

Course Module for Level 1 – Beginner Level Course

<u>Course Module Level:</u>	Level 1 - Beginner Level
<u>Course Objective:</u>	1. This course focuses on Internet of Things (IoT) and its architecture, Protocols, hardware used in IoT, Sensors, Actuators 2. It covers the Hands on Experience with NodeMCU (ESP32 or ESP8266) and development of Internet of Things (IoT) prototypes including devices for sensing and communication helps to develop skills and experiences.
<u>Course Outcome:</u>	1. Students will be explored to understand the various enabling IoT concepts. 2. To Understand Application areas of IoT, IoT Platforms, Software's and Hardware's. 3. Real time explorer using Real-Time Projects.
<u>Course Duration:</u>	3 or 5 Days
<u>Course Prerequisites</u>	Basic knowledge on C Language Computer Networks respective to Internet

<u>Sl. No</u>	<u>Lecture /Lab Wise Breakup</u>	
	<u>Chapters</u>	<u>Contents</u>
1	Introduction to the Internet of Things (IoT)	Study and Definition of IoT.
		Characteristics of IoT.
		Physical and Logical Designs of IoT.
		Challenges of IoT.
		Applications of IoT.
		Introduction to Embedded Systems
2	Introduction to IoT Architecture	Introduction to IoT Architecture
		Overview on other different Architectures.

3	Introduction to Arduino	Arduino Equipment
		Arduino Software (Arduino IDE)
		Arduino Programming
		Interfacing Sensors and Actuators using Arduino Simulator (Autodesk TinkerCAD)
4	Introduction to NodeMCU (ESP8266 or ESP32)	Introduction to Hardware
		Introduction to Software (Adding board to Arduino IDE)
		Interfacing Sensors to NodeMCU
		Interfacing Actuators to NodeMCU
5	Introduction to Cloud	Introduction to Thingspeak
		Publishing Sensory Data to Thingspeak
		Data Visualisation
		Data Analysis using Matlab
6	Introduction to Industrial IoT	Basics on NodeRED
		Introduction to Mindconnect Nano
		Introduction to Mindsphere (Insights Hub)