SCHOOL OF ENGINEERING

Department of Electronics and Communication Engineering

List of Courses on Different Pedagogies & Technology Integration

S. No.	Pedagogy Implemented	List of courses/topics	Technology Implementation
1	Collaborative	Network Theory, Analog Electronics, Digital Electronics, Signals and Systems Microcontroller and	Collaborative projects
2	Experiential	Digital Electronics	Hands on module
3	Cooperative	BoEE ,Signals and systems Internet of Things, Microcontroller and interfacing VLSI Testing, Wireless Sensor Networks	
4	Flipped classroom	Digital Electronics	PPT
5	Case Study Based	Internet of Things	Analyzing and report writing on a specific application that utilizes IoT technologies

Report and Pics

Education is a dynamic field that continually evolves to meet the needs of diverse learners. In this semester, the department of electronics and communication engineering focuses on Collaborative Learning, Experiential Learning, Cooperative Learning, Flipped Classroom, and Case Study Based Learning to enhance the overall learning experience.

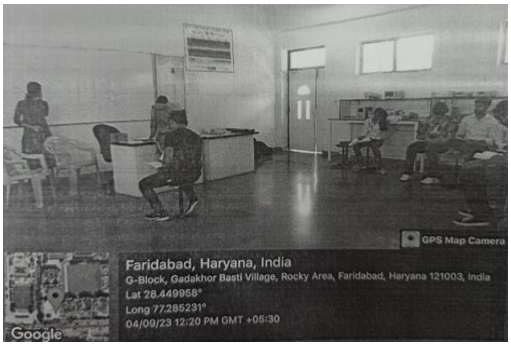
Collaborative learning emphasizes group work among students. It encourages the sharing of ideas and knowledge to achieve a common goal. This approach enhances communication, critical thinking, and problem-solving skills. Faculties were guiding students through the learning process. Group discussions, and peer evaluations are common strategies employed in collaborative learning environments.

Analog Electronics: Implementing peer-to-peer learning in Analog Electronics for topics like Bipolar Junction Transistor (BJT) and Metal-Oxide-Semiconductor Field-Effect Transistors (MOSFETs) aimed to enhance understanding and application through collaborative student interactions. The primary goal was to engage the students in discussions and collectively deepen their comprehension of complex electronic components.

Outcome:

- By engaging in peer discussions, students clarified their doubts, shared perspectives, and reinforced conceptual understanding. They improved their grasp of BJT and MOSFET principles through collaborative exploration of theoretical concepts.
- Peer-to-peer learning encouraged practical application discussions, aiding in the understanding of how BJTs and MOSFETs function in real-world circuits.
- They developed proficiency in applying theoretical knowledge to design and analyze circuits involving these semiconductor devices.
- Students gained confidence in solving complex problems related to BJT and MOSFET applications, enhancing their troubleshooting abilities
- Peer interactions foster effective communication of ideas, allowing students to articulate and share their understanding with peers.
- Improved communication skills through group discussions, enhancing their ability to work effectively in a team

Experiential learning focuses on hands-on experiences that bridge theory and practice together. Students actively engage in real-world activities, promoting a deeper understanding of concepts. This approach enhances students' ability to apply theoretical knowledge to practical situations, fostering a holistic understanding of the subject matter.



Cooperative learning involves small groups of students working together to achieve shared objectives. This promotes mutual support, communication, and interdependence. Cooperative learning structures include jigsaw, think-pair-share, and peer tutoring. Through collaborative efforts, students develop teamwork skills, learn from one another, and build a sense of community within the classroom.

Basic of Electrical and Electronics Engg: Cooperative Learning for Kirchhoff's Laws in Basic Electrical and Electronics:

Implemented cooperative learning strategies to enhance the understanding of Kirchhoff's Laws in the Basics of Electrical and Electronics engineering. The primary goal was to encourage active collaboration among students, fostering a deeper comprehension of these fundamental principles.

Outcome:

Through group discussions and problem-solving, students gained a comprehensive understanding of Kirchhoff's Laws and their applications in electrical circuits.

Cooperative learning activities enabled students to apply Kirchhoff's Laws effectively to analyze and solve complex electrical circuits.

Collaborative problem-solving tasks enhanced critical thinking skills, allowing students to analyze circuit scenarios and make informed decisions based on Kirchhoff's Laws.

Group interactions enhanced communication skills and they were able to discuss and understand Kirchhoff's Laws within their peers.

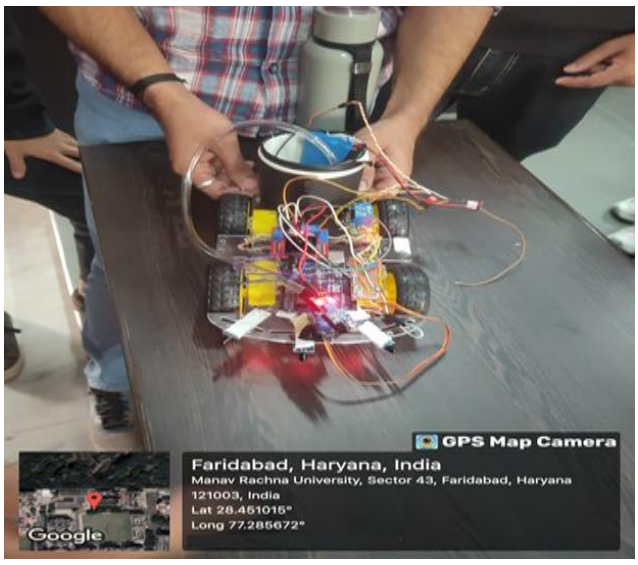
Cooperative learning strategies for Kirchhoff's Laws aimed to create an interactive and engaging learning environment, fostering enhanced understanding, application skills, and critical thinking among students in the course of basic electrical and electronics engineering.

The flipped classroom model reverses traditional teaching methods. Students reviewed instructions before attending class.

Objective: A flipped classroom approach was implemented to optimize the learning experience for the **Analog Electronics project on audio oscillator design**. The primary goal was to allow students to independently explore relevant concepts before engaging in collaborative, hands-on activities during class time.

Outcomes:

- Students independently reviewed the theoretical concepts related to audio oscillator design, ensuring a basic understanding before hands-on activities.
- Flipped mode encouraged active engagement, allowing students to explore audio oscillator principles at their own pace before applying them in practical project work.
- It facilitated problem-solving sessions, enabling students to enhance their troubleshooting skills during the audio oscillator project.
- It enabled collaborative work during class sessions, allowing students to share insights, exchange ideas, and collectively contribute to the success of the audio oscillator project.
- Students developed a deeper understanding of analog electronics and circuit design through the practical application of audio oscillator concepts in their projects.
- The flipped classroom approach bridged the gap between theoretical knowledge and real-world applications, enhancing students' ability to apply audio oscillator concepts beyond the classroom setting.



Case study-based learning immerses students in real-life scenarios, encouraging them to analyze, synthesize, and apply knowledge to solve complex problems. This method enhances critical thinking, decision-making, and problem-solving skills. Case studies may be drawn from various disciplines, offering a multidimensional perspective on issues and promoting interdisciplinary connections.

Poster Presentation for Introduction to Research: The poster presentation in the "Introduction to Research" course was conducted to showcase students' research ideas and provide a platform for them

to present and discuss their methodologies, and the significance of their research topics

Outcome

The students developed effective communication skills, allowing them to articulate research concepts clearly and concisely through visual presentations.

Stimulated critical thinking skills and challenged students to analyze and synthesize complex research information, fostering the ability to draw meaningful conclusions.

Encouraged collaborative learning environments where students worked together in team to create and present posters, promoting teamwork and the exchange of diverse perspectives in the research context.

By integrating collaborative, experiential, cooperative, flipped classroom, and case study-based learning approaches, coupled with complementary co-curricular activities, the Department of Electronics and Communication Engineering created an inclusive learning environment.