Session 1
Embedded Systems
Introduction of Embedded Systems
Why do we need Embedded Systems?
Microcontrollers
Microprocessors
Microcontroller Vs Microcontroller

Session 2
Embedded C Programming
Introduction to Embedded C
Basic Introduction of C
If, If Else, For and While
Bitwise operators and logical operators
Array and String

Session 3
Arduino
Working with Arduino
Introduction to Arduino
Architecture of Arduino
Digital Input and Output Pins
Interfacing Output Devices with Arduino
Interfacing Input Devices With Arduino
Introduction of Serial Communication
Controlling Devices using Computer & Android Mobile Phone

Session 4
Basic Electronics
Electronics vs Electrical
Voltage ,Current ,Resistance and Capacitance
Digital Logic and TTL Logic
Introduction to Multimeter
Power Supplies (Electrical and Batteries)
Various type of Diodes and its application
Application of BJP
Switches usingn pn and pnp
Relays
Application of Logic Gate

Session 5
Introduction of Various Type of Sensor/Motor
IR Sensor
Temperature Sensor,
Ultrasonic Sensor
PIR Sensor
DHT11 Sensor
LDR Sensor
Touch Sensor
Water Lever Indicator
Color Sensor
Smoke Sensor

Types of Motors
DC Motors
Stepper Motors
Servo Motors

Session 6
Interfacing I/O Devices
LEDs
Digital Sensors
Analog Sensors
Buzzer
Motor
Servo Motors
Other type of Motors (AC, DC, Stepper)
Motor Driver - IC L293D
Controlling direction of rotation of motor

Session 7
LCD & its interfacing
Introduction to LCD
Types of LCD
Display Character and String on LCD
Display digit on LCD
Moving Pattern on LCD
Creating Simple Animation on LCD.
Printing symbols on LCD
Printing Hindi Character

Session 8
Introduction of Serial Communication
Intro to Serial Communication.
RS-232 Protocol.
Programming of Serial Communication
Controlling Device using Serial Communication.
Interfacing Bluetooth
Controlling Devices using laptop and Mobile phone

Session 9
Introduction of Relay
Introduction of Relay
Working of Relay
Interfacing Relay with Arduino
Controlling home appliances using Arduino and Relay

Session 10
Introduction of IoT
Why do we need IoT?
Role of IoT In Various Field
Application of IOT
Future Scope of IOT
Architecture Of IOT

Session 10
NodeMCU
Introduction of NodeMCU
Architecture of NodeMCU
Interfacing I/O Devices with NodeMCU
Connecting nodemcu with wifigatway.
Server - Client Configuration.

Practical/ Hands on Session
Black Line Follower Robot
White Line Follower Robot
Color Line Follower Robot
Edge Avoider Robot
Wall Follower Robot
Sound Operated Robot
Clap on Stop- Clap on Start Robot
Obstacle Detector Robot
High Temperature Alarm
Password Controlled Application
Mobile Controlled AC Device

PROJECTS
Visitor Counter
Controlling Home Appliance using Android Phone
Voice Control Home Automation
Motion detector using PIR Sensor
Collecting sensor data on Thingspeak Cloud
Controlling devices using Webpage
Collecting sensor data on Thingspeak Cloud
Sending Data from NodeMCU to webpage
Distance Measurement System