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A REPORT ON A 5-DAY HANDS-ON WORKSHOP ON "NODEMCU ESP8266"

Organized by	: Department of Electronics & Communication Engineering
Association with	: CSC Academy, Vishakapatnam
Theme	: IoT & Embedded Systems using Node MCU ESP8266
Name of the Resource Person(s)	: 1. Mr. Marthi Naga Babu 2. Mr. P. Sri Naga Surendra
Designation	: 1. Firmware Engineer 2. Firmware Engineer
Venue	: VI - 203
Date(s)	: 17.08.2026 to 21.08.2026
Time	: 09:30 AM to 5:00 PM
Name of the Faculty Coordinators	: Mrs. Y. Lavanya, Associate Professor Mrs. K. Jeevana Jyothi, Assistant Professor
Convener	: Dr. M.V. Srikanth, HoD - ECE
No. of participants	: 66

Conducted for:

Branch	Year	Semester	Sections	No. of Students Attended
ECE	II	I	A, B, C	66

Profile of the Speakers

Marthi Naga Babu is an Embedded Hardware Engineer specializing in the design, development, and debugging of embedded systems for IoT, automation, and real-time monitoring applications. With hands-on expertise across Arduino, ESP32, STM32, and ARM Cortex platforms, he combines strong hardware circuit design and PCB layout skills with proficiency in Embedded C, Python, and MATLAB. His work spans sensor integration, wireless communication (Wi-Fi, GSM, GPS, Bluetooth, LoRa), and communication protocols including UART, SPI, I2C, CAN, and RS485 — from schematic design through hardware validation and prototype-to-production transitions. Notable projects include a Street lights management system, garbage detection alert system for AP government reflecting a practical, systems-level approach to embedded design.

Pasupuleti Sri Naga Surendra is an Embedded Hardware Engineer specializing in the design, development, and debugging of embedded systems for IoT, automation, and real-time monitoring

applications. With hands-on expertise across Arduino, ESP32, STM32, and ARM Cortex platforms, he combines strong hardware circuit design and PCB layout skills with proficiency in Embedded C, Python, and MATLAB. His work spans sensor integration, wireless communication (Wi-Fi, GSM, GPS, Bluetooth, LoRa), and communication protocols including UART, SPI, I2C, CAN, and RS485 — from schematic design through hardware validation and prototype-to-production transitions. Notable projects include a Street lights management system, garbage detection alert system for AP government reflecting a practical, systems-level approach to embedded design.

Report in Brief by Organizer / Coordinator / Convener

This report provides a comprehensive overview of the 5-day hands-on workshop on "NodeMCU ESP8266" conducted from 17.08.2026 to 21.08.2026 at the Department of ECE, Ramachandra College of Engineering, Eluru. The workshop aimed to equip participants with a solid understanding of the NodeMCU ESP8266, its architecture, and practical skills to build IoT and embedded systems projects, under the theme "IoT & Embedded Systems using NodeMCU ESP8266."

The workshop was structured across five days, beginning with a formal inaugural ceremony and progressing from foundational concepts to advanced IoT integration. Each day combined a recap of the previous day, focused technical sessions, hands-on practicals, two short breaks (10:40–10:50 AM and 3:00–3:30 PM), a lunch break (12:30–1:20 PM), and a closing recap and troubleshooting session, culminating in two mini projects and one final integrated project.

Day 1 began with a 30-minute Inaugural Ceremony welcoming the resource persons and participants, followed by an introduction to the fundamentals of IoT and its applications. Participants were introduced to the architecture, pinout, and specifications of the NodeMCU ESP8266, followed by installation of the Arduino IDE and board configuration. The day continued with hands-on interfacing of an LED and a push button for digital I/O, and an ADC practical session reading potentiometer and LDR values. The day concluded with hands-on interfacing of the DHT11 temperature and humidity sensor, giving participants a working understanding of NodeMCU basics, environment setup, and both digital and analog sensor interfacing.

Day 2 focused on display interfacing and the first mini project. Participants learned to interface a 16x2 I2C LCD display and use it to show live sensor readings. Building on this, participants worked on Mini Project 1, integrating the DHT11 sensor, LCD display, and an LED into a single working system, followed by dedicated time for testing, debugging, and demonstration. The day concluded with an introduction to IR sensor interfacing, both in theory and practice.

Day 3 covered PWM-based control and motor interfacing, building toward the second mini project. Sessions covered PWM basics and LED brightness control, followed by interfacing a DC motor driver (L298N/L293D) and setting up motor direction control. Participants then completed an extended hands-on session on motor speed and direction control, culminating in Mini Project 2 — an IR-controlled motor — where participants combined IR sensing with motor control in a single integrated build.

Day 4 introduced participants to IoT connectivity using the MQTT protocol. The day began with an overview of IoT architecture, followed by setting up Wi-Fi connectivity on the NodeMCU and understanding MQTT protocol basics. Participants then worked hands-on with MQTT publish/subscribe operations and implemented MQTT-based LED control, with additional time dedicated to troubleshooting MQTT connectivity and broker issues, giving participants practical confidence in cloud-connected IoT communication.

Day 5 concluded the workshop with cloud dashboard integration and the final project. Participants set up a Blynk IoT dashboard and configured widgets for monitoring and control, then worked on their Final

Project, integrating the NodeMCU with the Blynk dashboard for remote monitoring and control. After a dedicated testing and refinement session, participants demonstrated their final projects to peers and instructors, followed by a feedback session, workshop wrap-up, and distribution of participation certificates.

Across the five days, participants gained end-to-end exposure — from NodeMCU basics and sensor interfacing, through display integration, motor and PWM control, MQTT-based IoT communication, to cloud dashboard integration with Blynk — culminating in a final project demonstration, feedback session, and certificate distribution.

Poster of the Event



NAAC A+ ACCREDITED

NBA ACCREDITED

AICTE APPROVED



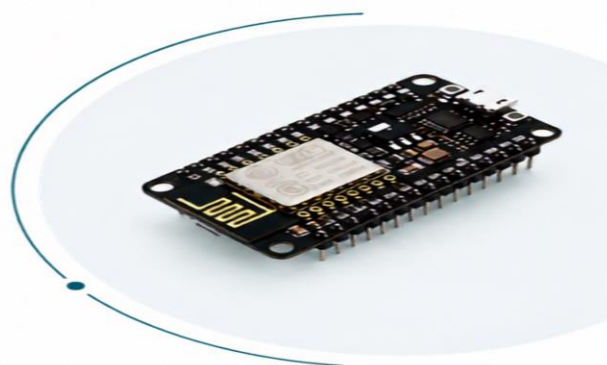
DEPARTMENT OF
**ELECTRONICS &
COMMUNICATION
ENGINEERING**

A 5-DAY HANDS-ON WORKSHOP ON

NODEMCU ESP8266

THEME:

IoT & Embedded Systems
using NodeMCU ESP8266



DATE

17th to 21st
August 2026



VENUE

VI 203



OBJECTIVE

To provide hands-on
practical exposure to IoT &
Embedded Systems.



RESOURCE PERSONS

Mr. Marthi Naga Babu
Firmware Engineer
at Quadbrick LLP
Mr. P Sri Naga Surendra
Firmware Engineer
at Quadbrick LLP



FACULTY COORDINATORS

Mrs. Y. Lavanya
Associate Professor
Mrs. K. Jeevana Jyothi
Assistant Professor



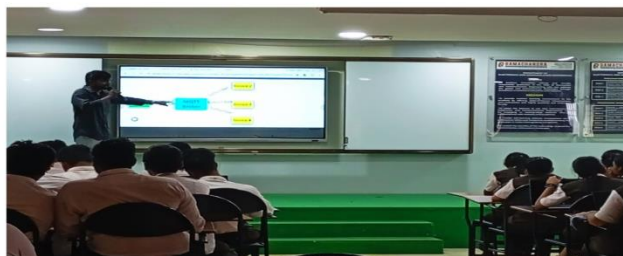
CONVENER

Dr. M.V. Srikanth
HoD – ECE

Day wise Activities Conducted

Day	Activities Conducted
Day 1	Inaugural ceremony; IoT & NodeMCU fundamentals; Arduino IDE setup; LED/push-button & ADC practicals; DHT11 interfacing.
Day 2	I2C LCD interfacing; Mini Project 1 (DHT11 + LCD + LED) build, test & demo; IR sensor interfacing.
Day 3	PWM basics; DC motor driver interfacing; motor speed & direction control; Mini Project 2 (IR-controlled motor).
Day 4	Wi-Fi & MQTT basics; MQTT publish/subscribe practical; MQTT-based LED control; connectivity troubleshooting.
Day 5	Blynk dashboard setup; Final Project (NodeMCU + Blynk) build & testing; project demonstrations; feedback & certificate distribution.

Few Glimpses of the event





Feedback from the Participants

The workshop was very informative and useful. Both resource persons explained the concepts clearly and provided good practical guidance during the hands-on sessions. The activities helped us understand the concepts better and gave us practical exposure. The workshop was well organized and coordinated. I am satisfied with the overall workshop and would like to attend more such practical and technical workshops in the future.

-----**G. Triveni II ECE-A**

The workshop was excellent and provided a good learning experience. The resource persons were knowledgeable and explained the topics in an easy-to-understand manner. The hands-on exercises were particularly helpful in connecting the theoretical concepts with practical applications. The coordination and organization of the workshop were also very good. I suggest conducting more workshops of this type in the future with advanced topics and additional practical sessions.

-----**S. Sri Saranya II ECE-B**

Overall, the workshop was very useful and engaging. The sessions were conducted effectively, and the resource persons provided clear explanations and guidance. The practical activities helped us gain better understanding and confidence in applying the concepts. The workshop was properly organized and gave us valuable technical exposure. I would appreciate more such workshops in the future, especially with extended hands-on activities and advanced applications.

-----**V. Teja Swaroop II ECE-C**

Remarks from the Resource Persons

“Students actively participated in the hands-on sessions and demonstrated good interest in NodeMCU and IoT applications. Their practical skills and project implementation were appreciable.”

-----**Mr. Marthi Naga Babu**

“The students showed enthusiasm and successfully implemented the practical exercises and projects. The workshop provided them with a good foundation in IoT and embedded systems.”

-----**Mr. P. Sri Naga Surendra**

Outcome of the Workshop

The workshop enabled students to gain end-to-end practical exposure to IoT system development—from sensor interfacing and embedded programming to wireless communication, cloud integration, and final project implementation.


Faculty


HoD-ECE


Dean-SoE


Principal