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OMR, CHENNAI - 119

Department of Electrical and Electronics Engineering

INNOVATIVE TEACHING AND LEARNING
ACADEMIC YEAR 2024-2025

S.No	Name of the Teaching Methods	Name of the Faculty	Name of the Subjects/Code	Topic	Year/Sem/Dept	Date
1.	Collaborative Learning	Mr.I.Cephas	EE4301-Electric Circuit Analysis	Network Theorems	II /III//EEE	29-07-2024
2.	Smart Board	Dr.R.Manivannan	EE4304-Digital Electronics	Asynchronous Sequential Circuits	II/III/EEE	08-10-2024
3.	Technical Connection	Dr.P.Nisha	BE4251 – Basic Electrical and Electronics Engineering	Resistor series & parallel connections and mesh formation in electric circuit	I/II/ADS	25-01-2025
4.	Simulation Based Learning	Dr.P.Anbarasan	EE4402-Control System	First and Second Order System	II /IV//EEE	29-01-2025
5.	Blended Learning	Mr. S.Karthick	EE4401 – Electrical Machines – II	Synchronous Generator	II /IV//EEE	30-01-2025
6.	Hands-on Learning	Dr.N.P.Gopinath	BE4251 – Basic Electrical and Electronics Engineering	Moving coil Meters	I/II/CSE	10-04-2025
7.	Video Lecture	Dr.P.Anbarasan	EE4402-Control System	Mechanical Translational System	II /IV//EEE	January - April 2025

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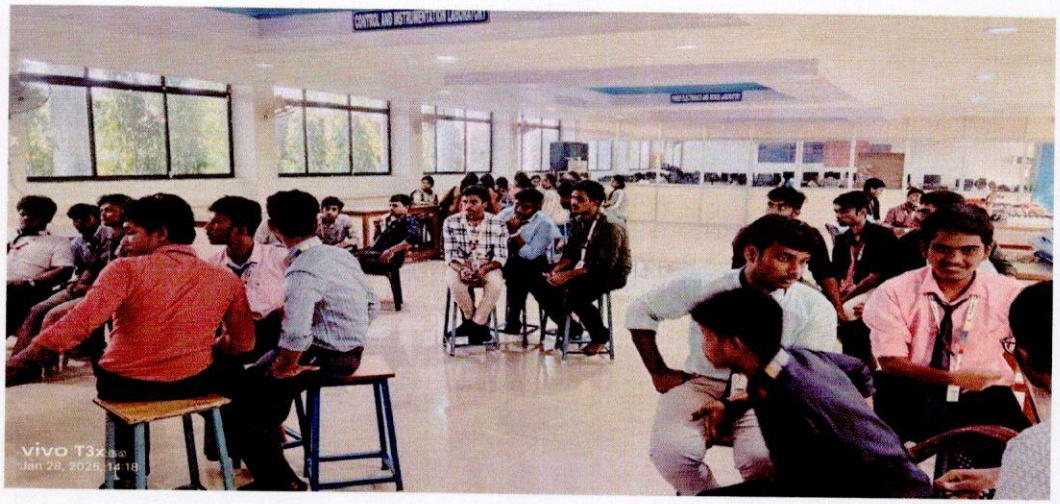
Innovative Teaching and Learning

Academic Year: 2024-2025

Name of Teaching method	Collaborative Learning
Topic	Network Theorems
Subject	EE4301-Electric Circuit Analysis
Name of the Faculty	Mr.I.Cephas
Year/Dept.	II EEE
Date/Time	29-07-2024 & 8.40 A.M
Innovative Teaching Method Description	A Collaborative Learning method was implemented for the topic "Electric Circuits" in the subject Principles of Electrical and Electronics Engineering for second-year EEE students. In this activity, students were divided into small groups to discuss and solve circuit problems collaboratively. The interactive learning environment encouraged peer discussion, knowledge sharing, and collective problem-solving. This approach helped students develop a deeper understanding of circuit concepts, improved communication and teamwork skills, and promoted active participation in the learning process.

Photos



Students Feedback	Working in groups helped in understanding electric circuit problems more clearly, as discussing with peers made the concepts easier to grasp. Collaborative learning enhanced confidence in solving circuit problems and provided opportunities to learn new approaches from teammates.
Total number of students	47
Total number of students present	46
Total number of students absent	01
Action plan for absentees	Absentees will be given a brief recap of the collaborative learning activity along with essential notes and solved examples discussed in class.

Reflective Critique:

The collaborative learning strategy successfully improved peer interaction and collective problem-solving. Students were more active and confident in approaching circuit problems. However, a small number of students depended heavily on stronger teammates; to improve this, future sessions will include role-based tasks so that every student contributes. More complex numerical problems can also be introduced to enhance critical thinking.

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Innovative Teaching and Learning

Academic Year: 2024-2025

Name of Teaching method	Smart Board
Topic	Asynchronous Sequential Circuits
Subject	EE4304-Digital Electronics
Name of the Faculty	Dr.R.Manivannan
Year/Dept.	II EEE
Date/Time	08-10-2024 & 12.20 P.M
Innovative Teaching Method Description	In Digital Electronics, the Smart Board is used to visually demonstrate logic circuits, timing diagrams, truth tables, and waveform animations. It allows the faculty to draw and edit logic gates, simplify Boolean expressions interactively, and simulate circuit behavior in real time. Students can participate by solving Karnaugh maps, marking states in sequential circuits, and observing live circuit responses. The Smart Board makes abstract digital concepts clearer, interactive, and easy to understand.

Photos

Students Feedback	The Smart Board made it easier to understand asynchronous sequential circuits, as the live diagrams and animations helped visualize step-by-step state changes. Solving truth tables and Karnaugh maps on the Smart Board made the class more interactive and improved the ability to interpret timing diagrams and circuit behavior.
Total number of students	60
Total number of students present	58
Total number of students absent	02
Action plan for absentees	Absentees will be given the Smart Board lecture notes, and circuit flow used in the session.

Reflective Critique:

The Smart Board improved visualization of state diagrams, timing charts, and logic operations. Students responded well to animations and interactive solving. However, a few students were passively observing rather than participating. Incorporating quick on-screen quizzes and student annotations in future sessions will ensure wider involvement.

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Innovative Teaching and Learning

Academic Year: 2024-2025

Name of Teaching method	Technical Connection
Topic	Resistor series & parallel connections and mesh formation in electric circuit
Subject	BE4251 – Basic Electrical and Electronics Engineering
Name of the Faculty	Dr.P.Nisha
Year/Dept.	I ADS C
Date/Time	25-01-2025
Innovative Teaching Method Description	The hands-on demonstration of resistor series and parallel connections using a breadboard made it much easier for us to understand how circuits work. Seeing the actual voltage and current distribution helped us connect theory with real applications. The explanation of mesh formation in electric circuits was clear, and applying Kirchhoff's laws practically made the concepts more intuitive. Overall, this session boosted our confidence in circuit analysis and made learning more engaging

Photos




Students Feedback	The hands-on activity with resistor connections provided a clear understanding of how series and parallel circuits behave, making circuit analysis much easier to follow. Forming meshes on the breadboard and applying Kirchhoff's laws in real time increased confidence and strengthened the grasp of basic electrical concepts.
Total number of students	65
Total number of students present	64
Total number of students absent	01
Action plan for absentees	Absentees will receive a focused recap session covering the breadboard demonstration of series and parallel resistor connections, along with clear notes and circuit diagrams used during the class.

Reflective Critique:

The hands-on breadboard demonstration enhanced conceptual clarity and made circuit behavior more intuitive. Students showed high engagement while forming meshes and applying KVL practically. However, time constraints limited deeper discussion of advanced cases. In future, additional practice kits and micro-groups will be arranged so students can explore more variations of circuits independently.

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Innovative Teaching and Learning

Academic Year: 2024-2025

Name of Teaching method	Simulation Based Learning
Topic	First and Second Order System
Subject	EE4402-Control System
Name of the Faculty	Dr.P.Anbarasan
Year/Dept.	II EEE
Date/Time	29-01-2025 & 1.40 P.M
Innovative Teaching Method Description	The topic "First and Second Order System" was taught using Simulation-Based Learning to enhance students' conceptual understanding and analytical skills. Instead of relying solely on theoretical explanations, MATLAB simulation tools were used to visually demonstrate the dynamic behavior of control systems. Through simulations, students were able to observe real-time responses such as step response, time constant, overshoot, settling time, and steady-state error for both first and second order systems. This hands-on virtual experimentation helped bridge the gap between mathematical modeling and practical system behavior. The approach promoted active learning, encouraged problem-solving, and enabled students to analyze system responses in a more intuitive and engaging manner. Overall, Simulation-Based Learning made complex control system concepts easier to understand and improved students' ability to interpret and design dynamic systems.

Photos

Students Feedback	The simulations provided a clear visualization of the behavior of first and second order systems, making difficult concepts like overshoot and settling time much easier to understand. Adjusting parameters in real time helped demonstrate how system dynamics are affected, thereby improving analytical skills and confidence in control system design.
Total number of students	60
Total number of students present	60
Total number of students absent	-

Reflective Critique:

MATLAB simulations enabled students to clearly understand dynamic responses and visualize key parameters. This method effectively bridged mathematical modeling with real-time system behavior. Some students struggled with interpreting graphs independently. To improve, a pre-simulation worksheet and guided practice tasks will be introduced before hands-on exploration.

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Innovative Teaching and Learning

Academic Year: 2024-2025

Name of Teaching method	Blended Learning
Assessment Tool	Online platforms - Mentimeter.com
Topic	Synchronous Generator
Subject	EE4401 – Electrical Machines – II
Name of the Faculty	Mr. S.Karthick
Year/Dept.	II EEE
Date/Time	30-01-2025 & 7.50 A.M
Innovative Teaching Method Description	The learning method adopted was Blended Learning, which combines traditional classroom teaching with digital tools and online platforms to enhance student engagement and understanding. The faculty used Mentimeter.com, an interactive online platform, as an assessment tool to conduct a Technical Quiz. This blended approach promotes active learning by encouraging students to participate in real-time quizzes, discussions, and feedback sessions. It bridges the gap between theoretical learning and digital interactivity, helping students grasp complex machine concepts effectively while fostering analytical and problem-solving skills.

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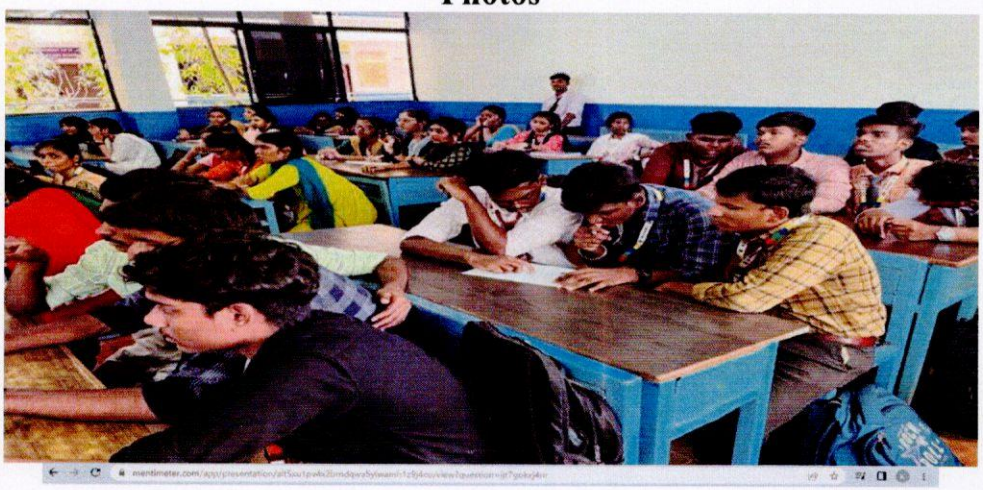

Students Feedback	The Mentimeter quiz made the class more interactive and enabled quick evaluation of understanding of synchronous generator concepts in real time. Using the online platform maintained engagement throughout the session and enhanced confidence in answering technical questions related to Electrical Machines.

Total number of students	60
Total number of students present	57
Total number of students absent	03
Action plan for absentees	Absentees will be provided with the key concepts covered in the Synchronous Generator topic along with a summary of the classroom discussion.

Reflective Critique:

Blended learning with Mentimeter increased participation and encouraged instant feedback. Students displayed strong enthusiasm during the live quiz. However, some students focused more on speed than conceptual understanding. Future sessions will include post-quiz discussions and explanation of incorrect responses to reinforce learning.

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Innovative Teaching and Learning

Academic Year: 2024-2025

Name of Teaching method	Hands-on Learning
Topic	Moving coil Meters
Subject	BE4251 – Basic Electrical and Electronics Engineering
Name of the Faculty	Dr.N.P.Gopinath
Year/Dept.	I CSE A
Date/Time	10-04-2025 & 1.40 P.M
Innovative Teaching Method Description	The learning approach focused on Hands-on Learning, allowing students to actively engage with real electrical instruments, specifically Moving Coil Meters. This method bridges the gap between theoretical concepts and practical applications by enabling students to observe, handle, and analyze the working of electrical measuring devices in real time. Through this experiential learning approach, students gain a deeper understanding of meter construction, operation, and measurement principles enhancing both their conceptual clarity and technical skills. Such innovative teaching practices promote active participation, problem-solving, and experiential understanding, making learning more effective and engaging.

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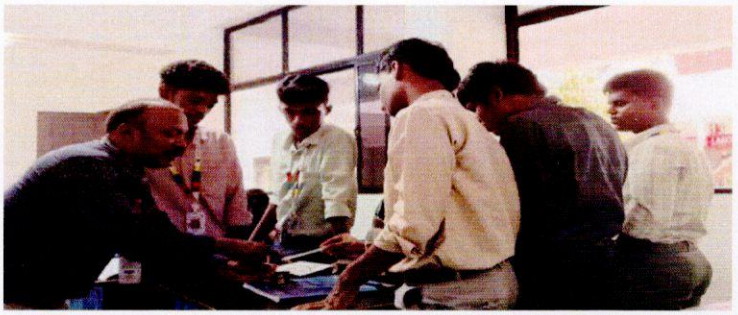

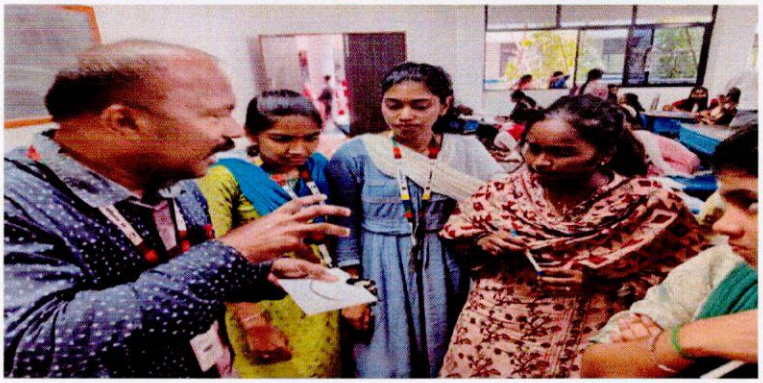

Students Feedback	Handling the Moving Coil Meters in the lab provided a clear understanding of their construction and working, which was previously difficult to grasp through theory alone. The hands-on activity boosted confidence in taking accurate measurements and made the concepts of electrical instruments much easier to remember and apply.
Total number of students	66
Total number of students present	62
Total number of students absent	04
Action plan for absentees	Absentees will be provided with a summary of the hands-on demonstration along with clear circuit diagrams showing series and parallel connections.

Reflective Critique:

This practical approach greatly strengthened students understanding of instrument construction and measurement principles. Handling real meters increased confidence and reduced misconceptions. Some students needed extra time to handle instruments comfortably. Follow-up open-lab sessions will be planned to provide extended hands-on practice for slower learners.

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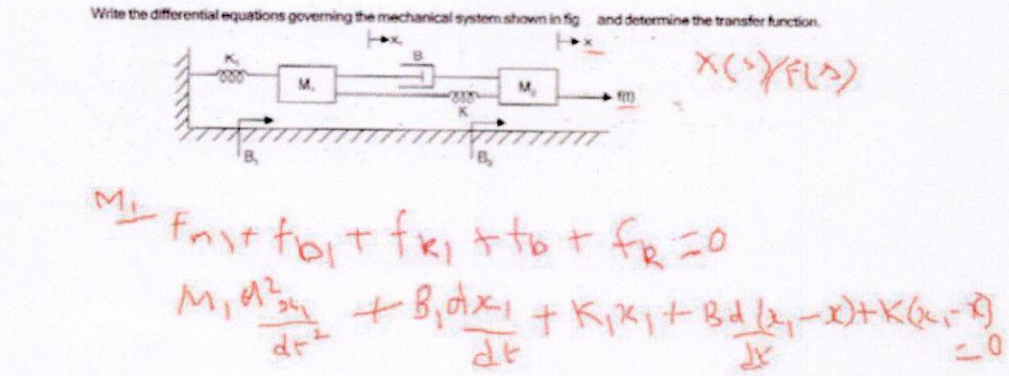
Innovative Teaching and Learning

Academic Year: 2024-2025

Name of Teaching method	Video Lecture
Topic	Mechanical Translational System
Subject	EE4402-Control System
Name of the Faculty	Dr.P.Anbarasan
Year/Dept.	II EEE
Innovative Teaching Method Description	A Video Lecture method was adopted for the topic *"Mechanical Translational System"* in the subject Control Systems for II EEE students. The session focused on explaining the derivation of differential equations and transfer functions for mechanical systems involving mass, damping, and spring elements. Through step-by-step visual explanations, students were able to clearly understand the analogy between mechanical and electrical systems. This innovative approach enhanced conceptual clarity, visualization skills, and analytical understanding of system dynamics and modeling.

Photos



Mechanical Translation System - Transfer function problem 2

Students Feedback	The video lecture made it easier to visualize the mechanical translational system and clearly understand how differential equations and transfer functions are derived. The step-by-step visual explanation helped relate mechanical components to their electrical analogies, improving the overall understanding of system modeling.

Reflective Critique:

The video lecture supported step-by-step visualization, making differential equations and analogies clearer. Students appreciated flexible and self-paced viewing. However, passive learning may occur for students who do not actively pause and review concepts. Embedding small reflective questions or checkpoints in the video can enhance active engagement.

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