

# ECE662:IOT WITH NODEMCU

L:3 T:0 P:2 Credits:4

**Course Outcomes:** Through this course students should be able to

- CO1 :: define the use of NodeMCU Board along with Arduino IDE and the supported IO peripherals
- CO2 :: explain the programming of Input, Output devices and PWM control with NodeMCU
- CO3 :: apply the concept of interfacing with display devices and do its programming with NodeMCU
- CO4 :: analyze the usage of Thingspeak IoT server and its programming with NodeMCU
- CO5 :: design smart devices with Blynk and Cayenne application
- CO6 :: develop a real time application using NodeMCU Board

## Unit I

**Getting started with NodeMCU** : setting up NodeMCU with Arduino IDE, nodemcu Board and supported peripheral, nodemcu serial port programming, configuring GPIO pins of NodeMCU as output, configuring GPIO pins of NodeMCU as input

**Input devices with NodeMCU** : nodemcu programming for DHT11, programming of NodeMCU for Ultrasonic sensor

## Unit II

**Output devices with NodeMCU** : led interfacing with NodeMCU board, dc motor interfacing with NodeMCU board

**Programming NodeMCU for PWM** : controlling brightness of LED using nodemcu, speed control of DC motor using nodemcu, servo motor control using nodemcu

## Unit III

**Liquid crystal display with NodeMCU** : lcd interfacing with NodeMCU board, programming NodeMCU board for LCD

## Unit IV

**Seven Segment with NodeMCU** : seven segment interfacing with NodeMCU board, programming NodeMCU board for seven segment

## Unit V

**IoT with Thingspeak** : introduction to thingspeak server used of iot, programming NodeMCU board for Thingspeak IoT server

**IoT with Blynk** : introduction to blynk application used for IoT, creating iot device with Blynk application

## Unit VI

**IoT with Cayenne** : introduction to cayenne application used of Iot, creating smart device with cayenne iot application

**Futuristic technologies** : 5G Connectivity, edge Computing, energy Harvesting, wearable Technology

## List of Practicals / Experiments:

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- programming NodeMCU board for LED interfacing
- interfacing DHT11 with NodeMCU board
- dc motor interfacing with NodeMCU board
- programming NodeMCU board for Ultrasonic sensor
- controlling brightness of LED with nodemcu
- interfacing LCD with NodeMCU board
- seven segment interfacing with NodeMCU board

- programming NodeMCU board for Thingspeak IoT server
- creating smart device with Cayenne iot application
- creating smart device with blynk iot application

**References:**

1. PROGRAMMING NODEMCU USING ARDUINO IDE by UPSKILL LEARNING, KINDLE EDITION
2. NODEMCU: THE ULTIMATE GUIDE TO BUILDING IOT PROJECTS by RUI SANTOS, PACKT PUBLISHING