



SRI VENKATESWARA COLLEGE OF ENGINEERING (Autonomous)

Karakambadi Road, Opposite LIC Training Centre, Tirupati – 517 507.
Accredited by NBA (B.Tech – CSE, ECE,EEE,Mech.,Civil and IT) & NAAC with 'A' Grade
Approved by AICTE, New Delhi permanently affiliated to JNTUA, Ananthapuram.

Innovations by the Faculty in Teaching and Learning

Statement of Clear Goals:

Faculty members of the Electrical and Electronics Engineering (EEE) department have set clear goals focused on strengthening students' understanding of electrical concepts, enhancing analytical and design skills, and fostering innovation in power systems, control systems, and embedded technologies. The objectives align with the course outcomes (COs), program outcomes (POs), and institutional mission, aiming to improve student engagement, bridge the gap between theory and application, and prepare students for industry and higher studies.

Use of Appropriate Methods:

To achieve these goals, faculty employ a variety of innovative pedagogical strategies:

- 1. Flipped Classroom:** Pre-class video lectures on topics like circuit analysis and power electronics allow in-class time for problem-solving and discussions.
- 2. Project-Based Learning (PBL):** Students work on mini-projects such as IoT-based energy meters, solar charge controllers, or home automation using Arduino/Raspberry Pi.
- 3. Virtual Labs and Simulation Tools:** Tools like MATLAB/Simulink, Multisim, and PSCAD are used to simulate and analyze power systems and control systems.
- 4. Blended Learning:** Online platforms such as Google Classroom and Moodle are integrated for resource sharing, assessments, and tracking progress.
- 5. Industry-Relevant Case Studies:** Faculty introduce real-world case studies on power quality, smart grids, and industrial drives to connect theoretical knowledge with practical challenges.

Significance of Results:

These innovative methods have resulted in notable improvements in students' academic and professional performance. Key outcomes include:

- Increase in average course grades and pass percentages across semesters.
- Enhanced student participation in paper presentations, internships, and national-level competitions like Smart India Hackathon.
- Final-year project quality improvement, with more industry-collaborated and prototype-based outcomes.



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- Positive student feedback on teaching-learning experience and peer learning engagement.

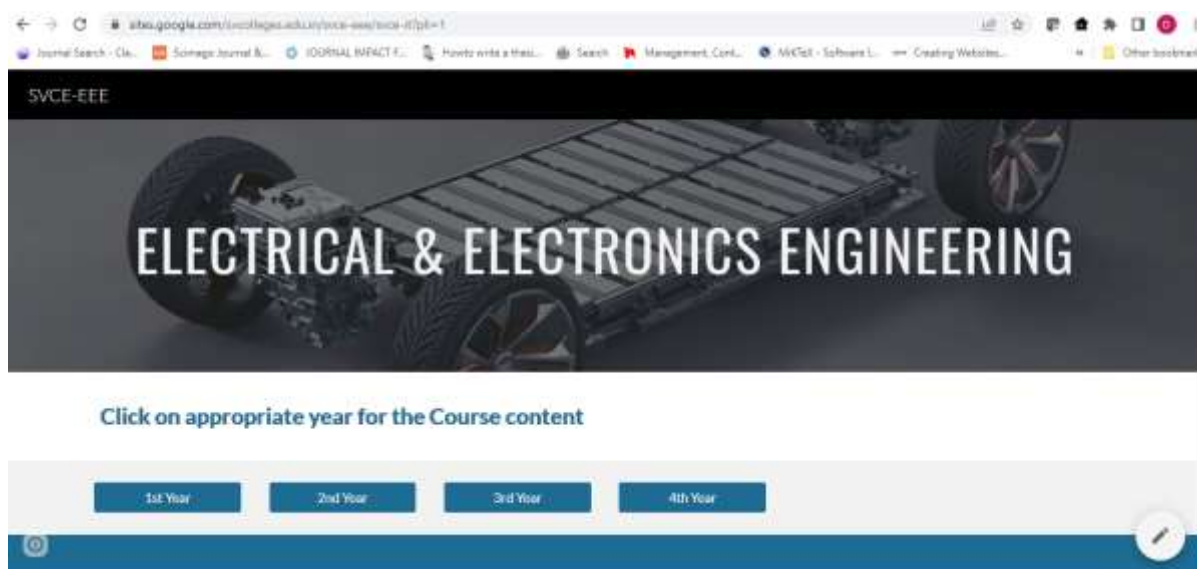
Effective Presentation:

All innovations are well-documented in individual course files, academic audit reports, and faculty teaching portfolios. Teaching-learning practices and their impacts are:

- Reviewed in department-level academic meetings.
- Presented during internal review and institutional best practice showcases.
- Shared with stakeholders (students, alumni, industry) via newsletters, departmental websites, and parent-teacher meetings.

1. Department Space submissions:

Lecture notes, practice problems and solved problems are regularly uploaded by the faculty in various electronic platforms for easy reach to students. Department Space repository of SVCE is one of the best examples. This portal has lecture notes to help students.



<https://sites.google.com/svcolleges.edu.in/svce-eee/svce-it?pli=1>

2. Virtual labs:

As an initiative by the MHRD, in labs, relevant experiments are displayed to students with the help of simulations uploaded on the labs website <http://www.vlab.co.in/> such as Virtual High Voltage Lab, Substation Automation Lab etc.



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Virtual Labs
An Initiative of
Ministry of Education
Under the National Mission on Education through ICT

HOME ABOUT US BECOME NCCL CENTER OUTREACH PORTAL PARTICIPATING INSTITUTES NMECT CONTACT US

Electrical Engineering

Home » Broad Areas of Virtual Labs

Labs ready for use

Lab Name	Institution
Virtual Laboratory For Simulation and Gaming Reference Books Syllabus Mapping	IIT KHARAGPUR
Virtual High Voltage Lab * Reference Books Syllabus Mapping	IIT KHARAGPUR
Substation Automation Lab Reference Books Syllabus Mapping	NIT SUR

Announcements

* Various projects... resources on the Ministry of Education are available on the link given here. [Please click here for more details.](#)

* [Please click here to see the tutorial for using the Flash-based Labs through Virtual Box.](#)

Link: <https://www.vlab.co.in/broad-area-electrical-engineering>

Virtual Labs

HOME ALL LABS PARTNERS CONTACT SEARCH FOR A LAB

Electrical Engineering

Introduction
List of experiments

Welcome to Electrical Machines!

- Load Test On Separately Excited DC Motor
- Speed Control of Separately Excited DC Motor
- No Load Test on Three Phase Induction Motor
- Blocked Rotor Test on Three Phase Induction Motor
- Open Circuit Test on Three Phase Alternator
- Short Circuit Test on Three Phase Alternator
- Load Test on Three Phase Alternator
- V and Inverted V curves of Synchronous Motor

Updates

CONTACT US

Example Link:

<http://em-coep.vlabs.ac.in/List%20of%20experiments.html?domain=Electrical%20Engineering>

Virtual Labs

HOME PARTNERS CONTACT

Electrical Engineering

Introduction
Objective
List of experiments
Target Audience
Course Alignment
Feedback

Electrical Measurements

Welcome to the Electrical Measurements Labs, an essential component of BTech curriculum designed to provide a hands-on understanding of fundamental measurement techniques in electrical engineering. Our web-based simulator offers a versatile and interactive platform for exploring key concepts and conducting experiments related to electrical measurements. The web-based simulator provides a dynamic and interactive learning environment where you can perform these experiments virtually. The simulator offers real-time data visualization, allowing you to conduct measurements, analyze results, and understand the principles behind each experiment without the constraints of physical lab equipment. This platform is designed to enhance your practical skills and theoretical knowledge, preparing you for real-world applications in electrical engineering.

Example Link:

<https://elms-iitr.vlabs.ac.in/Introduction.html>



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3. MOOCS:

MOOCS or Massive open online courses are a relatively new entry in the academic sector throughout the world. Although the role of MOOCs in effective dissemination of knowledge is still under debate, they are speedily gaining unquestioned acceptance in more and more academic circles as an innovative means of imparting additional knowledge to students. Here at SVCE, we support augmenting our own efforts of effective delivery by MOOCs available through agencies like NPTEL and SWAYAM.

4. Faculty Initiatives to Promote Design Thinking and Experiential Learning : Encouragement of Miniature Working Models

In several key subjects, faculty members actively encourage students to conceptualize and develop miniature working models of structures and design components. This hands-on approach significantly enhances students' interest, deepens their understanding, and improves their learning outcomes by bridging theoretical knowledge with practical application.

Design Thinking to Optimize Student Learning

Faculty integrate design thinking methodologies into project-based learning to foster creativity, problem-solving, and innovation among students.

Project-Based Learning:

Students are assigned projects that require them to design, plan, and execute solutions to real-world problems. This process develops their creativity, critical thinking, and project management skills while boosting their confidence.

- Mini Projects on Emerging Technologies:
- Students undertake mini-projects on cutting-edge technologies under the continuous mentorship of faculty members. These projects involve:
 - Independent research.
 - Practical implementation.
 - Report preparation and presentation.

Faculty provide structured guidance throughout the project lifecycle, ensuring students develop a holistic understanding and technical proficiency

5. Innovative Teaching-Learning Methods Adopted :

- I. **Power point Presentations:** This technique is being widely used in the teaching-learning process, as it triggers an interactive teaching and learning process. Our



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department is well equipped with high quality projectors ready for use any time in all the classrooms.

- II. **Electronic correspondence with Students:** Faculty frequently engages in electronic correspondence with the students to share notes, remarks, assignments and test results. This improves the teacher student communication in a positive manner. This significantly boosts the in –class and out-of-class learning experience of students.
- III. **Student Presentations:** Students deliver presentations to the rest of their classmates. The topics are related to course content or the pre-requisites so that the content is delivered effectively to students. This significantly enhances students’ confidence and their learning experience.
- IV. **Teachmint Digital Boards:** In many subjects (wherever necessary) audio-visual aids are used. It is a proved fact that audio-visual presentations in the classrooms are more effective in capturing the attention of students.
- V. **Classroom quiz Sessions:** Quizzes help in creating interest and can develop in-class communication between students and the teacher by breaking monotony of regular classes while enhancing the learning experience.
- VI. **Library Assignments:** Students are set such assignments from time to time; wherein they are required to research certain topics from the resources available in the institute library and finally submit a report.

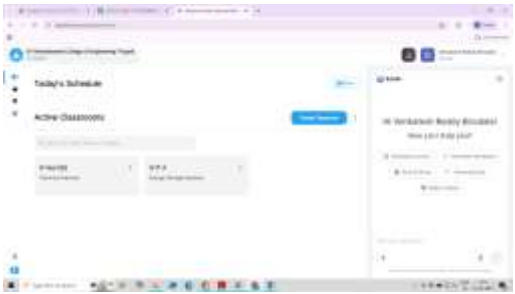
Table 5.6.1 PEDAGOGICAL METHODS

S.No	Pedagogical Methods	Activities	Sample Photos
1	FLIPPED Classrooms	Study material is made available both in digital and paper formats to the students for basic understanding of the concepts	



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2	Teachmint	Students are taught using teachmint digital boards	
3	NPTEL Videos	The students will be shown the NPTEL Videos on the lecture topics of the resource persons from IITs, NITs, etc.	
4	Group Discussions, Seminars And Assignments	The students will be assigned with or asked for topics in recent advancements as seminars in the class room and submit the report.	
5	GOOGLE Classroom	Students are made members of the Google class room. Notes materials, Assignments, Quiz questions are posted in the app.	