

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

A Report

One week SDP on

**“SMART DEVICES, SMART LEARNING:**

**IoT HARDWARE & FIRMWARE FOR BEGINNERS”**

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

The Embedded Systems & IoT club under the Research Group NIEoN- Dept. of ECE successfully conducted a week workshop on "Smart Devices, Smart Learning: IoT hardware & firmware for beginners " for II B. Tech students from 22nd April 2025 to 26th April 2025. This workshop aims to introduce students to the fundamentals of the Internet of Things (IoT), with a special focus on IoT hardware and firmware. Designed for beginners, this programme aimed to provide hands-on learning experiences and foster an understanding of smart devices in real-world applications.. This workshop comprises of theoretical lectures and demonstrations of the software and various toolboxes by department faculties.

Students learned to work with essential tools such as Arduino and Raspberry Pi, gained exposure to embedded programming, and actively engaged in practical sessions that helped bridge the gap between theoretical concepts and real-world applications. The programme fostered innovation, teamwork, and technical curiosity, ultimately enhancing the participants' confidence in building smart device prototypes.

The workshop, which was organized in association with the IETE Student Forum (ISF), involved 55 students.

**Dr. Sk.Fairooz , Dr.P.Ashok Kumar, Mr.K.Rambabu & Ms.N.Lavanya** 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.

**NALLA NARASIMHA REDDY**  
Education Society's Group of Institutions-Integrated Campus  
(Approved by AICTE & PCI, New Delhi & Affiliated to JNTUH, Accredited by NAAC with A+ Grade)  
Chowdariguda (V), Korremula 'X' Road, Ghatkesar (M), Medchal-Malkajgiri (D), Hyderabad - 500088, Telangana.  
(UGC AUTONOMOUS INSTITUTION)

Department of Electronics & Communication Engineering  
NNRG Embedded & IoT Club  
In association with IIC, ISTE & IETE Student forum (ISF)  
Organizes  
A Five Day  
Student Development Programme  
on  
**Smart Devices, Smart Learning:  
IoT Hardware & Firmware for Beginners**

Date: 22<sup>nd</sup> - 26<sup>th</sup> April 2025

Chief Patron Shri Nalla Narasimha Reddy Chairman	Patron Dr. C.V. Krishna Reddy Director	Co-Patron Mr. Nalla Prashanth Reddy Vice-Chairman	Co-Patron Dr. G. Janardhana Raju Dean - SoE	Convener Dr. B. Ravi HoD - ECE	Co-Conveners Dr. Sk. Fairooz	Co-ordinators Dr. P. Ashok Kumar Mr. K. Rambabu Ms. N. Lavanya
--	--	---	---	--------------------------------------	---------------------------------	---

Venue: Seminar Hall

**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 Mr.K.Rambabu delivered the lecture on **“Introduction to Embedded Systems”** and related concepts. The afternoon session is followed by hands-on training using Wokwi Simulator.



**Mr.K.Rambabu** , Assistant Professor as resource person delivered the concepts of **“Introduction to Embedded Systems”**

**Day 2 –Session 1:**

In the morning session, **Ms. N.Lavanya** handled the theoretical session on **"IoT real time applications"** , students will learn the concepts of IoT applications in the various fields. Followed by practical sessions in the afternoon.



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

Ms. N.Lavanya, Asst Professor of ECE, as a resource person delivered the concept of IoT applications.

**Day-3- Session 1:**

In the session1, resource person **Dr.Fairooz delivered** a lecture on "**Machine Learning In Embedded Systems & IoT**". Students learned the concepts of Machine learning models & their importance in IoT. Followed by Hands on Sessions.



**Dr.Fairooz**, Associate Professor of ECE, delivered lecture on **Machine Learning Models in IoT**

**Day-4 Session1 :**

In the morning session, resource person **Dr.Ashok Kumar delivered** a lecture on **real time case studies on Embedded Systems & IoT**, students learned Practical use cases in real time applications. Followed by Hands on session.



Session by **Dr.P.Ashok Kumar** on Implementation of use Case studies on IoT applications.

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### Day 5-Forenoon Session:

In the morning session, all resource persons of the Embedded Systems & IoT club conducted hands on sessions to develop student prototypes.



Students Attempting an online quiz test conducted by the Coodinators

## 1. Student Development Program Outcomes (DPOs):

SDPO Code	Development Program Outcome Description
SDPO1	Gained hands-on experience with IoT hardware platforms like Arduino and Raspberry Pi, and learned the basics of embedded C programming.
SDPO2	Developed mini-projects and smart device prototypes, applying theoretical concepts to practical, real-world scenarios.
SDPO3	The workshop introduced students to the diverse applications of IoT in fields such as smart homes, healthcare, and automation.
SDPO4	Through collaborative tasks and team-based activities, students developed problem-solving skills and the ability to work effectively in groups.
SDPO5	The sessions inspired students to explore career opportunities in IoT and embedded systems, and encouraged them to innovate within the tech space.



# NALLA NARASIMHA REDDY

Education Society's Group of Institutions-Integrated Campus

(Approved by AICTE & PCI, New Delhi & Affiliated to JNTUH, Accredited by NAAC with A+ Grade)  
Near Narapally, Chowdariguda (V), Korremula 'X' Road, Ghatkesar (M), Medchal-Malkajgiri (D), Hyderabad - 500088, Telangana.

(UGC AUTONOMOUS INSTITUTION)

School of Engineering



## 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.

NIEoN SPoC

HoD-ECE