These outcomes are designed to ensure that students are well-equipped to enter the workforce in the growing field of IoT or to continue their education in more advanced areas of technology.

Course Fee: Rs: 590/-

Eligibility:

12th Or ITI Certificate (Two Years) after class 10
Or ITI Certificate (One Years) after class 10 with one year of experience post qualification. Or Successful completion of the second year of a Government recognized polytechnic engineering diploma course after class 10, Training of 'O' Level course concurrently during the third year of the said 3 years Polytechnic engineering diploma course.

Methodology:

- ✓ Teaching Mode: Self-Pace
- ✓ Access from anywhere anytime
- ✓ Content Access through e-learning portal
- ✓ Doubt Clearing Session
- ✓ Practical Oriented

Registration Link: http://nva.nielit.gov.in

Contact Details:

- Course coordinator Name: Sh. Arun Mani Tripathi
- Email: arunmani@nielit.gov.in
- Mobile number: 7706009307

Contents:

Module: M4-R5.1 IOT	
Introduction to Internet of Things – Applications/Devices, Protocols and Communication Model	
UNIT 1	Introduction - Overview of Internet of Things(IoT), the characteristics of devices and applications in IoT ecosystem, building blocks of IoT, Various technologies making up IoT ecosystem, IoT levels, IoT design methodology, The Physical Design/Logical Design of IoT, Functional blocks of IoT and Communication Models, Development Tools used in IoT.
Things and Connections	
UNIT 2	Working of Controlled Systems, Real-time systems with feedback loop e.g. thermostat in refrigrator, AC, etc. Connectivity models – TCP/IP versus OSI model, different type of modes using wired and wireless methodology, The process flow of an IoT application.
Sensors, Actuators and Microcontrollers	
UNIT 3	Sensor - Measuring physical quantities in digital world e.g. light sensor, moisture sensor, temperature sensor, etc. Actuator – moving or controlling system e.g. DC motor, different type of actuators

	Controller – Role of microcontroller as gateway to interfacing sensors and actuators, microcontroller vs microprocessor, different type of microcontrollers in embedded ecosystem.
Building IoT applications	
UNIT 4	Introduction to Arduino IDE – writing code in sketch, compiling-debugging, uploading the file to Arduino board, role of serial monitor. Embedded 'C' Language basics - Variables and Identifiers, Built-in Data Types, Arithmetic operators and Expressions, Constants and Literals, assignment. Conditional Statements and Loops - Decision making using Relational Operators, Logical Connectives - conditions, if-else statement, Loops: while loop, do while, for loop, Nested loops, Infinite loops, Switch statement. Arrays – Declaring and manipulating single dimension arrays Functions - Standard Library of C functions in Arduino IDE, Prototype of a function: Formal parameter list, Return Type, Function call. Interfacing sensors – The working of digital versus analog pins in Arduino platform, interfacing LED, Button, Sensors-DHT, LDR, MQ135, IR. Display the data on Liquid Crystal Display(LCD), interfacing keypad. Serial communication – interfacing HC-05(Bluetooth module) Control/handle 220V AC supply – interfacing relay module.
Security and Future of IoT Ecosystem	
UNIT 5	Need of security in IoT - Why Security? Privacy for IoT enabled devices- IoT security for consumer devices- Security levels, protecting IoT devices. Future IoT ecosystem - Need of power full core for building secure algorithms, Examples for new trends - AI, ML penetration to IoT
Soft skills-Personality Development	
UNIT 6	Personality Development - Determinants of Personality-self-awareness, motivation, self-discipline, etc., building a positive personality, gestures. Self-esteem - self-efficacy, self-motivation, time management, stress management, Etiquettes & manners. Communication and writing skills- objective, attributes and categories of communication, Writing Skills – Resume, Letters, Report, Presentation, etc. Interview skills and body language.

Examination & Certification

Category	Theory	Total
M4-R5.1: Internet of Things	01	100
Marks	100	100

After successful completion of the course, candidate will get an online certificate with the following Grading Scheme:

Marks Range	Grade	Certificate Type
85% and above	S	Graded
75-84%	A	Graded
65-74%	B	Graded
55-64%	C	Graded
50-54%	D	Graded
<50%	F	Participation
Attended the Course but not appeared in Examination	N	Participation