

Innovations in Teaching

The key role of a teacher is to teach, which can be understood as meaning to facilitate learning of some target curriculum. Teaching is therefore intimately tied to notions of learning and there is a sense that if students do not learn then whatever the teacher is doing does not deserve the label of ‘teaching’. The use of innovative methods in educational institutions has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve the human development goals for the country.

Traditional Teaching Method: In the pre-technology education context the teacher is the sender, the educational material is the information and the student is the receiver of the information. In terms of the delivery medium, the educator can deliver the message via the “chalk-and- talk” method and LCD projector transparencies. This learning perspective is a popular technique, which has been used for decades as an educational strategy in all institutions of learning. Basically teacher controls the instructional process, the content is delivered to the entire class and the teacher tends to emphasize factual knowledge.

Innovative Teaching Methods: Following innovative learning methods are initiated and implemented by the faculty for students to learn in a better manner.

1. Through Display of Working Models
2. Through Software
3. Through Display of Animation
4. Use of ICT such as Google classroom, Video lectures, Virtual labs, Smart Boards

INT-21

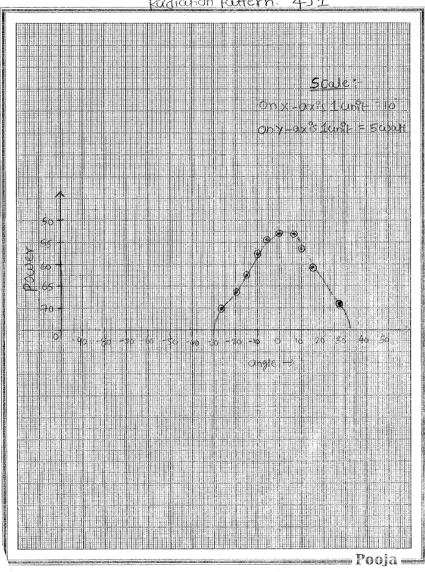
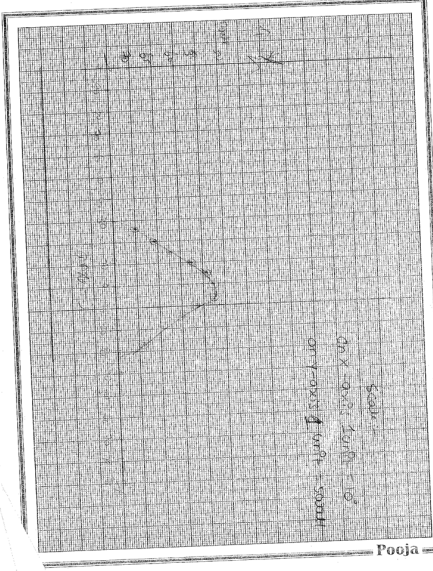
Antennas and Wave Propagation

Innovation in Teaching is conducted under Fields and Communications group (Group-1) by the faculty of department ECE. Plotting the Radiation pattern of the given Horn Antenna using a Microwave Bench Projects is identified and given training to the III ECE students under the guidance of Prof. B. Hari Kumar and Dr. B. L. Prakash, Associated faculty member: Ms. D. Ramya

Plotting the Radiation Pattern:

To measure the radiation pattern of a horn antenna using a microwave bench, you need to set up a system with a transmitting horn antenna connected to a microwave source, a receiving horn antenna mounted on a rotating platform, and a power detector to measure the received signal strength at different angles; then, rotate the receiving antenna in steps while recording the power levels to plot the radiation pattern in both the E-plane and H-plane of the antenna



		 
INT-20	<u>“Multisim hands-on session” as part of Innovation in Teaching during AY2022-23</u> <u>Course:</u> Circuit Theory for B. Tech (ECE), II Year, I Sem <u>Course Code:</u> 20EC21004 <u>Objective:</u> To provide hands-on simulation experience to the students and clarify the concepts in “Transient and	

steady state analysis of single time constant circuits in time domain”.

Resource persons:

1) Mr.O.V.P.R Siva Kumar, Professor, Faculty for CT, II B.Tech (Section B), Dept. of ECE

2) Mr.Md Furkhanuddin, Asst. Prof., Associate Faculty for CT, II B.Tech (Section B), Dept. of ECE

Demo Session to Students on Multisim:

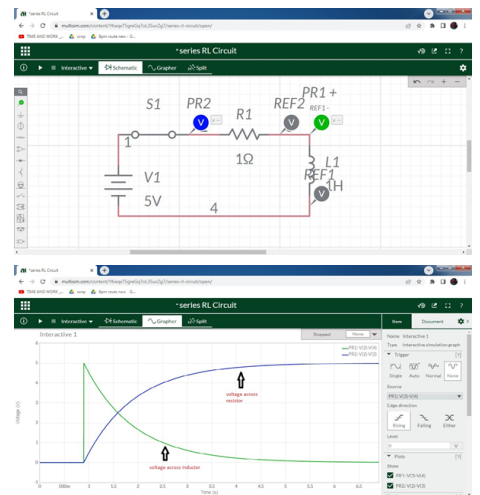
A demo of Multisim tool was given to the students on 17th November, 2022 by using the free online version of Multisim from the link given below:

<https://www.multisim.com/content/9DqSigwz3dkSMgdXN8t4jT/online-simulator>

The following were covered in the demo:

1. Introduction of the features
2. Practical demo on how to build a RL Series Circuit with DC Excitation.
3. Students were given a demo of how to simulate the circuit (when the Switch is closed at $t=0$).
4. Students were explained on how to plot the graphs for the current in the circuit and also the voltage across the inductor.

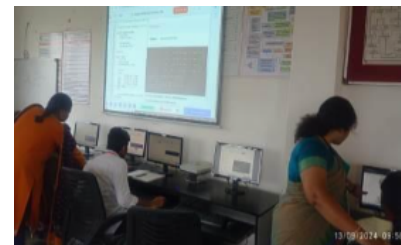
Number of students attended: 51



INT-19

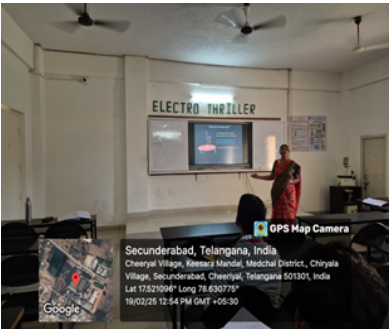
Using Online Simulator JDOODLE:
<https://www.jdoodle.com/execute-verilog-online>
Link for Online Verilog HDL Simulator

During this academic year students are given exposure to how to simulate Digital Design through Verilog HDL course concepts using Online Simulator using JDOODLE. This has enabled the student to understand the concepts both theoretically and practically. This Hands-on session was conducted on 13th September, 2024 from 9 AM to 10:30 AM.



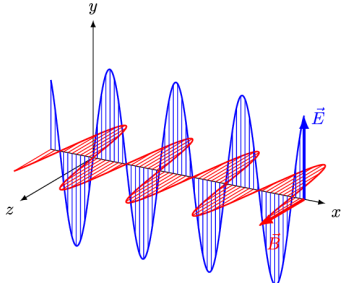
	As this tool is compatible with the browser version, students can run the codes and verify using their mobile phone, hence availability of PC/ Laptop is not mandatory.	
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INT-18	Teaching ECAD with Multisim Software Date: 11-11-2024 Time: 1:40 PM to 3:30PM Faculty: Dr. Appala Raju Uppala To simplify complex concepts like amplifier frequency response and designing amplifiers, II-Year ECAD faculty utilize Multisim software. This visual approach enhances understanding, promotes experiential learning, and develops practical skills in Analog Electronics.	
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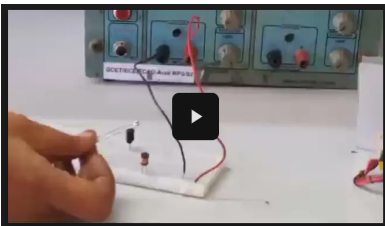
INT-17	Innovation in Teaching - Explaining Cylindrical Coordinates Using a Bottle Gourd and guava. Date : 18.02.2025 Faculty : Prof .B.Harikumar Class :ECE 2B Time: 09.00 to 10.00 AM In an effort to enhance the understanding of cylindrical coordinates among students, an innovative teaching approach was implemented using a bottle gourd (ridge gourd) and guava. This method, introduced as part of the Effective Teaching and Learning for cylindrical coordinate systems, making abstract mathematical concepts more accessible and engaging. The primary objective of this innovation was to simplify the concept of cylindrical coordinates. A bottle gourd was chosen due to its natural cylindrical shape, making it an ideal representation of the coordinate system.	 Secunderabad, Telangana, India Cheerly Village, Keesara Mandal, Medchal District, Chiryala Village, Secunderabad, Telangana 501301, India Lat 17.521355° Long 78.630822° 18/02/2025 09:24 AM GMT +05:30
INT-16	Understanding the Spherical Coordinate System This animated video aims to visually explain the spherical coordinate system, its components, and how it relates to Cartesian coordinates. Visualizing the transformations and properties of this coordinate system, students can develop a deeper conceptual and practical understanding of 3D space representation. Date:19.02.25 Faculty:Dr.Y.Nagalakshmi Class :ECE 2D Time: 12.00 to 01.00 PM	 Secunderabad, Telangana, India Cheerly Village, Keesara Mandal, Medchal District, Chiryala Village, Secunderabad, Cheerly, Telangana 501301, India Lat 17.521094° Long 78.630775° 18/02/25 12:44 PM GMT +05:30

INT-15	Title : "From States to Outputs: A Journey through Sequential Circuits" A gallery walk is a classroom activity where students move around the room to view and provide feedback on each other's work. Gallery Walk is a discussion technique that gets students out of their chairs and into a mode of active engagement. Gallery Walk activity for 2-1 ECE B section Venue: II-I ECE B Room No 118 Time:12.00 Noon to 01.00 PM Date: 26.11.2024 Groups-8 (5 students per group) 2 groups of students explained their solutions to all groups.	
INT-14	"Test Your Knowledge: Class Quiz for Ongoing Assessment" Logic Gates MODE:OFFLINE Date: 12.09.2024 II-I ECE B,D section To reinforce students' understanding of logic gates, a class quiz was conducted as an on-going assessment tool. The quiz aimed to evaluate students' grasp of fundamental concepts and their ability to apply logical reasoning in digital circuits. The class quiz is an effective method for assessing and reinforcing knowledge of logic gates. By incorporating ongoing assessments, we can track student progress and address learning gaps promptly.	

INT-13	Teaching Using Physical Models In the course, Microwave Engineering, while explaining about the Directional coupler to the students of IV Year ECE, the physical device of Directional coupler was demonstrated to the students to get them a better understanding about the working of the device. Similarly concepts of E-plane Tee, H- plane Tee, Circulator, Magic Tee, Reflex Klystron Oscillator were explained using physical devices. Name of the Teacher: Prof. B. Hari Kumar	
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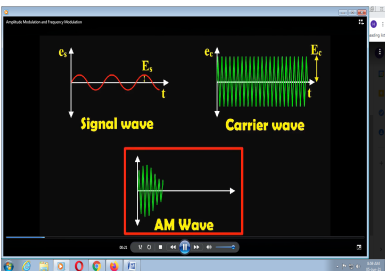
INT-12	Through Animated Videos The concept of Propagation of Electromagnetic Wave in free space in which the directions of Electric field, magnetic field and the direction of propagation are mutually perpendicular to one another is explained through an animated Video “Wikimedia Commons.” to II ECE A students on 14-Feb-2024 Name of the Faculty: B. Hari Kumar	
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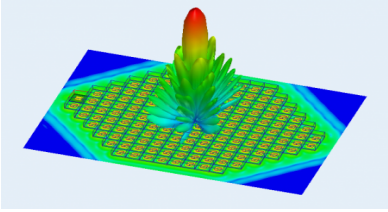
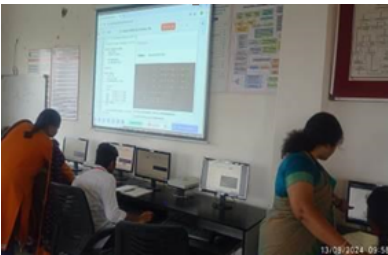
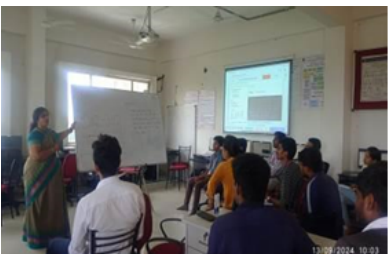
INT-11	Through Simple Experiments The concept of Static electric field is explained to the II Year students with the following experiments. - Upon rubbing the balloon on our hair, negative charge gets induced on to the balloon while positive charge gets transferred on to our hair. The balloon with a negative charge changes the track of water fall (bends towards the balloon) as can be seen from the video - Upon rubbing the balloon on our hair, the negative charge which induced on to the balloon is attracting small pieces of paper in the video.	
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INT - 10	Through Simple Experiments The concept of creating a Static Magnetic field is explained to the II Year students using a simple experiment. A current carrying conductor creates a magnetic field. <u>This simple experiment is proof of that concept</u>	
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INT-09	Through Guest Lectures A Guest lecture was organized by Group III (Communications) under IEEE SB, GCET on 30th September 2019 on “Role of Communication, Navigation and Surveillance in Aviation”, by Dr.Ch.Mahesh, SM (CNS), Airport Authority of India (AAI), HAL Hyderabad for IV Year students. 60 students have attended the lecture	
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INT-08	Value Addition Course A Student Development Program on Arduino Programming and Node MCU for IoT was conducted for four weeks from 7th January, 2020. The resource person were Mr. Ch.Sandeep, Mr. M.Anand and Mr. P.Chandra Prakash Reddy from the Department of ECE, GCET. 100 students were trained in this program	
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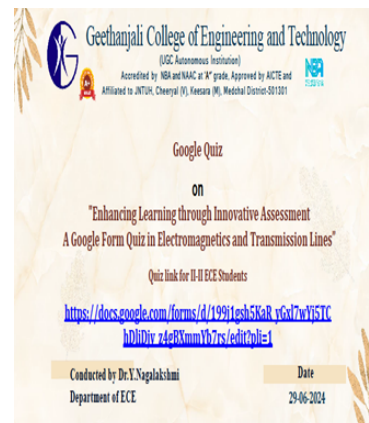
INT-07	Through Animation Videos The concepts of modulation techniques can be understood in a better way by the students if animated videos are presented to them. The concept of Amplitude Modulation technique wherein the amplitude of the carrier wave is modified according to the instantaneous amplitude of the message signal is taught using animated videos that are available on the internet. Name of the Teacher: Dr. P. Srihari	
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INT-06	Through Use of Software The concepts of radiation of an antenna is very hard to explain in terms of the equations. The radiation pattern of an antenna is also difficult to visualize as it is a 3-D pattern. While teaching the Antennas and Propagation course in III Year – I semester, the teachers are taking the help of HFSS software (student version) to explain the concepts of different antennas and to show them how radiation pattern of an antenna appears in 3-D. A good number of students have done projects in the area of Microstrip antennas using the HFSS software.	
INT-05	During this academic year students are given exposure how to simulate the Digital Design through Verilog HDL course concepts using Online Simulator using JDOODLE. This has enabled the student to understand the concepts both theoretically and practically. This Hands-on session was conducted on 13th September, 2024 from 9 AM to 10:30 AM. As this tool is compatible with the browser version, student can run the codes and verify using their mobile phone, hence availability of PC/ Laptop is not mandatory.	  

INT-04	Implemented Application Centric Learning on Curricular Topics to the students, partial course delivery by Industry Expert is conducted as an initiative of Industry Institute Interaction Cell of GCET under CoE VLSI Design and in association with IEEE CAS SB Chapter. <u>Resource Person:</u> Ms.S.Sowmya (GCET-Alumni), Engineer II-Design, Microchip Technologies. <u>Conducted on:</u> 21st, 28th September, 2024 (2 Days) 5th, 19th October, 2024 (2 Days) and 9th November, 2024(1 Day) <u>Timings:</u> From Morning 9:30AM to Afternoon 3:30PM. <u>Total Duration:</u>30 Hours In this, the students are enabled to use and hands-on practice session, at the end students have developed the micro-projects. These micro-projects are exhibited in the form of Poster Presentation and the evaluation is done by the expert committee. The best projects are identified and awarded, based on the knowledge, implementation and presentation.	  
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INT-03	The Department of ECE, Geethanjali College of Engineering and Technology, has adopted new methodologies for the academic year 2023-24, I Semester for both Digital Design Theory Course and Digital Design Lab Course. <u>Course Faculty:</u> 1. Ms. B Sree Latha, Associate Professor, ECE Department. 2. Ms. Y Nagalskhmi, Assistant Professor, ECE Department. 3. Ms. M Umarani, Assistant Professor, ECE	 
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	Department. <u>Course Coordinator:</u> Ms. B Sree Latha, Associate Professor, ECE Department. College has facilitated classrooms with ICT. This is enhanced to handle the courses in a smarter way, with better presentation. During this academic year students are given exposure to how to simulate the course concepts using SimulIDE tool, peer learning workshop on “Integration of Digital Design Concepts with ARDUINO board using Tinkercad Tool” and Workshop on Introduction to Arduino Programming.	
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INT-02	Title: Enhancing Learning through Innovative Assessment A Google Form Quiz in Electromagnetics and Transmission Lines The Google Forms quiz was administered online, ensuring accessibility and flexibility for students to complete the quiz at their convenience within a specified timeframe Insights gathered from quiz responses provided instructors with valuable data on student performance and comprehension levels and identified areas where additional support or clarification was needed. 60 Students attempted the quiz from II-II ECE Conducted by: Dr.Y.Nagalakshmi	
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INT-01	Scientific and Engineering concepts experiments conducted under Innovation in teaching methodologies in Electromagnetic wave Theory	Videos link shared to students group:
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	By integrating physical experimentation with digital media, we aim to provide students with a dynamic learning experience that fosters curiosity and critical thinking. Videos help to enhance understanding concepts by visually illustrating fundamental principles of electromagnetism from demonstrating the behaviour of electric charges and magnetic fields, these videos offer a dynamic way for students to grasp complex concepts. By Prof.B.Harikumar	https://www.youtube.com/playlist?list=PL3boGbFmElRyOpFPugZgrOuA5bBSS8o4V From simple demonstrations of electrostatic attraction showcasing electromagnetic induction, each video serves as a comprehensive resource to deepen understanding and reinforce learning.
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