

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:

List of practicals

- 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