Model Curriculum: IoT Associate

S No.	NOS	Topics	Duration (Hours)		Learning Outcomes
			Theory	Lab	
1	Identification and troubleshooting of Basic Electronics components	• Identification of electronics components • Understanding the Fundamentals of basic electronics • Troubleshooting of electronics components • Understanding the operation of measurement devices.	20	40	• 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 fundaments of basic electronics. • Students will be able to understand how to operate the multimeter, ammeter, voltmeter, voltage supply etc. • Students will 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	• 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	• 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	• Smart Street Light control • Home automation using Arduino • Password enabled Digital Lock using Arduino	15	45	• 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	• 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	• Student will learn the fundamentals of wireless IoT architecture and design • Student will 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 fundaments of Cloud Platform and free Cloud Service Providers. • Student will be able to make IoT devices that can monitor the system using cloud platforms.
Sub Total = 330 hours			120	210	
5	Employability Skills		60		Students will be able to get the additional skills apart from the technical skills, to be job ready
6	OJT/Project		60		Students will be able to learn the working in a job.
Total Duration			**420**		