

## IOT

### COVERAGE:

- Introduction to IoT and applications
- Fundamentals of Electronics components
- Basic electronics circuit design (Comparator, Timer etc.)
- Introduction to NodeMCU
- Basic programming with NodeMCU with Arduino IDE
- LED blinking with different patterns
- Analog input using potentiometers
- Sensor interfacing with NodeMCU (Infrared, Temperature, Light)
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- Soil moisture sensor, Rain sensor with NodeMCU
- Basic Webpage Design
- Fundamental knowledge on Webserver, Data exchange between server and client
- Displaying sensor data in webpage
- Working with output devices like Relay, TRIAC etc.
- Application of IoT in Robotics
- Study of H-bridge Motor driver circuit
- Smart IoT controlled Robotics
- IoT controlled smart home automation

### SYLLABUS IN DETAILS: \_\_\_\_\_

#### Introduction to IoT

- What is IoT?
- History of IoT
- IoT Applications
- Future Scope

#### Fundamentals of Electronics components

- Resistor
- Capacitor
- Diode
- PNP transistor
- NPN transistor
- LED
- Step down Transformer
- Rectifier
- 7805 Voltage regulator IC
- Relay
- IR sensor
- PIR sensor
- LDR

#### Introduction to NodeMCU

- NodeMCU architecture
- Pin diagram
- Memory elements

#### Basic programming with NodeMCU with Arduino IDE

- Basic Programming with Arduino
- Importing NodeMCU library
- Burning Program to NodeMCU

#### Digital output in NodeMCU

- LED Interfacing
- LED Blinking with delay
- Interfacing buzzer
- Transistor switching with digital output

#### Digital input in nodeMCU

- Switch interfacing
- Push button Interfacing

- V-POT
- Ohm's and Watt's Law

## Basic electronics circuit design (Comperator,Timer etc.)

- Introduction to Comperator
- LM358 Comperator
- Circuit design
- Introduction to 555 timer
- 555 Timer circuit

## Power supply Design

- Introduction to DC power supply
- 5V DC power supply design
- DC-DC converter

## Webpage design and data Transmission

- Basic concepts on Web
- Server and client Data exchange
- Basic html webpage design
- Web events Firing
- Basic CSS

## Analog sensors interfacing

- IR sensor
- Light sensor
- Temperature sensor
- Soil moisture sensor

## Output devices design

- Relay switching
- TRIAC driver circuit
- BJT Switch
- Buzzer

## Actuators

- Motor driver
- DC motor interfacing
- Applications in Robotics

## Live Projects

- Smart Home automation
- Weather Station on NodeMCU
- Temperature monitoring using IoT