LESSON PLAN

Subject : Embedded Full Stack IoT

Duration - 1 Month

Sl No	Content	Theory (hrs)	Practical (hrs)
1	Introduction of Embedded System, Block Diagram of Microcontroller & Microprocessor, Difference between controller & processor, applications, types of sensors & actuators. Introduction of IoT, block diagram & 4-layer architecture of IoT, OSI model, gateways, IoT protocols, communication models, APIs, REST API, IoT enabling Technologies. User Interface, frontend, backend	8	2
2	**HTML:** introduction, HTML page structure, tags, elements, attributes, template design using headings, paragraphs, formatting, quotations, colours, images, links, tables, lists, inline & block line, class & id, iframes. **CSS:** introduction, syntax, selectors, inline css, internal css, external css, style the web page using, backgrounds, border, margin, padding, text, font, icon, colours, opacity & etc. **Bootstrap-5 framework:** introduction, advantages, responsive WebPages designed using containers, grid, typography, jumbotron, buttons, inputs, table, navigation & etc	4	16
3	**Python 3:** Introduction, syntax, variables, data types, strings, lists, tuple, sets, dictionaries, condition statements, loops, functions, arrays, object, class, inheritance, polymorphism, file handling. Python3 and Pycharm IDE installation, PIP and other python libraries installation. **Flask:** Introduction, Environment creation, Application, Routing, Variable rules, URL Building, HTTP Methods, Templates, Static files, Request object, sending form data to template.	5	15

4	**Embedded C/C++ Programming:** introduction, syntax, Multiline Comments ,Single Line Comments,Preprocessor Directives,Global Variables,Function Declarations,Main Function, Local Variables,Function Calls, Infinite Loop, Statements, Function Definitions Local Variables, Statements **Arduino IDE:** installation, introduction, project creation, board and library installation, compiling, uploading Explanation of Arduino uno & ESP8266 Block diagram, pin configuration, specifications	**4**	**2**
5	ESP8266 interface with IR sensor, its block diagram, coding & its applications. ESP8266 interface with Ultrasonic sensor(HC-05), its block diagram, coding & its applications. ESP8266 interface with Photo sensor, its block diagram, coding & its applications. ESP8266 interface with magnetic sensors(floating & door), its block diagram, coding & its applications. ESP8266 interface with relay module, its block diagram, coding & its applications. ESP8266 interface with Temp & Humidity sensor(DHT11), its block diagram, coding & its applications. ESP8266 interface with LCD & I2C module, its block diagram, coding & its applications. ESP8266 interface with Bluetooth module & android app, its block diagram, coding & its applications, ESP8266 interface with GSM module, its block diagram, coding & its applications. ESP8266 interface with RFID(MFRC522), its block diagram, coding & its applications.	**4**	**14**
6	Real time project on Weather Monitoring , Smart Irrigation, Home Automation	**2**	**8**
7	Introduction to ARM Controller, Introduction of Raspberry pi, Block diagram, Specifications, raspbian Operating System installation & configuration, explanation about terminal commands, Introduction to thonny python IDE, project create, python library installation, Programing	**1**	**2**
8	Raspberry pi interface with Ultrasonic sensor(HC-05), Raspberry pi interface with DHT11, , Raspberry pi interface with Relay Module, Raspberry pi interface with float sensor, Raspberry pi interface with soil sensor.	**1**	**5**

9	Real time project on Ultrasonic Distance Monitoring System and Smart Traffic Light System	**1**	**4**
10	Softskill Training, Methods of Training, How to use the digital platforms for Interview preparations and for industry exposure like Google, ChatGPT other AI tools	**1**	**1**
TOTAL HOURS		**31**	**69**
		100	