WARRIORS WAY COACHING PROGRAM

COURSE CURRICULUM

PCB DESIGN, EMBEDDED DESIGN, INTERNET OF THINGS

PCB DESIGN

- Introduction to PCB Design and Terminologies and Installation of Orcad Trail version
- Introduction to Schematic Capture
- Introduction to Allegro and Footprint Creation
- Importing Schematics in allegro ,Placement and route
- Gerber Creation, BOM, PDF
- How to Design a 8051 Microcontroller Board
- Library Creation
- Schematics Design
- Footprint Creation
- Design rules check-Import and Placement
- Layout
- Layout Design , Gerber Creation, Recap, schematic design consideration, Layout Design Consideration

EMBEDDED SYSTEM DESIGN & IOT

- Introduction to Embedded System Design
- Choosing the Right Processor and Embedded Product Life cycle
- Challenges and Design Issues in Embedded Systems,
- Introduction to Real-Time Concepts,
- IoT Trends, IoT Architecture, IoT Applications, IoT Standards, and Protocols,

8051-Week 2

- 8051 Architecture-Keil
- Switch ,Relay,
- UART,SPI
- LCD,IIC
- 8051 Mini Project-Bluetooth based Home automation

ARM7 -Week 3

- ARM Architecture-Keil, LED Blinking
- Switch ,Relay,
- UART,SPI
- LCD,IIC
- ARM Mini Project -IoT based weather monitoirng system

CORTEX M4-Week 4

- CORTEXM4 LPC4088 Architecture-Keil, LED Blinking
- Switch ,Relay,
- UART,SPI
- LCD,IIC

- Cortex -M4 - Temperature Monitoring using Zigbee and LORA
  PIC -Week 5
- Introduction to PIC Architecture
- MPLABIDE and LED Blinking
- Switch ,Relay, PWM
- UART,SPI
- LCD,IIC NodeMCU/ESP8266 -Week 6
- Introduction to NODE MCU
- Led,switch,relay,UART
- Iot Temperature Data Logging
- Build Your Home Automation with ESP8266 and Control
  Devices from Anywhere in the World
- Conclusion and Wrap up-Graduation Day

INTERNET OF THINGS

IoT Introduction and Architectures

- Introduction to IoT
- IoT Communication Protocols
- Introduction to ESP32 and NodeMCU
- Iot Clouds,Analytics & Datascience
- Sensors for IoT

IoT using Thingspeak

- Sending Data to Thingspeak -Arduino+Humidity+Air quality(Weather monitoring system)
- How to Analyze IoT Data in ThingSpeak
- Deploying a Machine learning Model on the Cloud
- Thingspeak for IoT in agriculture
- Smart Humidity Sensor – ThingSpeak, MATLAB, and IFTTT

IoT with Microsoft Azure

- Introduction to IoT with Microsoft Azure
- Implementing IoT with Azure
- Edge Computing and Analytics
- Coginitive services,Computer vision API
- Weather monitoring station using Microsoft Azure and Arduino

Iot Projects and Case Study

- Home automation using Google Assistant
- Industrial Iot using Zigbee and WIFI(Windmill case study)
- Recording sensor data to google sheet using IFTTT with Arduino and sending alerts
- Real time Video surveillance esp32cam and Blynk App
- Predictive Maintenance of a Duct Fan Using Nodemcu, ThingSpeak and MATLAB

IoT with AWS IoT

- Introduction to AWS IoT,Setting up Free tier AWS, AWS CLI, Policys, Security Credentials, and Testing
- Raspberry PI3 with AWS IOT SDK
- SNS Push Notifications,AWS IoT Analytics
- AWS Lambda Functions for IoT
- HTTPs Arduino sketch to AWS IoT Core for the ESP8266 and ESP32
- Using Mongoose OS on embedded devices for AWS IoT
- Storing data into the Dynamo Database from the AWS IoT control panel
- AWS Quicksight for data analytics and visulizations
- AWS Device Shadows and multiple Pub/Sub's
- Weather monitoring station using AWS IOT