



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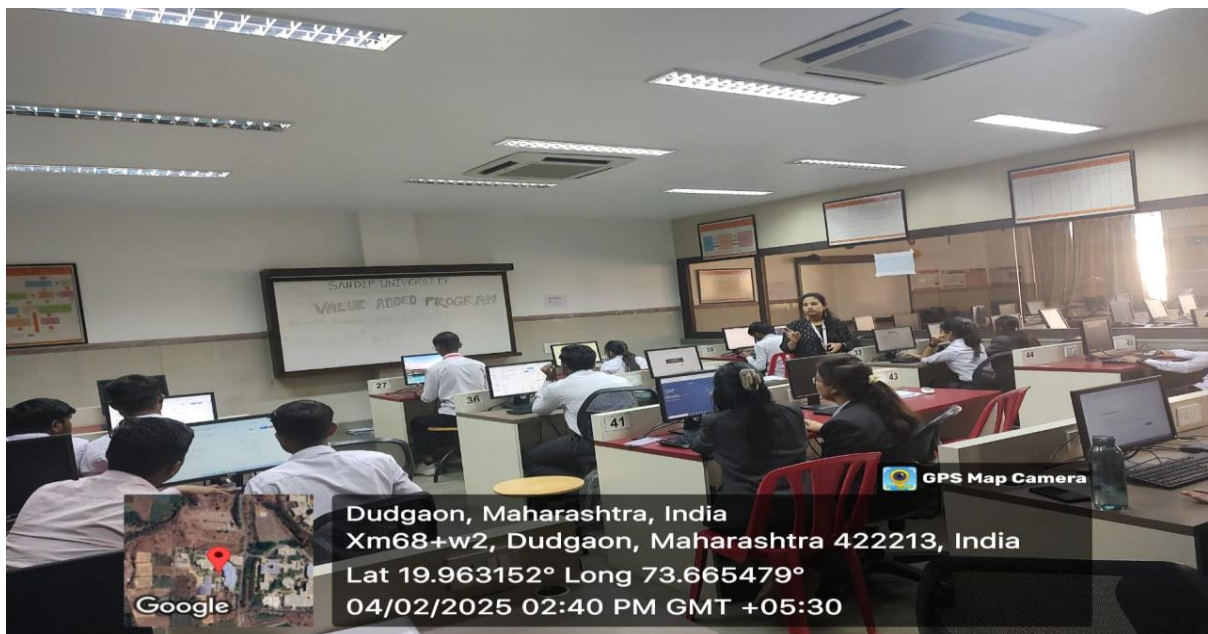
- **94% of students** reported that the eSim tool helped them better understand fundamental and complex circuit concepts.
- **Positive reception** was recorded toward the integration of **open-source tools** like eSim in the engineering curriculum.
- Students appreciated the **hands-on learning approach**, which bridged the gap between theory and practice.

8. Conclusion

The ICT-based FOSSEE Spoken Tutorial on eSim proved to be an enriching experience for second-year students. The initiative successfully merged theoretical concepts with practical simulations, encouraging experiential learning. It set a strong foundation for advanced electronics and simulation courses in further semesters.

9. Photographs

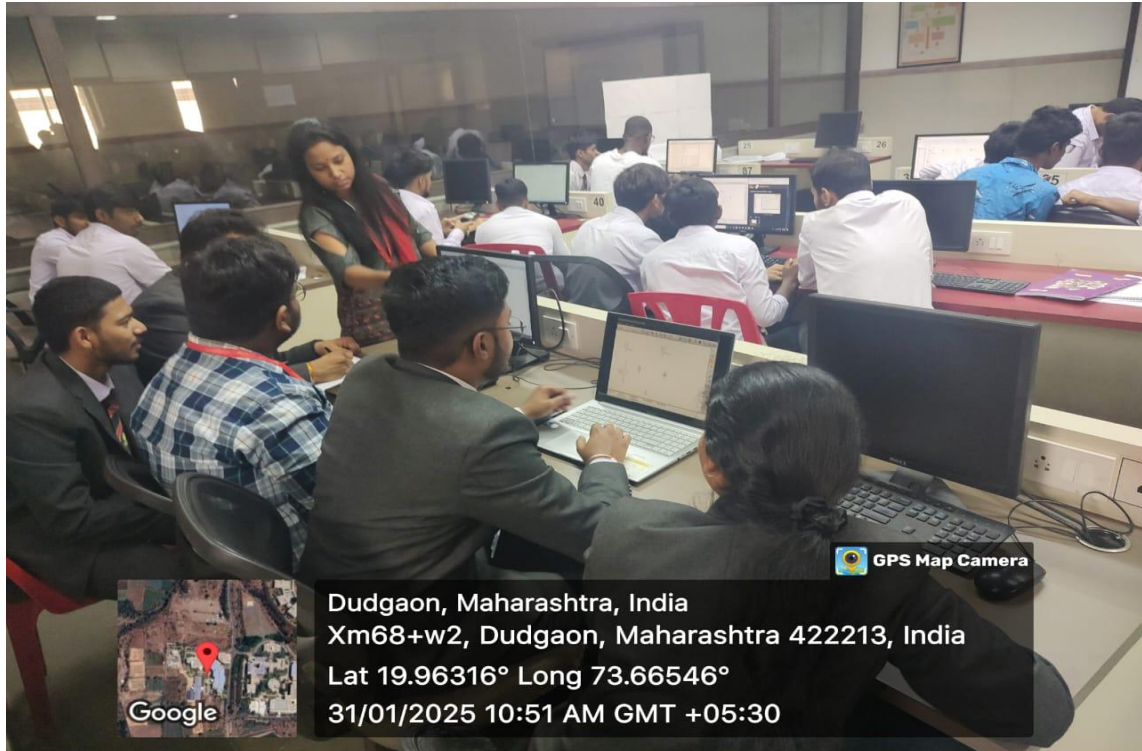
(Photographs of classroom session, students working on eSim)



E sim Conduction



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10. Acknowledgment

We thank the management of Sandip University, the Dean of SoET, and the HOD of EEED for their support. Special thanks to the FOSSEE team, IIT Bombay, and Spoken Tutorial Project for enabling access to high-quality educational resources.