JOINT CERTIFICATION PROGRAMME FOR ONLINE TRAINING ON INTERNET OF THINGS (IoT)

Name of Group: Electronics Division.

Name of Course: ***Certificate Course in*** **Solar-LED (Design and Manufacturing)**

Objective:

- To train the students with the knowledge of Internet of Things (IoT).

Duration: 1 Month.

Batch Size: 30

Eligibility: Diploma/B.Sc./B.Tech./ITI in Electronics, Electrical, Instrumentation Engineering or its equivalent. (Completed or Pursuing)

Course Content:

Sl. No.	Name of Topics	Theory Duration (in Hrs)	Practical Duration (in Hrs)
Content covered by NIELIT Patna Centre			
1	**Introduction**		
1.1	Introduction to IoT	1	
1.2	IoT Architecture	1	
1.3	IoT reference model	1	
1.4	IoT protocol stack	2	
1.5	IoT Applications	2	
2	**Sensors & Actuators**		
2.1	Basics of sensors and actuators	3	
2.2	Sensors for IoT applications	2	1
3	**IoT Hardware platforms**		
3.1	Introduction to hardware platforms used for IoT	3	
3.2	Introduction to Arduino	2	
3.3	Programming on Arduino IDE	3	
3.4	Interfacing of sensors and actuators with Arduino	2	13
3.5	Introduction to Rpi	2	
3.6	Booting and configuring Rpi	1	2
3.7	Programming Rpi with python	5	5
4	**IoT connectivity solution**		
4.1	Networking fundamentals	3	
4.2	Wireless Protocols for IoT	4	
4.3	Programming Node MCU	1	3
4.4	ZigBee networks for IoT applications	1	3
4.5	Bluetooth and RFID interfacing with Arduino	3	5
4.6	Working with ESP32	1	4
5	**IoT Protocols**		

5.1	Implementing Client Server model	1	3
5.2	Requirement of lightweight protocols	1	
5.3	IoT application protocol (MQTT, COAP) implementation	2	3
6	**Cloud platforms for IoT**		
6.1	Introduction to various cloud platforms	4	
6.2	Uploading data from hardware platforms to cloud	1	3
6.3	Device and data management from Cloud Platforms	1	2
7	**IoT Graphical user interface and back end application design**		
7.1	Introduction to HTML and PHP	8	
7.2	Web development for IoT	2	4
7.3	Dashboards for IoT	1	1
7.4	App development for IoT	1	3
Content covered by Incubation Centre, IIT Patna			
8	**IOT Concept to Product ProtoTyping**		
8.1	IOT Applications	1	
8.2	Lighting as a service (case study)	1	
8.3	Intelligent Traffic systems (case study)	1	
8.4	Smart Parking (case study)	1	
8.5	Smart water management (case study)	1	
8.6	IOT for smart cities (Case study)	2	
9	**IOT in Indian Scenario**		
9.1	IOT and Aadhaar	1	
9.2	IOT for health services.	2	
9.3	IOT for financial inclusion	1	
9.4	IOT for rural empowerment	1	
9.5	IOT for Industries and Production	1	
9.6	Challenges in IOT implementation.	1	
9.7	IOT for the future (Everyday life, Individual Privacy)	2	
10	**IOT Standards**		
10.1	Requirement of international standard (case study)	2	
10.2	IOT standards in practice	1	
10.3	Operating platforms /systems	1	
8	**Project Work**	20	40
Total Duration		**105**	**95**

* These sessions will include Theory Classes, Demo and Practical, assignment and Project.

Registration open at NIELIT Patna website: http://14.139.202.67/registration