Tamil Nadu
TDPC

Confederation of Indian Industry
Southern Region

CII-TNTDPC Certificate Course on IoT with GenAI

15 – 20 December 2025 | 1400 – 1700 Hrs (IST) | Virtual

The integration of **Internet of Things (IoT)** and **Generative AI (GenAI)** is unlocking powerful new applications across industries—from smart homes to intelligent manufacturing and predictive maintenance to autonomous systems.

IoT provides a continuous stream of real-world data from devices ranging from household appliances to industrial machinery. This data, when processed by GenAI, can be transformed into intelligent insights, predictive analytics, or even automated decision-making systems—enhancing efficiency, personalization and innovation across sectors.

This workshop aims to introduce participants to the fundamentals of both IoT and GenAI, explore how their integration is driving intelligent solutions, and provide hands-on experience in building applications that bridge the physical and digital worlds.

In this context, CII-TNTDPC is organizing a a certificate course on **Internet of Things (IoT) with GenAI** from 15 – 20 December 2025 over the virtual platform.

The schedule of the training programme is as follows.

Objectives

- To introduce participants to the fundamentals of **IoT systems** and **Generative AI**.
- To explore real-world applications where IoT and GenAI converge.
- To demonstrate how GenAI can analyze, simulate, or generate responses to IoT data.
- To provide practical experience through hands-on sessions using popular platforms.

Program Schedule

Date : 15 – 20 December 2025
Time : 1400 – 1700 Hrs (IST)
Duration : 18 Hours (6 Sessions/3 Hours a day) Online.
Mode : Virtual

Topic	Learning Outcomes
Module 1 - IoT Basics and NodeMCU Simulation (2 Hours)	• Focus - Foundational IoT concepts and simulated NodeMCU setup. • Introduction to IoT - What IoT means, real-world applications (e.g., smart homes), and role of sensors and actuators. • Node MCU Overview (Simulated in Wokwi) - Explore ESP8266 architecture, virtual setup, and LED blink simulation in Wokwi. • Programming and Connectivity - Learn Arduino-based coding in Wokwi and simulate WiFi connection and device responses.

Module 2 - Sensor Interfacing & Data Acquisition (Simulated) (2 Hours)	• Focus - Working with sensors using simulation tools. • Sensor Fundamental - DHT11, LDR, Ultrasonic, and virtual sensors in Tinkercad/Wokwi • Hands-On Interfacing - Simulate temperature and humidity readings fromDHT11 in Wokwi. • Data Acquisition Projects - Display simulated sensor data on serial monitor and troubleshoot code virtually.
Module 3 - Mobile App for IoT Control (3 Hours)	• Focus: Create IoT mobile apps using **MIT App Inventor.** • App Inventor Basics - UI design and logic building. • Simulating IoT Connectivity - Use virtual MQTT/Web API to connect with Wokwi projects. • Voice-Controlled App Project - Create a voice-controlled smart device simulator using App Inventor+Wokwi
Module 4 - Cloud Connectivity & Virtual Data Transfer (2 Hours)	• Focus: Send simulated IoT data to cloud services. • IoT Communication Protocols - HTTP & MQTT using Wokwi's virtual cloud integration. • Cloud Integration - Send simulated data to **ThingSpeak** or **Google Sheets** using APIs. • Mini-Project - Virtual environmental monitor uploading sensor data online.
Module 5 - Python for IoT Data Visualization (2 Hours)	• Focus: Visualizing and analyzing cloud IoT data. • Python Basics for IoT - Fetch simulated data from ThingSpeak using API. • Dashboard Development - Create interactive charts using **Plotly Dash** or **Streamlit**. • Advanced Visualization - Design a smart dashboard for monitoring IoT trends.
Module 6 - Generative AI Fundamentals (2 Hours)	• Focus: Understanding and applying GenAI concepts. • GenAI Overview - Introduction to large language models (OpenAI, Gemini). • Prompt Engineering - Create intelligent chatbot prompts and automation examples. • AI Applications - Generate insights and summaries from simulated IoT datasets.
Module 7 - Integrating GenAI with IoT (2 Hours)	• Focus: Bringing AI into IoT dashboards and reports. • AI for IoT Data Analysis - Generate automatic reports using GenAI APIs. • Automation and Intelligence - Build Python scripts that ask AI to summarize IoT data patterns. • Discussion - Explore integration challenges and real-world possibilities.
Module 8 - Hands-On Final Projects (3 Hours)	• Focus: Virtual projects combining IoT + GenAI.

	• Hours 1–4: Project 1 — Women Safety Mobile App Development with IoT • Final Review & Presentation • Each team presents a working IoT+AI simulation with dashboard and report

Course Highlights

- Interactive live classes and presentations will be conducted by industry practitioners who will focus on experiential learning, which will allow learners to apply concepts learned in the classroom.
- Fundamental and advanced topics related to IoT will be taught by industry practitioners, and the course will consist of a mix of theory sessions, hands-on training, interaction with experts, and use case studies.
- Through practical cases, the course provides participants with the opportunity to develop IoT problem-solving skills from experienced IoT industry practitioners and enables them to create their own IoT solutions.
- At the end of each class, the course offers participants a daily discussion and support for resolving doubts or queries.
- Upon completion of the course, all participants will receive a Certificate of Participation.

Requirements

1) Computer Skills, Basic Knowledge of Electronics, Industrial Domain and Concepts.
2) Participants must have a computer/laptop with preferably 4 GB RAM or higher.
3) A stable Internet Connection with decent speed can cater to the program.

Industries

Banking, Insurance, Finance Retail, E commerce, Marketing consultancies, Travel & tourism, Agriculture, Consulting, Customer Service, Education, Engineering, Finance, Government, Health, Mining Hospitality, Hospitals, Human Resources, Information Systems, Information Technology, Law Enforcement, Manufacturing, Telecommunication, Oil and Gas, Public Relations, Purchasing, Quality Assurance, Software Development, Training etc.

Who Should Attend?

- Graduates, Freshers / Beginners who want to kick start their career with the IoT.
- Mid-Level / Senior-level Executives and Professionals who wish to pursue a career in IoT.
- Technology / IT Professionals, Product Managers & Software Developers who are venturing into IoT space.
- Electrical and Electronics Engineers, Designers, Technical and Solution Architects.
- Business Executives and Managers who want to understand the essentials of IoT.
- Candidates aspiring to be Consultants in IoT.
- Entrepreneurs who are interested in building solutions for their customers.

- Professionals who are looking to upgrade their knowledge and expertise in IoT and gain hands-on experience with it.

I am writing to invite participation from your organisation for this comprehensive course.

Participation Fee

- CII Member : INR 13,000/- + 18% GST
- Non-Member : INR 15,000/- + 18% GST
- Academia : INR 10,000/- + 18% GST [INR 7,000/- + 18% GST for more than 10 students/research scholars from the same institute]

    - 10% discount for 3 or more participants from the same organization.
    - Registration fee is non-refundable. However, a change in nomination is accepted.
    - Registration would be confirmed only against receipt of payment.
    - Limited Seats, registration will be on first come-first serve basis.
    - Sessions will be through Digital Platform.
    - Participation Certificate will be issued after the completion of all the sessions.