



माधव प्रौद्योगिकी एवं विज्ञान संस्थान, ग्वालियर
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
Deemed University

(Declared under Distinct Category by Ministry of Education, Government of India)

NAAC ACCREDITED WITH A++ Grade

Gola Ka Mandir, Gwalior (M.P.) - 474005, INDIA

Ph.:+91-751-2409300, E-mail: vicechancellor@mitsgwalior.in, Website: www.mitsgwalior.in



MITS

CENTRE FOR INTERNET OF THINGS

Report on

One-week Faculty Development Programme (FDP) on “IoT and Its Applications”

A one-week Faculty Development Programme (FDP) on “IoT and Its Applications” was successfully hosted by Centre for Internet of Things, MITS-DU, in collaboration with the **Electronics & ICT Academy, IIT Guwahati**, and facilitated by **The IoT Academy**, from **24th March 2025 to 29th March 2025**. The program aimed at equipping faculty members and researchers with in-depth knowledge and hands-on skills in the field of the Internet of Things (IoT), which plays a pivotal role in the modern technological landscape.

46 faculty members and research scholars registered for the FDP through MITS-DU as Spoke/online institute. The details of FDP are provided in the brochure below:













IoT

Course Objectives

The Faculty Development Program (FDP) on IoT and Its Applications by IIT Guwahati aims to enhance faculty expertise in IoT technologies through theoretical insights and hands-on training. The program covers IoT architecture, hardware, networking, security, cloud integration, and AI-driven applications. It equips educators with practical skills to integrate IoT-based learning, research, and industry-relevant projects into their curriculum, fostering innovation and interdisciplinary teaching.

Course Date: 24 Mar to 29 Mar, 2025

Last Date of Registration: 20/03/2025 (Online)
Registration Link will be open from: 07/03/2025

Per Day Timing: 10:00 am to 05:00 pm
05hrs of project on the last day (29/03/2025)

Contact Hours for the Course:
40Hrs (Theory, Activities, Case Studies & Evaluation)

REGISTRATION FEES: RS. 500/- (INCLUSIVE OF GST)
MODE OF PAYMENT: ONLINE ONLY (NEFT/RTGS/IMPS)

For Online Transfer
Bank Name: State Bank of India
Account Name: IIT Guwahati R and D E and ICT Academy
Account No.: 36071160089
IFSC Code: SBIN0014262

Please Note: Registration fees includes E&ICT Academy kits, stationaries, 05 days lunch and high tea, evaluation and certificate of completion. Participants have to submit UTR No. as the proof of payment while registering to the workshop

Please Note: Registration Fees is Refundable if the registration cancellation request is submitted before the last date of registration.

REGISTRATION LINK
<https://forms.gle/q5Y2SYwoaw3u8rm9>



**ONE WEEK
FACULTY DEVELOPMENT
PROGRAMME
ON
IOT AND ITS APPLICATIONS**

Organized by E&ICT IIT Guwahati
An Initiative of
Ministry of Electronics & Information
Technology (MeitY),
Government of India

+91-361-2583182 (O)
+91-7086502139 (M)

eictacad@iitg.ac.in
eictacad@gmail.com







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Principal Investigator

Prof. Gaurav Trivedi
Dept. of Electronics and Electrical
Engineering
IIT Guwahati

Course Co-ordinator from E&ICT Academy

Ms. Vartika Agarwal
Associate Project Engineer
E&ICT Academy IIT Guwahati
Ph. No.: 7376952382

Mr. Neelotpal Sharma
Associate Project Engineer
E&ICT Academy IIT Guwahati
Ph. No.: 70025 18971

Course Outcome:

1. Build their own IoT Design Solution
2. Setup and connect sensors to cloud
3. Monitoring solutions
4. Process and transform IoT data for analytics
5. Make smart IoT systems by applying business analytics on IoT data

Mode of delivery

1. Jaypee Institute of Information Technology, Noida, Uttar Pradesh (Hub/Offline)
2. Madhav Institute of Technology & Science, Gwalior, Madhya Pradesh (Spoke/Online)
3. IMS Engineering College, Ghaziabad, Uttar Pradesh (Spoke/Online)

Course Modules:

- Overview of IoT: Evolution and technologies used in IoT
- Introduction to Nodemcu
- Communication protocols (SPI, I2C, UART)
- IOT Networking
- IOT Security



Pre-requisites

Basics knowledge of IoT

Who can attend?

Programme is open to Faculty Members and PhD Research Scholars from Universities and Colleges. The Faculty/Staff are requested to submit the NOC from respective department before attending the session.

For details of the programme and course contents etc., please log on to Electronics and ICT Academy

website: <https://eict.iitg.ac.in/>

Scan the QR for registration



Participants willing to attend the workshop in the offline mode need to register as early as possible to get on campus hostel accommodation. Accommodation will be provided on self-payment basis.

These FDPs can be considered at par with other QIP (Quality Improvement Programme) and other provisions for recognition/credits.

The main objectives of the FDP were:

- To provide a foundational and practical understanding of IoT systems and their applications
- To familiarize participants with modern IoT hardware, communication protocols, and cloud-based analytics
- To encourage the integration of IoT into teaching, research, and project-based learning
- To foster industry-academia collaboration by sharing real-world use cases

Multiple sessions were conducted during the FDP, covering a range of topics delivered by esteemed faculty members, industry experts, and professionals. These sessions helped participants gain both conceptual clarity and practical knowledge. The hands-on training included working with Arduino and NodeMCU boards, implementing communication protocols like MQTT and HTTP, and developing real-time IoT applications. The FDP also included cloud-based exercises where participants created dashboards, visualized sensor data, and explored edge computing concepts.

The key topics covered during the sessions included:

- Introduction to IoT and Smart Systems
- Sensors, Actuators, and Microcontrollers (Arduino, NodeMCU)
- Communication Protocols: HTTP, MQTT, LPWAN



- IoT System Design and Integration
- Cloud Platforms for IoT: Thingspeak, Node-Red
- Case Studies in Smart Cities, Healthcare, and Agriculture

The FDP concluded on **29th March 2025** with a project submission. Certificates of participation were awarded to attendees with acceptable range of attendance. Overall, the FDP served as a valuable platform for faculty development, promoting the integration of IoT in academics and fostering future-ready technical capabilities among educators.

Detailed Schedule of FDP

Date	Time	Topic
Day-1 (24-03-2025)	10:00 am – 10:15 am	Inauguration
	10:15 am – 12:00 noon	Session 1. a. Overview of IoT: Evolution and technologies used in IoT b. IOT Architecture: IoT embedded system, sensors and components c. IOT applications in different domains Session 2. Introduction to IOT hardware Platforms
	01:00 pm – 02:00 pm	Query Handling and Evaluation
	02:00 pm – 03:00 pm	Break
	03:00 pm – 05:00 pm	<u>Hands-on Practice</u> Setting up online circuit simulator Simple electronics circuit Interfacing RGB led with Arduino Traffic line controller
Day-2 (25-03-2025)	10:00 am – 12:00 noon	Session 1. a. Introduction to Nodemcu b. Communication protocols (SPI, I2C, UART) Session 2. Introduction to IOT development board Session 3. Introduction to IOT sensors and actuators
	12:00 noon – 01:00 pm	Query Handling
	01:00 pm – 02:00 pm	Break
	02:00 pm – 05:00 pm	<u>Hands-on Practice</u> Connection with WIFI and get an IP address Interfacing ultrasonic sensor for intrusion detection Weather station using OLED display Air quality monitoring system



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Day-3 (26-03-2025)	10:00 am – 12:00 noon	Session 1. IOT Networking a. LPWAN b. NBIOT c. LTE-M d. OSI/TCP model Session 2. IOT protocols -MQTT, COAP, HTTP Session 3. IOT cloud platform
	12:00 noon – 01:00 pm	Query Handling and Evaluation
	01:00 pm – 02:00 pm	Break
	02:00 pm – 05:00 pm	<u>Hands-on Practice</u> IOT based Temperature and humidity Monitoring over Thingspeak Sending Live sensor data to IBM Bluemix or AWS
Day-4 (27-03-2025)	10:00 am – 12:00 noon	Session 1. IOT Security Session 2. a. Getting started with Node-RED b. Flow design and deploying in Node-red Session 3. IOT Dashboard in Node-red
	12:00 noon – 01:00 pm	Query Handling and Evaluation
	01:00 pm – 02:00 pm	Break
	02:00 pm – 05:00 pm	Node-RED Installation Local server(mosquitto) integration with Node-RED using MQTT Remote server integration with Node-RED using MQTT

Day-5 (28-03-2025)	10:00 am – 12:00 noon	Session 1. a. IoT application : Smart Home, Healthcare, Energy Monitoring, Smart Farming b. IoT and Communication Technologies (LPWAN/5G) Session 2. Edge AI
	12:00 noon – 01:00 pm	Query Handling and Evaluation
	01:00 pm – 02:00 pm	Break
	02:00 pm – 05:00 pm	<u>Hands-on Practice</u> Building an Image Classifier with Edge AI/ Machine Learning Smart predictive maintenance
Day-6 (29-03-2025)	5 hrs	Project



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101 and its Applications

24 - 29 March, 2025 at Madhav Institute of Technology & Science

Attendance Sheet

Sl. No.	Name of Participant	Day 1 (24 March 2025)		Day 2 (25 March 2025)		Day 3 (26 March 2025)		Day 4 (27 March 2025)		Day 5 (28 March 2025)	
		Morning Shift Sign with In Time	Evening Shift Sign with Out Time	Morning Shift Sign with In Time	Evening Shift Sign with Out Time	Morning Shift Sign with In Time	Evening Shift Sign with Out Time	Morning Shift Sign with In Time	Evening Shift Sign with Out Time	Morning Shift Sign with In Time	Evening Shift Sign with Out Time
42	Mr. Utkarsh Sharma	[Signature]	[Signature]								
43	Ms. Aditi Samadhya	[Signature]	[Signature]								
44	Ms. Manali Singh	[Signature]	[Signature]								
45	Dr. Pawan Dubey	[Signature]	[Signature]								
46	Dr. Tej Singh	[Signature]	[Signature]								
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Signature of Course Coordinator (Madhav Institute of Technology & Science)

[Signatures]

Glimpses of FDP



Priyanka Garg

Dr. Priyanka Garg
Lab Coordinator

Bhavna Rathore

Dr. Bhavna Rathore
Course Coordinator

Praveen Bansal

Dr. Praveen Bansal
Head, CIoT
