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OMR, CHENNAI - 119

Department of Electrical and Electronics Engineering

INNOVATIVE TEACHING AND LEARNING
ACADEMIC YEAR 2023-2024

S.No	Name of the Teaching Methods	Name of the Faculty	Name of the Subjects/Code	Topic	Year/Sem/Dept	Date
1.	Simulation Based Learning	Mrs.M.Latha Devi	EE8703 - Renewable Energy Systems	Wind Energy Conversion Systems	III,IV/V,VII/EEE	20-06-2023
2.	Alumni-Assisted Learning	Dr.D.Kirubakaran	EE3591 - Power Electronics	Inverters	III/V EEE	22-06-2023
3.	Visit Based Learning	Ms.Golda Jeba	EE3001 – Utilization and Conservation of Electrical Energy	Energy Conservation	III/V EEE	24-06-2023
4.	Flipped Classed Room Based Learning	Mr.S.V.Prabu	EE4302 - Electrical Machines – I	Parallel Operation of DC Generators	II/III/EEE	23-08-2023
5.	Active Recall Based Learning	Mrs.S.Vasanthi	EE4401 – Electrical Machines – II	AC machines	II/IV/EEE	14-02-2024
6.	Visit Based Learning	Ms.Golda Jeba	EE4405 – Generation, Transmission and Distribution	Lightning Arrester	II/IV/EEE	14-03-2024

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Department of Electrical and Electronics Engineering

Innovative Teaching and Learning

Academic Year: 2023-2024

Name of Teaching method	Simulation Based Learning
Topic	Wind Energy Conversion Systems
Subject	EE8703 - Renewable Energy Systems
Name of the Faculty	Mrs.M.Latha Devi
Year/Dept.	III & IV EEE
Date/Time	20-06-2023 & 11.00 A,M
Innovative Teaching Method Description	The session focused on the topic "Wind Energy Conversion Systems" from the subject Renewable Energy Systems. Through this simulation-based approach, students explored the operational principles of wind turbines, aerodynamic characteristics, and electrical power generation using software-based simulation tools. This innovative method enabled students to visualize and analyze real-time performance parameters of wind energy systems without physical hardware limitations. It enhanced their conceptual understanding, analytical skills, and ability to design and optimize renewable energy conversion setups. Such experiential learning techniques bridge theoretical concepts with practical applications, preparing students for research and industrial challenges in the renewable energy sector.

Photos

Students Feedback	The simulation session provided a clear understanding of the working principles of wind turbines and allowed visualization of system behavior without the need for physical equipment. Using simulation tools increased confidence in analyzing wind energy systems and inspired further interest in learning about renewable energy technologies.
Total number of students	71
Total number of students present	67
Total number of students absent	04
Action plan for absentees	Absentees will be given the simulation files and lecture notes used during the session to help them understand the operational principles of wind energy systems.

Reflective Critique:

Simulation tools enhanced understanding of turbine operation and performance characteristics. Students gained industry-relevant skills without needing physical hardware. However, some students found it challenging to modify parameters confidently. Additional simulation tutorials and stepwise worksheets will be introduced for better preparedness.

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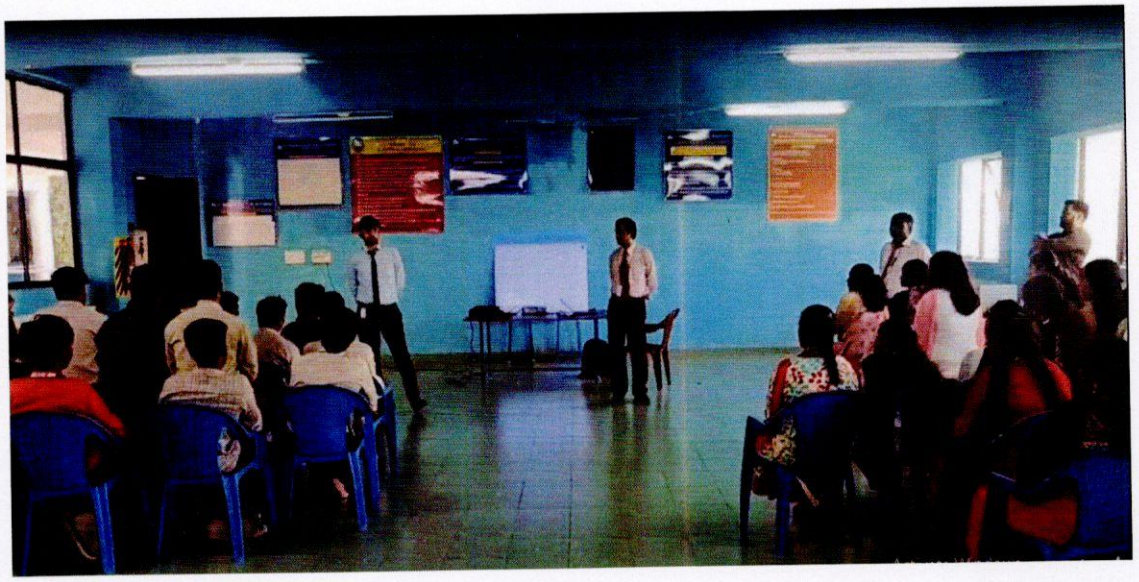
Innovative Teaching and Learning

Academic Year: 2023-2024

Name of Teaching method	Alumni-Assisted Learning
Topic	Inverters
Subject	EE3591 - Power Electronics
Name of the Faculty	Dr.D.Kirubakaran
Alumini Name	Mr. Roshan Aro Alvin
Year/Dept.	III EEE
Date/Time	22-06-2023 & 12.20 P.M
Innovative Teaching Method Description	As part of the course Power Electronics, the topic "Inverters" was delivered using an Alumni-Assisted Learning approach to enhance student engagement and industry relevance. Mr. Roshan Aro Alvin, an alumnus of the EEE department and a practicing professional in the power electronics field, was invited to interact with the III-year students. During the session, the alumnus shared practical insights on inverter operation, real-world applications, switching devices, PWM control techniques, and challenges encountered in industrial inverter design. He demonstrated how theoretical concepts taught in the classroom such as voltage control, harmonic reduction, and modulation strategies are implemented in actual power conversion systems. Through real project examples, case studies, and interactive discussions, students were able to link classroom learning with current industry practices. The alumni interaction motivated learners, enhanced conceptual clarity, and improved their understanding of inverter behavior in practical scenarios. This innovative teaching method strengthened industry-student connectivity and enriched the overall learning experience.

Photos



Students Feedback	The alumni session provided a clearer understanding of inverter concepts, particularly the application of PWM control and switching techniques in real industrial systems. Listening to an industry professional boosted confidence and encouraged exploration of practical applications of inverters beyond classroom theory.
Total number of students	58
Total number of students present	57
Total number of students absent	01
Action plan for absentees	The alumnus presentation slides and reference documents, will be shared with absentees for self-learning.

Conclusion:

The Alumni-Assisted Learning method effectively bridged the gap between academic knowledge and industry practices. By integrating real-world insights, case studies, and interactive discussions, the session enriched students' understanding of inverter technologies and enhanced their preparedness for professional challenges in the power electronics field.

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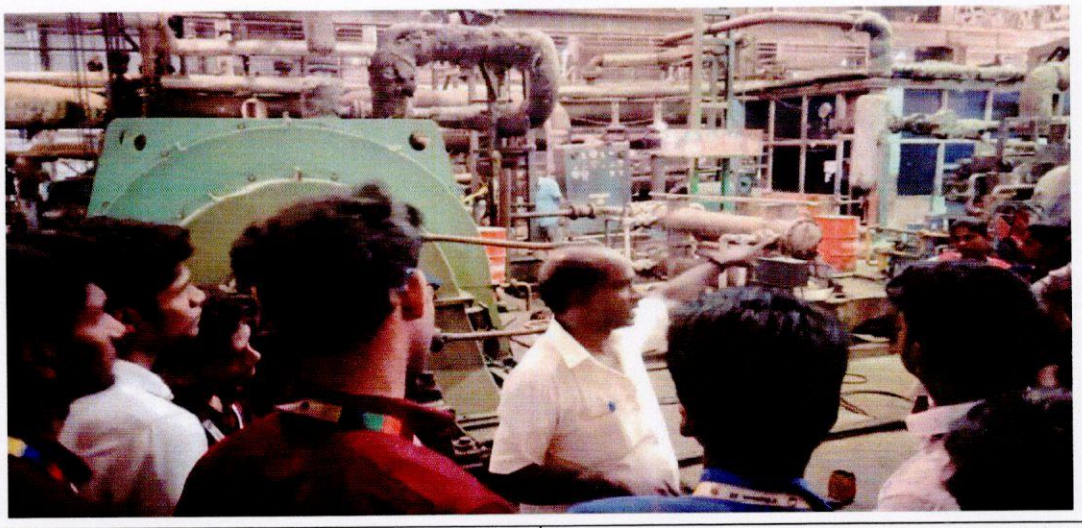
Innovative Teaching and Learning

Academic Year: 2023-2024

Name of Teaching method	Visit Based Learning
Topic	Energy Conservation
Subject	EE3001 – Utilization and Conservation of Electrical Energy
Name of the Faculty	Ms.Golda Jeba
Year/Dept.	III EEE
Date/Time	24.06.2023 & 10.00 A.M
Innovative Teaching Method Description	The visit was organized to complement the subject "Utilization and Conservation of Electrical Energy" and focused on the topic Energy Conservation. The students visited M.R.K Co-op Sugar Mills, Sethiathope. The objective of this activity was to bridge the gap between theoretical knowledge and practical applications in the field of electrical energy utilization. During the visit, students gained valuable insights into various methods of energy conservation and the efficient use of electrical energy in large-scale industrial operations. This hands-on learning experience enhanced their understanding of real-world energy systems and motivated them to adopt energy-saving practices in engineering applications. This innovative approach to learning promoted experiential education, improved conceptual clarity, and strengthened students' awareness of sustainable energy practices.

Photos



Students Feedback	The visit provided a clear understanding of how energy conservation techniques are implemented in real industries, making the concepts more meaningful and easier to remember. Observing practical applications of electrical energy utilization encouraged exploration of energy-saving methods in personal projects and increased overall interest in the subject.
Total number of students	58
Total number of students present	54
Total number of students absent	04
Action plan for absentees	Share detailed notes, photos, and reference documents covering the key observations made during the visit.
Conclusion:	

The visit-based learning method effectively enhanced students understanding by connecting theoretical knowledge with real industrial practices. It promoted experiential learning, improved conceptual clarity, and encouraged students to adopt sustainable energy practices in their academic and professional activities. Overall, this innovative approach proved to be highly beneficial in strengthening students' engagement and learning outcomes.

K. Falala Leba

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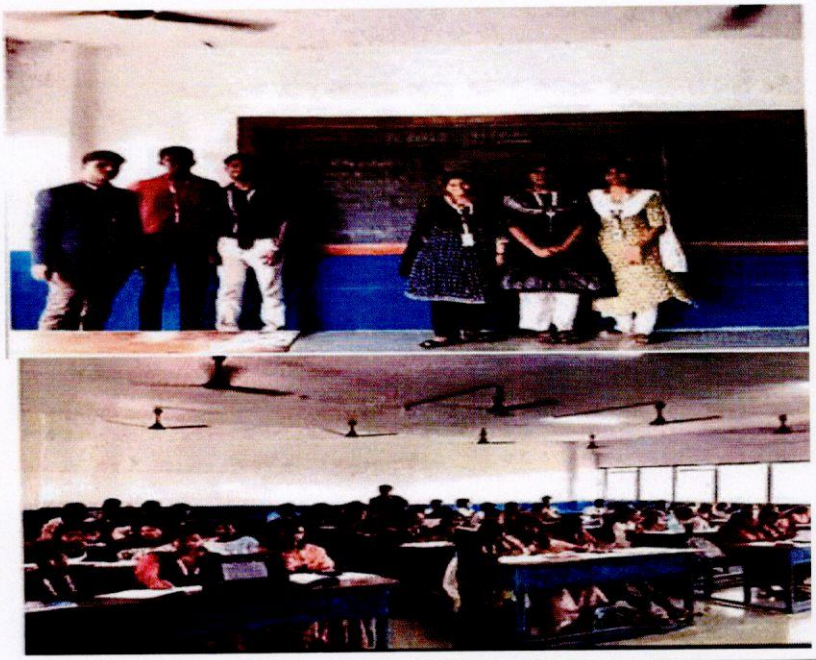
Innovative Teaching and Learning

Academic Year: 2023-2024

Name of Teaching method	Flipped Classed Room Based Learning
Topic	Parallel Operation of DC Generators
Subject	EE4302 - Electrical Machines – I
Name of the Faculty	Mr.S.V.Prabu
Year/Dept.	II EEE
Date/Time	23-08-2023 & 8.40 A.M
Innovative Teaching Method Description	As part of the Flipped Classroom-Based Learning approach, students of II EEE studied the topic "Parallel Operation of DC Generators" under the subject Electrical Machines – I. In this innovative method, students were encouraged to learn theoretical concepts before class through videos, notes, and reference materials shared by the faculty. During the classroom session, they actively participated in discussions, problem-solving, and practical demonstrations related to the parallel operation of DC generators. This method helped students develop a deeper conceptual understanding, as they could apply their pre-learned knowledge to real laboratory setups and collaborative activities. The interactive classroom environment also improved communication, teamwork, and analytical skills. By integrating theory with practice through the flipped learning model, students gained both technical proficiency and confidence in handling DC generator operations effectively.

Photos



Students Feedback	The pre-class materials provided a strong understanding of the basic concepts of the parallel operation of DC generators, enabling more confident participation during class discussions and activities. The practical demonstrations in the classroom made the topic clearer, and connecting theory with real-time laboratory setups enhanced the hands-on learning experience.
Total number of students	55
Total number of students present	03
Total number of students absent	52
Action plan for absentees	Absentees will receive the same learning resources shared earlier like notes, PPTs, and reference materials, so they can study the theoretical concepts independently.

Conclusion:

The flipped classroom–based learning method effectively enhanced students' understanding of the parallel operation of DC generators by combining pre-class preparation with active in-class engagement. This approach strengthened conceptual clarity, promoted collaboration, and improved students' analytical and practical skills, ultimately making the learning process more interactive, meaningful, and efficient.

SV. Prabu

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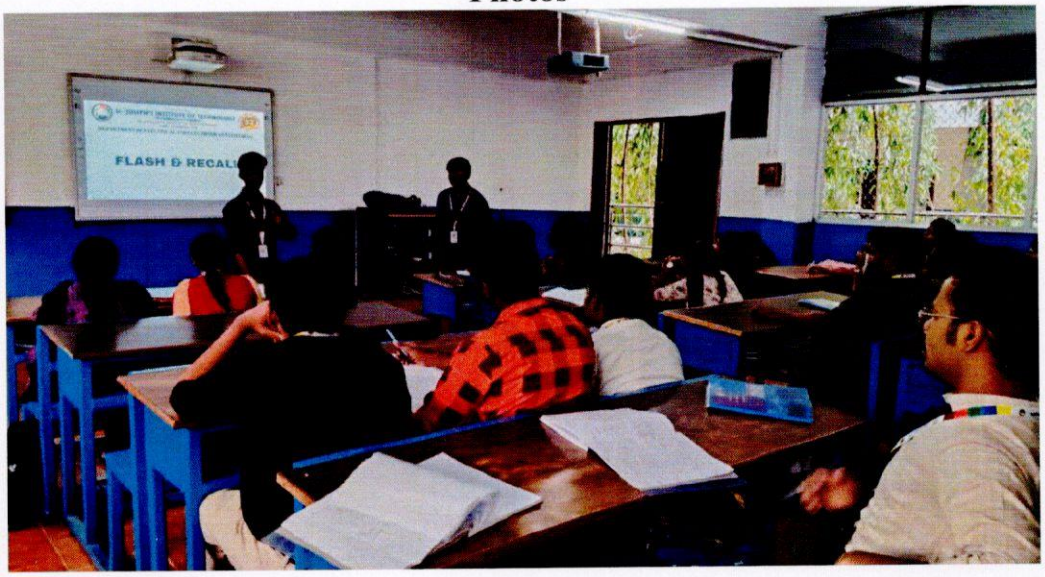
Innovative Teaching and Learning

Academic Year: 2023-2024

Name of Teaching method	Active Recall Based Learning
Topic	AC machines
Subject	EE4401 – Electrical Machines – II
Name of the Faculty	Mrs.S.Vasanthi
Year/Dept.	III EEE
Date/Time	14-02-2024 & 2.20 P.M
Innovative Teaching Method Description	The topic covered was "AC Machines" from the subject Electrical Machines–II. The session aimed to strengthen students' understanding of key concepts such as the working principles, construction, and performance characteristics of induction motors and synchronous machines through rapid recall and discussion activities. In this method, students were encouraged to actively retrieve information from memory through quick questioning, flash prompts, and group interactions. This technique enhanced conceptual clarity, improved memory retention, and promoted critical thinking. The activity made the learning process more interactive and engaging, helping students to confidently recall and apply theoretical concepts in practical scenarios.

Photos



Students Feedback	The active recall activities made it easier to remember important concepts of AC machines and improved confidence in answering questions during class. The quick questioning and group discussions made the session highly interactive and helped develop a clear understanding of the working and characteristics of induction and synchronous machines.
Total number of students	58
Total number of students present	02
Total number of students absent	56
Action plan for absentees	They will be paired with a classmate who attended the session for a 10–15 minute peer discussion to reinforce understanding.

Reflective Critique:

The active recall based learning method effectively enhanced students memory retention, conceptual clarity, and critical thinking in the topic of AC machines. By engaging students through rapid recall exercises and interactive discussions, the method promoted active participation and enabled them to apply theoretical concepts with greater confidence in both academic and practical contexts.

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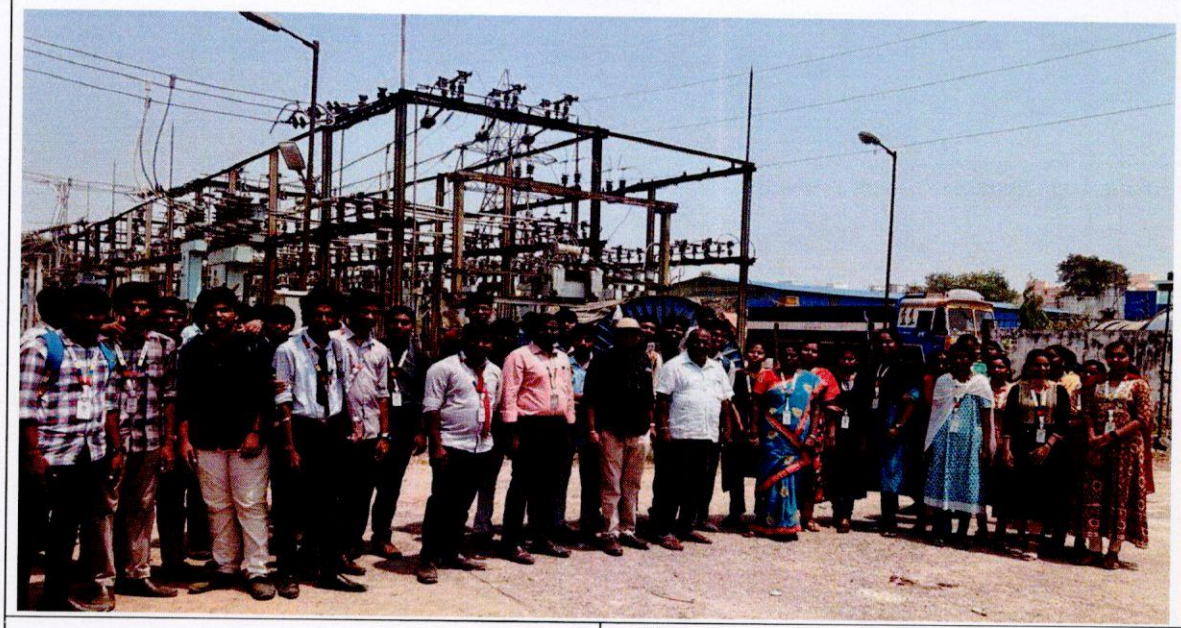
Innovative Teaching and Learning

Academic Year: 2023-2024

Name of Teaching method	Visit Based Learning
Topic	Lightning Arrester
Subject	EE4405 – Generation, Transmission and Distribution
Name of the Faculty	Mrs.K.Golda Jeba
Year/Dept.	II EEE
Date/Time	14-03-2024 & 9.30 A.M
Innovative Teaching Method Description	As part of the Visit-Based Learning methodology, students of II EEE explored the topic "Lightning Arrester" under the subject 110 KV Substation, Madambakkam. The students visited North Chennai Thermal Power Station, Chennai. The visit provided practical exposure to the functioning and installation of lightning arresters in power systems. The main objective of this activity was to help students understand how lightning arresters protect electrical equipment and power lines from high-voltage surges caused by lightning strikes. During the visit, students observed various types of lightning arresters, their working principles, and the materials used in their construction. This experiential learning approach enabled students to connect theoretical knowledge with real-world applications. It enhanced their understanding of system protection, transient phenomena, and safety practices in electrical power networks.

Photos



Students Feedback	The visit provided a clear understanding of how lightning arresters operate in real power systems and offered practical insight beyond textbook knowledge. Observing different types of lightning arresters during the visit enhanced understanding of system protection and made the concept of power system transients much easier to grasp.
Total number of students	56
Total number of students present	55
Total number of students absent	01
Action plan for absentees	A brief follow-up session will be conducted in class where absentees can clarify their doubts with the faculty and peers who attended the visit.

Reflective Critique:

The visit provided valuable real-world experience and strengthened understanding of surge protection practices. Students were highly motivated by observing actual installations. However, technical explanations during the visit were fast-paced for some learners. A structured pre-visit briefing and post-visit worksheet will be added to maximize learning continuity.

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