Annexure -III

Detailed Curriculum

Name of Unit of Qualification : The Internet of Things: Brain Storming Basics

Duration : 50 Hours

Topics : The Internet of Things: Brain Storming Basics

Outcome	**Contents**	**Hrs.**
Basic Concepts	Interaction with the Internet, Major components of IoT devices, Control Units, Sensors, Communication Modules, Power Sources	20
Communication Technologies	RFID, Bluetooth, ZigBee, WiFi, RF Links, Mobile Internet, Wired Communication, Which one is the best?	30

Name of Unit of Qualification : The IOT Microcontroller Platform
Duration : 75 Hours
Topics : The IOT Microcontroller Platform

Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Microcontroller Fundamental	Microcontrollers, Programming Microcontrollers, Arduino Platform, The Boards, The Anatomy of an Arduino Board, The Development Environment	25
Arduino Software	Setup the IDE, Writing Arduino Software, The Arduino Sketch, Some Basic Examples, Trying the code on an Arduino Emulator - Extending Arduino, Arduino Libraries	25
Programming & Interfacing	Programming Arduino for the Internet of Things, Using Timers, Threads, Adding Security to Sensor Readings, Authenticating and Encrypting Arduino Data	25

Name of Unit of Qualification : The Basics of Sensors and Actuators
Duration : 75 Hours
Topics : The Basics of Sensors and Actuators

Learning Outcome (NO)	Topics	Hours
Sensor Fundamentals	How Sensors Work, Analog and Digital Sensors, Pull-Up/Down resistors and Examples of sensors and working principles	5
A/D Conversion	A brief Introduction to sampling theory, A/D conversion,	10
Other Components	Acceleration, Temperature, Humidity, Distance, Light, Orientation, Sound, Electric Current	10
Actuators	Actuators, Relay Switch, Servo Motor, Putting Things Together, Sensing the World, Reading from Analog Sensors	20
Digital Sensors	Digital Sensors, Sensors With On/Off Sates,	10
Serial Communications	Using the Serial Protocol, The Software Serial Library, Using the I2C Protocol, Communicating with a Digital Pressure Sensor	10
I2C Technology	Talking I2C through the Code, Read Data from another Arduino Board, The SPI Protocol	10

Name of Unit of Qualification : Interfacing Arduino with Internet

Duration : 75 Hours

Topics : Interfacing Arduino with Internet

Performance Criteria(OUTCOME) No.	Contents	Hrs.
Internet Basics	TCP/IP, IP/MAC Addresses, DNS and DHCP, Network Sockets, HTTP,	15
Arduino-Ethernet Interface	Connect Arduino using the Ethernet, Arduino Ethernet Library, Simple Ethernet Client Example, Simple Ethernet Server Example	20
Arduino using the WiFi	Connect Arduino using the WiFi, WiShield Library, WiFly Shield Library, Using the Arduino Library for Processing,	20
Data Transmission & Reception	Send Arduino Data to our own Cloud Application, Project Description, Using the Ethernet Shield, Using a WiFi shield or a WiFi-enabled	20

Name of Unit of Qualification : Arduino Communication with Andriod Phone & Cloud

Duration : 75Hours

Topics :Arduino Communication with Andriod Phone & Cloud

Performance Criteria(OUTCOME) No.	Contents	Hrs.
Ardunio Interface	Connecting Arduino with a mobile device,	5
Andriod OS and Communications	The Android mobile OS, Communicating using Bluetooth, Hardware, Configure Bluetooth serial modem, Software,	10
`Project - 1	Send Air Quality data to Android phone Using Android phone and Android Debug Bridge (ADB), Sending sensor data to Android – Arduino Code	20
Cloud Computing	What is Cloud Computing, Cloud Computing Components, Cloud Computing Models and Architectures, Benefits of Cloud, Communicating with the Cloud using Web Services,SOAP and Restful Web Services, SOAP, REST, Cloud Computing and IoT, Thing Speak Internet of Things, The Nimbits Data logging Cloud, The iDigi Device Cloud, The Sensor Cloud	25
Project - 2	Use Arduino to upload feed data from environmental sensors	15

Name of Unit of Qualification : IoT:Project

Duration : 100 Hours

Topics :IoT:Project

Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Project based on following verticals • Smart parking • Intelligent Transport System • Smart urban lighting • Waste management. • Smart city maintenance • Tele-care • Citizen safety • Smart Grid • Smart Energy • Water Management • Agriculture	Problem IdentificationIts Solution, Mathematical analysis and modeling Simulation Result Verification, Bread Boarding Physical Result verification, PCB and Case Designing, Final Product Development, Costing, Report Preparation	100

Name of Unit of Qualification : Enhancing Communication and Soft Skill

Duration : 20 Hours

Topics :Enhancing Communication and Soft Skill

Performance Criteria(OUTCOME) No.	**Contents**	**Hrs.**
Acquiring Communication Skill	Communication , verbal and non-verbal communication	6
Managing career, staff and professional relationships	Building professional relationship, Relationship at work , Making the most of personal and professional relationships, Competency Description, Managing Difficult Business Relationships	6
Preparing for interview	**Interview Techniques**: Planning For The Interview, Preparing for an Interview, Interview Formats, Stages Of The Interview, Types Of Interview Questions **Best Bet for Interview Preparation**: Mock Interviews, The Benefits of Mock Interviews Experience & Skills, **Curriculum Vitae**:Overview, types of CV, Covering letter, Writing a Resume, Acceptance Letter, Thank You Letter	8