Nalla Narasimha Reddy Group of Institutions

NALLA NARASIMHA REDDY

Education Society's Group of Institutions - Integrated Campus

(UGC AUTONOMOUS INSTITUTION)

EAMCET/ ICET/ PGECET Code NNRG

SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

A Report

One week SDP on

"INNOVATION IN ELECTRONICS &NETWORKING: A ROAD MAP TO NEXT GENERATION"

from 22/04/2025 to 26/04/2025

The KommNet club under the Research Group NICoN- Dept. of ECE successfully conducted a week workshop on "**Innovation in Electronics & Networking: A road map to next generation** " for II B. Tech students from 22nd April 2025 to 26th April 2025. This workshop aims to provide insights into the importance of MATLAB Software and its related tools for student development in the fields of wireless communication, signal processing, antenna design, Simulink, image processing and so on. This workshop comprises of theoretical lectures and demonstrations of the software and various toolboxes by department faculties.

The students got exposure to MATLAB coding, wireless communication, Antenna design, Simulink usage for communication and Image processing toolboxes. As an outcome of the workshop, the students can develop programming code, process of communication, antenna design, and simulation.

Totally 42 students participated in the workshop and it was organized in association with **the IETE Student Forum (ISF).**

Dr. S Rekha and Mr. A. Aravind, Mr Prashanth Kulkarni, Ms . Anuradha. K, Ms. Swetha.T worked as Faculty Coordinators for this workshop.

Day-1(22 April 2025) INAUGURATION (9:45 am to 11 am):

The workshop was inaugurated by Director, Dean-School of Engineering, and ECE-Head at the ECE seminar hall from 9:45 am to 11 am.

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Day-1 Forenoon (11:15 am to 12:50 pm) and Afternoon (1:30 pm to 4:00 pm):

The workshop started from forenoon session 2 in which **Dr. S Rekha** delivered the lecture on **"Realizing Antennas using MATLAB"** and related concepts. The afternoon session is followed by hands-on training using MATLAB

Dr. S. Rekha, Associate Professor as resource person delivered the concepts of **"Basics of Antenna"**

Day 2 –Session 1:

In the morning session, **Mr. N.Raju** handled the theoretical session on **"Antennas for biomedical aplications" ,** students will learn the concepts of Antennas for biomedical applications are specialized devices designed to transmit or receive electromagnetic (EM) signals for medical purposes, either externally (e.g., wearable sensors) or internally (e.g., implanted devices). These antennas must meet strict design criteria due to safety, miniaturization, and biocompatibility requirements. followed by practical sessions in the afternoon.

Mr. N.Raju, Associate Professor of ECE, as a resource person delivered the **concept of wireless communication.**

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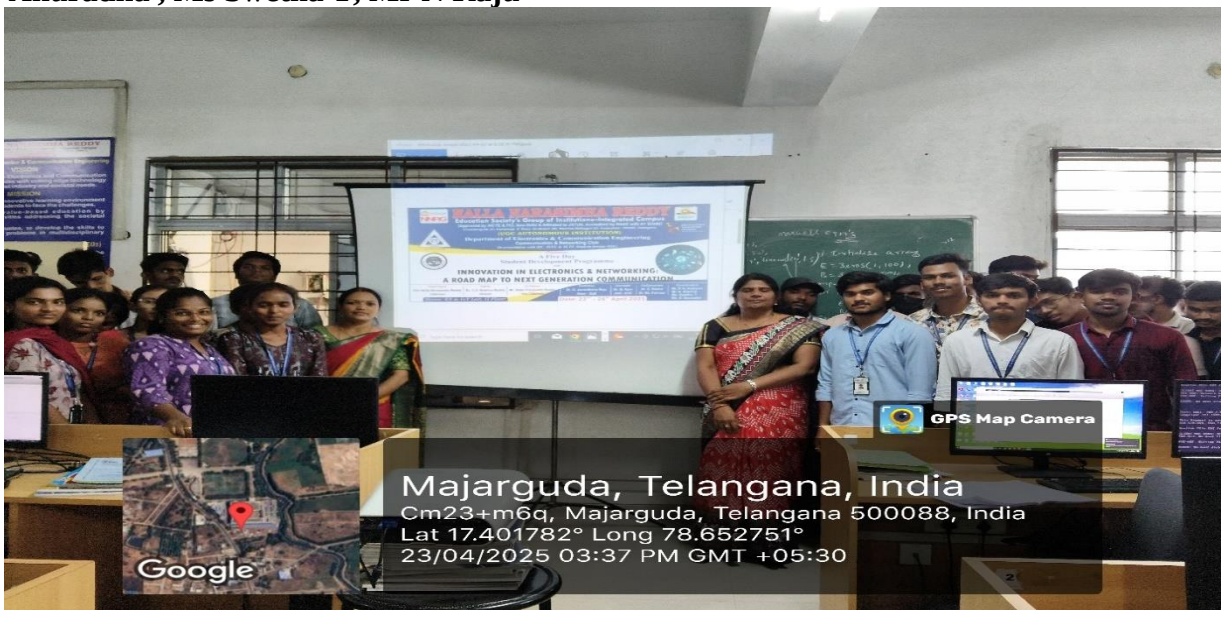
Day 2-Session:2

In the session2 ,Mrs.Swetha.T handled theoretical session on **"Electromagnetic Wave Simulation by MATLAB" ,** students learned the importance of **Electromagnetic (EM) wave simulation using MATLAB** is highly important in the design and analysis of antennas, especially for **biomedical applications**, due to the complexity of interactions between EM waves and biological tissues. followed by practical session.

Mrs.Swetha.T, Assistant Professor sessioin on Electromagnetic wave simulation by MATLAB.

Day 2 Session 3:

In the Session 3 Hands on Session on **Electromagnetic Wave Simulation by MATLAB By Ms Anuradha , Ms Swetha T, Mr N Raju**



Hands on Session on **Electromagnetic Wave Simulation by MATLAB By Ms Anuradha , Ms Swetha T, Mr N Raju**

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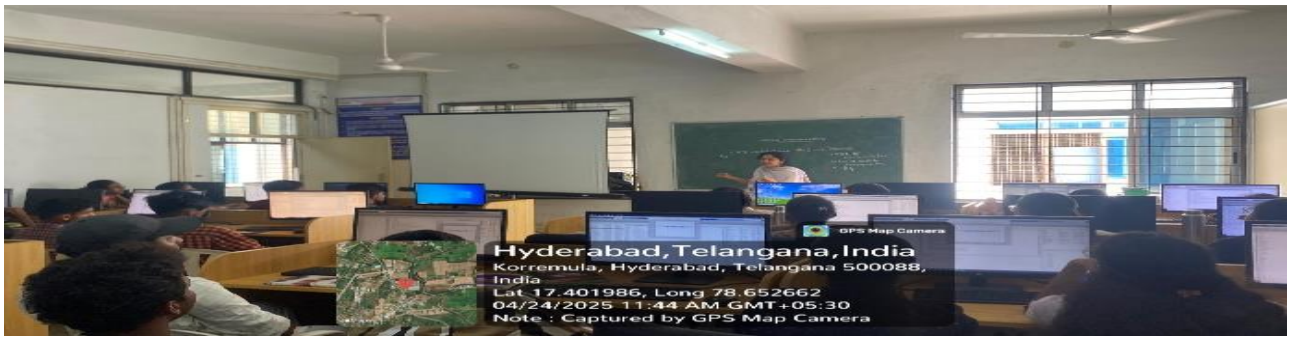
Day-3- Session 1:

In the session1 , resource person **Mr. A. Aravind** delivered a lecture on **"Modeling of data converters in MATLAB".** Students learned the concepts of such as ADCs (Analog-to-Digital Converters) and DACs (Digital-to-Analog Converters)—is essential for designing, analyzing, and verifying mixed-signal systems in various applications, including communications, biomedical devices, and control systems. The afternoon session is followed by hands-on and project implementation.

Mr. A. Aravind, Assistant Professor of ECE, delivered lecture on **Modeling of data converters in MATLAB**

Day 3-Session 2

In the session2 ,**Mrs. B. Naga Prasanna** Deliverd a speech on **Antenna parameters and simulation in MATLAB.** Resource person demonstrate the students in Simulating antennas and analyzing their parameters in MATLAB is a powerful approach to designing efficient, optimized antenna systems—especially important in wireless, radar, and biomedical applications.



Mrs. B. Naga Prasanna Delivered a speech on **Antenna parameters and simulation in MATLAB.**

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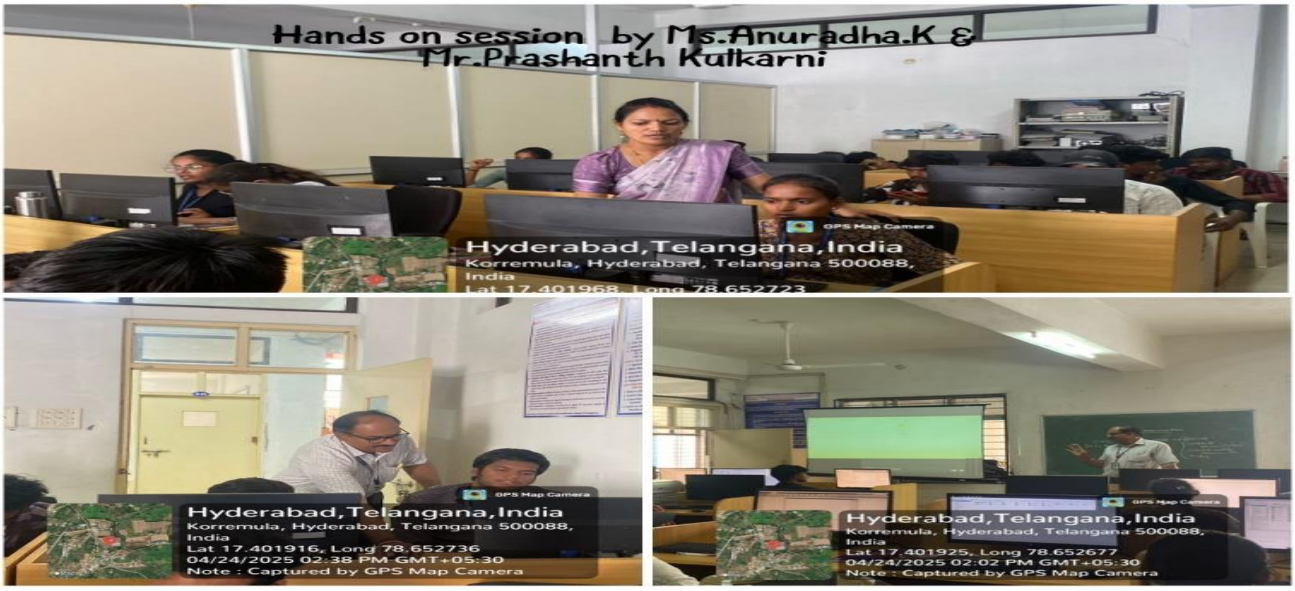
Day 3-Session3:

Afternoon session is handled by resource person **Mrs. K. Anuradha & Mr.Prashanth kulkarni** on **"Implementation of Analog communication system in Simulink and MATLAB"** followed by practical session.



Hands on session by Mrs. K. Anuradha, Mr Prashant Kulkarni B**asic concepts of Implementation of Analog communication system in Simulink.**

Day-4 Session1 :

In the morning session, resource person **Mr. Prashanth Kulkarni delivered a lecture on Implementation of Digital communication system in Simulink and MATLAB,** students learned Digital communication systems are essential for transmitting information efficiently and reliably over various channels. MATLAB and Simulink provide powerful platforms for simulating, visualizing, and testing these systems in a modular, flexible, and scalable way.

Session by Mr. Prashanth Kulkarni on Implementation of Digital communication system in Simulink and MATLAB

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Day-4 Session 2 :

Session is handled by resource person Mr. B. Saidulu on Python programming implementation of coding and students project work is carried out. Basics of python programming modules are explained clearly by the resource person.

Session by Mr. B. Saidulu on Python programming implementation of coding

Day 4-Session3:

Afternoon session is handled by resource person **Mr.Prashanth kulkarni & G Soumya Deliveded** on **"Implementation of Analog communication system in Simulink and MATLAB"** followed by practical session. Students simulated the various modules

Handson session by Mr.Prashanth kulkarni & G Soumya on "Implementation of Analog communication system in Simulink and MATLAB.

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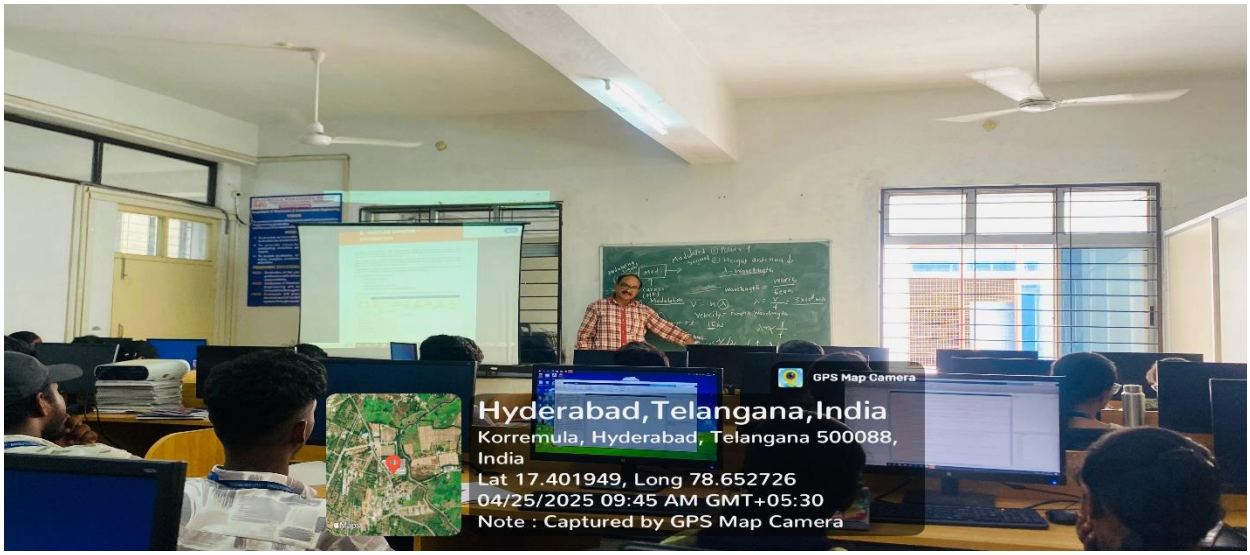
Day 5-Forenoon Session:

In the morning session, resource person **Mr. Prashanth Kulkarni delivered a lecture on Implementation of Digital communication system in Simulink and MATLAB, students developed basic AM, FM, PSK, FSK MODULES by using SIMULINK**



Lecture on Implementation of Digital communication system in Simulink and MATLAB by Mr. Prashanth Kulkarni.

Day-5 Session 2 :

Session is handled by resource person Mrs. G. Soumya **on** Optimization techniques in Channel Coding .Students learned Channel coding is essential in digital communication systems to detect and correct errors introduced by noise and interference. Optimization techniques are used to **maximize performance**, **reduce complexity**, and **improve reliability** of these codes.

Session by Mrs. G. Soumya **on** Optimization techniques in Channel Coding

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Day-5 Session 3 :

In Session 3 Students completed their projects on communication related topics , after completion of projects , they completed a overall project presentation reviews and online quiz conducted by the coordinators, after that quiz winners , best projects were announced, coordinators appreciated the students by the Merit Certificates .

Students Attempting an online quiz test conducted by the Coodrinators

Outcomes of the Workshop

1. Student Development Program Outcomes (DPOs):

SDPO Code	Development Program Outcome Description
SDPO1	Understand the fundamentals of next-generation communication technologies such as 5G, IoT, and AI in networking.
SDPO2	Develop hands-on skills in electronics and networking through practical demonstrations and tools.
SDPO3	Apply innovative thinking to real-world communication challenges.
SDPO4	Gain awareness of current industry trends and standards in modern communication systems.
SDPO5	Enhance communication and teamwork skills through collaborative activities during the program.

2. Mapping of SDPOs to POs, PSOs, and PEOs

SDPO	Mapped PO(s)	Mapped PSO(s)	Mapped PEO(s)	Justification
SDPO1	PO1, PO3	PSO1, PSO2	PEO1	Aligns with foundational understanding and technological updates in modern communication.
SDPO2	PO4, PO5	PSO1, PSO2	PEO2	Encourages technical practice and use of tools to solve problems.
SDPO3	PO1, PO3, PO11	PSO2	PEO2, PEO3	Fosters innovation and leadership in addressing engineering challenges.
SDPO4	PO6, PO12	PSO1	PEO1	Promotes awareness of societal trends and continuous learning.
SDPO5	PO9, PO10	PSO2	PEO3	Develops communication and team skills essential for ethical and effective practice.

NICoN SPoC **HoD-ECE**