



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

5.5 Innovations by the Faculty in Teaching and Learning

Innovative teaching and learning process is required for students to understand the curriculum. This helps in bridging the gap between the curriculum and the Industry.

1.Multimedia Learning Process:

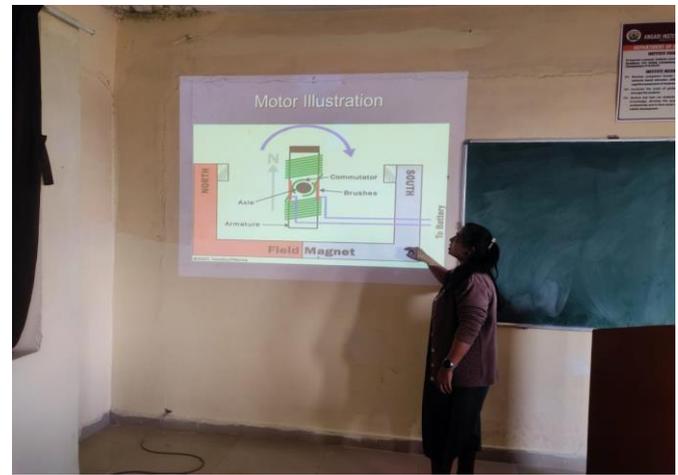
The faculties are using multimedia elements LCD projectors in the Classroom. It will help the faculties to represent the content in a more meaningful way using different media elements.

2.ICT

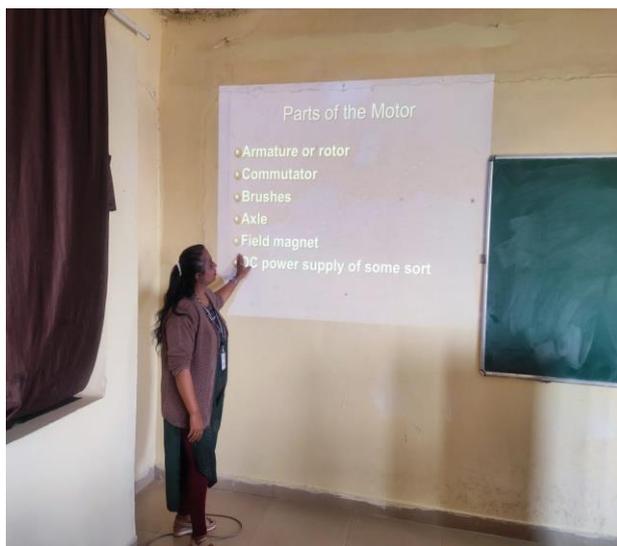
Each subject, the slides are created with animations. For certain topics videos is shown and then the teaching is continued to provide a realistic overview and better understanding.



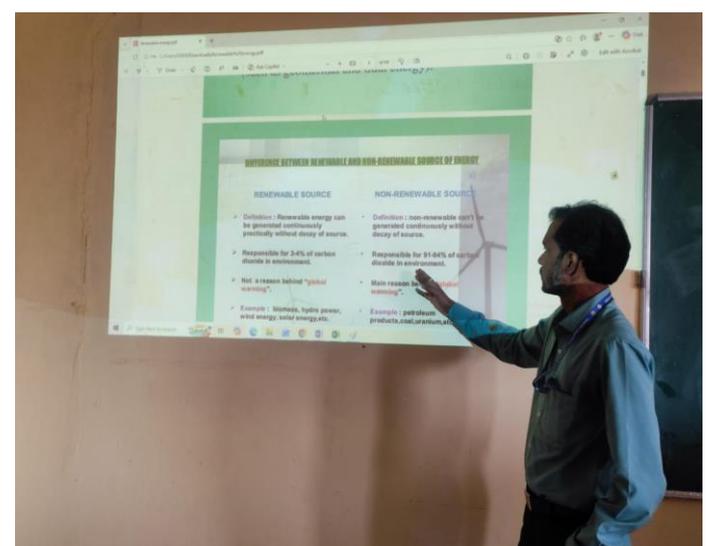
(a)



(b)



(c)



(d)



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(e)

3. Quiz

The Quiz is used as an assessment tool to improve the instructional methods and student feedback through the teaching and learning process. They learn to work in a team..



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MULTIPLE CHOICE QUESTIONS(MCQ's)

Subject: Power System Planning (21EE731)

Date: 16/12/2024

Student Name: Adarsh Kulkarni

USN: 19AG21EE001

1.	What is the primary objective of power system planning? a) Reduce the system voltage b) Maximize load shedding c) Ensure reliable, cost-effective, and sustainable power supply d) Increase transmission losses
2.	Which factor is the most critical in determining power system expansion? a) Load demand growth b) Weather conditions c) Voltage regulation d) Transformer rating
3.	What is a load curve? a) A graph of energy consumption over time b) A representation of system losses c) A chart of generator efficiency d) A diagram of power system components
4.	What is the primary function of a transmission system in power planning? a) Power generation b) Voltage regulation c) Transfer of bulk power from generation to distribution d) Energy storage
5.	What is meant by 'reserve margin' in power system planning? a) Excess power supply to handle contingencies b) Minimum power required during peak hours c) Margin of error in load forecasting d) Storage of energy in batteries
6.	Which software tools are commonly used for power system planning? a) MATLAB, PSSE, and ETAP b) Photoshop and AutoCAD c) MS Excel and Word d) CorelDRAW and Blender
7.	What is a demand-side management (DSM) strategy? a) Techniques to increase power demand b) Methods to reduce energy consumption during peak hours c) A strategy for storing excess energy d) A policy for improving generator efficiency
8.	What is the significance of renewable energy in modern power system planning? a) Reduce dependence on fossil fuels b) Ensure sustainability and reduce greenhouse gas emissions c) Provide decentralized power generation d) All of the above
9.	What is the main goal of power system planning? a) Reduce electricity consumption b) Optimize power system reliability and cost c) Increase power plant downtime d) Improve only the distribution network
10.	Which of the following is essential for power system planning? a) Forecasting electricity demand b) Enhancing grid instability c) Ignoring environmental factors d) Delaying infrastructure upgrades
11.	What does 'reserve margin' mean in power system planning? a) The margin of error in electricity billing b) Extra generation capacity over peak demand c) The cost margin of electricity production d) Area reserved for power plants
12.	What is a load curve used for? a) Calculating energy losses b) Representing variations in load demand over time c) Designing transformer windings d) Measuring generator output efficiency



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13	Which type of energy is prioritized in sustainable power planning? a) Renewable energy b) Fossil fuels c) Nuclear energy only d) Coal-fired plants
14	What is demand-side management (DSM)? a) Increasing power generation during peak hours b) Reducing or shifting electricity demand c) Creating storage systems for demand surplus d) Decreasing voltage to manage demand
15	Why is environmental impact assessment necessary in power planning? a) To reduce construction costs b) To ensure compliance with legal regulations and sustainability c) To delay renewable integration d) To increase energy wastage
16	What is the role of a transmission network in power planning? a) Deliver power directly to consumers b) Transfer electricity from generation to distribution systems c) Provide backup power during outages d) Control load scheduling
17	What challenges arise when integrating renewable energy into the power system? a) Variability in energy output b) High initial costs c) Need for energy storage systems d) All of the above
18	What is the importance of load forecasting in power system planning? a) It reduces the need for power generation b) It ensures adequate power supply for future demand c) It delays infrastructure upgrades d) It eliminates power losses
19	What challenges arise when integrating renewable energy into the power system? a) Variability in energy output b) High initial costs c) Need for energy storage systems d) All of the above
20	The topmost conductor in hy transmission line is a) B-phase conductor b) Y-phase conductor c) R-phase conductor d) Earth conductor

17
20



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Flipped Classroom (FC) :

FLIP stands for:

F: Flexible environment

L: Learning Culture

I: Intentional Content

P: Professional Educator

A flipped classroom is an instructional and ambivalent strategy, and a type of blended learning that reverses the traditional learning environment. It moves activities, including those that may have traditionally been considered homework, into the classroom. With a flipped classroom, students watch online lectures and collaborate in discussions, while actively engaging concepts in the classroom, with guidance of faculty.

Flipped Classroom teaching Strengthens team-based skills, encourages engagement and attendance promotes higher level classroom discussion



Flipped Class



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Project based Learning (PBL) :

The students are encouraged to carry out mini projects and capstone projects under the guidance of faculty. Further, students of first year and second year are encouraged to do mini projects /hobby projects to make them comprehend the theoretical aspects taught in the classrooms. The annual project exhibition is conducted every year to showcase their projects, and to encourage students to have interactions with their juniors, peers and senior students.



Students Demonstrating Projects

Industrial Visit:

Industrial Visit to Varahi Underground Power House Hosangadi Udupi

The Department of Electrical and Electronics Engineering, Angadi Institute of Technology & Management, Belagavi, Organized Industrial visit for 5th and 7th semester students to Varahi Underground Power House, Hosangadi Udupi on 29/11/2024. An industrial visit to the Karnataka Power Generation House was organized for Electrical and Electronics Engineering students to gain practical insights into power generation, distribution and the operational intricacies of a power plant. This visit served to bridge the gap between theoretical knowledge and real-world application and enhancing students to understand the power engineering concepts.



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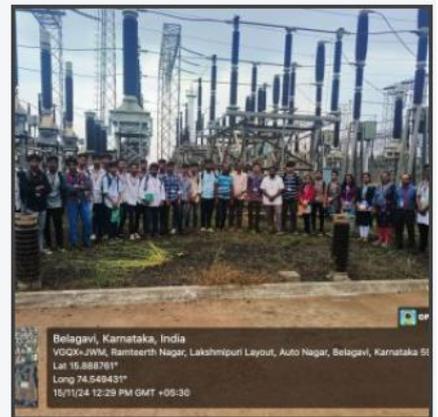
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Visit to Varahi Underground Power House Hosangadi Udupi





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Technical Talk

On June 22nd 2022 the technical talk was conducted for students on “Electrical Transmission Network” and the resource person was Dr. Shivappa. Sobarad Assistant Engineer O&M Substation GESCOM Munirabad. Dr. Shivappa. Sobarad Explained to the students about the working process of Electrical Transmission in the substation.



Experiential Learning (EL)

Experiential Learning is an engaged learning process whereby students learn by doing and by reflecting on the experience. Experiential Learning aims at recognizing and encouraging spontaneous opportunities for learning, engagement with challenging situations, experimentation, and discovery of solutions. Some forms of experiential learning include Internships, industrial visits, out-of-classroom community service experiences/projects (AICTE activity).

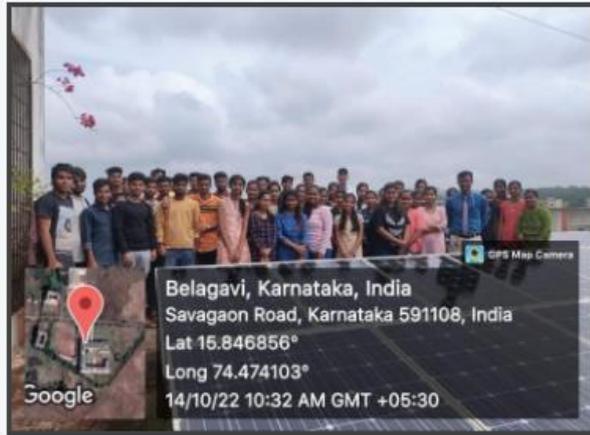




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Green Energy Club Activity

The Green Energy Club aims to promote awareness, innovation, and practices related to sustainable and renewable energy among students and the community.



Details of innovative teaching methods adopted for few subjects are listed in the below table 5.5 (i)
Table 5.5(i): Innovative teaching methods adopted for few subjects

Sl.No	Sem	Subject	Faculty	Innovation Method
1	1	Basic Electrical Engineering	Prof. Rajendra G	PPT and Kit
2	6	Renewable Energy Sources	Prof. Kantesh D C	Models: Solar and Wind application models
3	1	Elements of Electrical Engineering	Prof. Rajendra G	PPT ,Measurement and testing of Electrical parameters with Multimeter
4	1	Renewable Energy Sources	Prof. Kantesh D C	PPT and Working Model Display
5	4	Electric Motors	Prof. Vinaychandrika K	PPT and Cut Sections



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5.5 (i) (a) Cut Section of DC Shunt Motor



(b) Cut Section of AC Synchronous Motor



(c) Cut Section of 3 Phase AC Squirrel Cage Induction Motor



(d) DIN T/F



e. Solar Panel



d. Voltage HRC Fuse



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E-content facility provided by faculties are listed in the below table

Faculty Name	Courses	Link Details
Prof. Kantesh D C	Signals and Systems	https://youtu.be/8xbfqxnNIZE
	High Voltage Engineering	https://youtu.be/rveRXrfGXxE
	Electromagnetic Field Theory	https://youtu.be/d9qUyRlPdIA
Prof. Rajendra G	Power System Protection	https://youtu.be/6w1Y_SAKdno
		https://youtu.be/knvvsqcdnJ0
		https://youtu.be/YvJrAKF1fXo
Basic Electrical Engineering	https://youtu.be/aX_HbTFFfxU?list=PLKbleAZbXsES7-ohjD6v9GvWjWpCv4wfl	
Prof. Vinayachandrika K	Digital System Design	https://youtu.be/xnD8y7YCWMY
		https://youtu.be/77L4kOYjirs
		https://youtu.be/gXdQ3btwhek
Prof. B.N. Patil	Basic Electrical Engineering	https://youtu.be/BBplBESvGTw
		https://youtu.be/HL7UllDxgDU
		https://youtu.be/c7_rjvEBiTM
Prof. Alok Kulkarni	Utilization of Electric Power	https://youtu.be/bczj7qb6CDE https://youtu.be/E50YUwBkBoA
Prof. Santosh Raikar	Basic Electrical Engineering	https://youtu.be/J48mgNnclus https://youtu.be/6L64sYkRoJ4