

Model Curriculum: IoT Developer

S No.	NOS	Topics	Duration (Hours)		Learning Outcomes
			Theory	Lab	
1	Identification and troubleshooting of Basic Electronics components	<ul style="list-style-type: none"> • Identification of electronics components • Understanding the Fundamentals of basic electronics • Troubleshooting of electronics components • Understanding the operation of measurement devices. 	20	40	<ul style="list-style-type: none"> • Students will be able to identify the basic electronics components like Resistor, Inductor, diodes, transistor, LED, Capacitor etc. • Students will be able to learn the fundamentals of basic electronics. • Students will be able to understand how to operate the multimeter, ammeter, voltmeter, voltage supply etc. • Students will be able to learn the operation of diodes, transistors, Zener diodes, rectifiers etc. • Students will understand how to assemble the electronics components to make a circuit using Bread-board as well as veroboard. • Students will be able to perform soldering - de-soldering along with troubleshooting the basic PCB circuits.
2	Conceptualising IoT Platform - Arduino	<ul style="list-style-type: none"> • Introduction to microprocessor and micro controller • Introduction to Internet of Things(IoT) – applications, protocols, use-cases • Introduction to Arduino • Embedded C Language • Interfacing of sensors and actuators with Arduino Boards 	45	75	<ul style="list-style-type: none"> • Student will understand the basic difference between microprocessor and micro-controller, different types of micro-controller boards. • Students will come to know about the fundamentals of Internet of Things(IoT) - applications, protocols, use-cases • Students will be able to understand the IoT ecosystem, basic building blocks of IoT. • Student will learn about the different types of Arduino boards in brief. • Students will learn about the basic difference between transducers, sensors and actuators. • Students will come to know about the different types of sensors and their working principles. • Students will write programme using embedded C language on Arduino Platform • Students will learn and do hands-on in interfacing digital and analog sensors with Arduino Uno.

3	Conceptualising IoT based use-cases	<ul style="list-style-type: none"> Smart Street Light control Home automation using Arduino Password enabled Digital Lock using Arduino 	20	40	<ul style="list-style-type: none"> Students will learn, how to make a prototype of Intelligent street light control using LDR, LED and Relay Students will learn, how to develop a home automation system using Bluetooth, PIR and Relay. Students will learn how to make a password enabled digital lock using keypad, LCD, buzzer.
4	Fundamentals of wireless IoT using NodeMCU	<ul style="list-style-type: none"> Fundamentals and architecture of wireless IoT TCP/IP modelling for IoT NodeMCU as an IoT Platform Fundamentals of cloud Platforms Implementation of cloud based IoT use cases 	40	50	<ul style="list-style-type: none"> Student will learn the fundamentals of wireless IoT architecture and design Student will be able to know about the different layers of IoT system using TCP/IP model Students will learn how to make the wireless IoT system using NodeMCU. Students will learn how to interface sensors and actuator with NodeMCU. Students will learn the fundamentals of Cloud Platform and free Cloud Service Providers. Student will be able to make IoT devices that can monitor the system using cloud platforms.
5.	Conceptualising Single Board Computer as an IoT Platform - Raspberry Pi	<ul style="list-style-type: none"> Introduction to Raspberry Pi Basics of Python Programming Interfacing of sensors and actuators with Raspberry Pi Implementation of IoT based use cases using Raspberry Pi 	25	35	<ul style="list-style-type: none"> Student will understand about the Single Board Computer- Raspberry Pi –Pinout, advantages, Application and Use-case. Students will learn the Basics of Python Programming Language. Students will learn the use cases of Raspberry Pi over Arduino board. Student will learn how to interface sensors and actuators with Raspberry Pi. Students will develop the application of IoT use-case using Raspberry Pi.
Sub Total = 390 hours			150	240	
6	Employability Skills		60		Students will be able to get the additional skills apart from the technical skills, to be job ready

7	OJT/Project	90	Students will be able to learn the working in a job.
Total Duration		540	