TIH Foundation for IoT and IoE IIT Bombay

Contact Us

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TIH IoT IIT Bombay

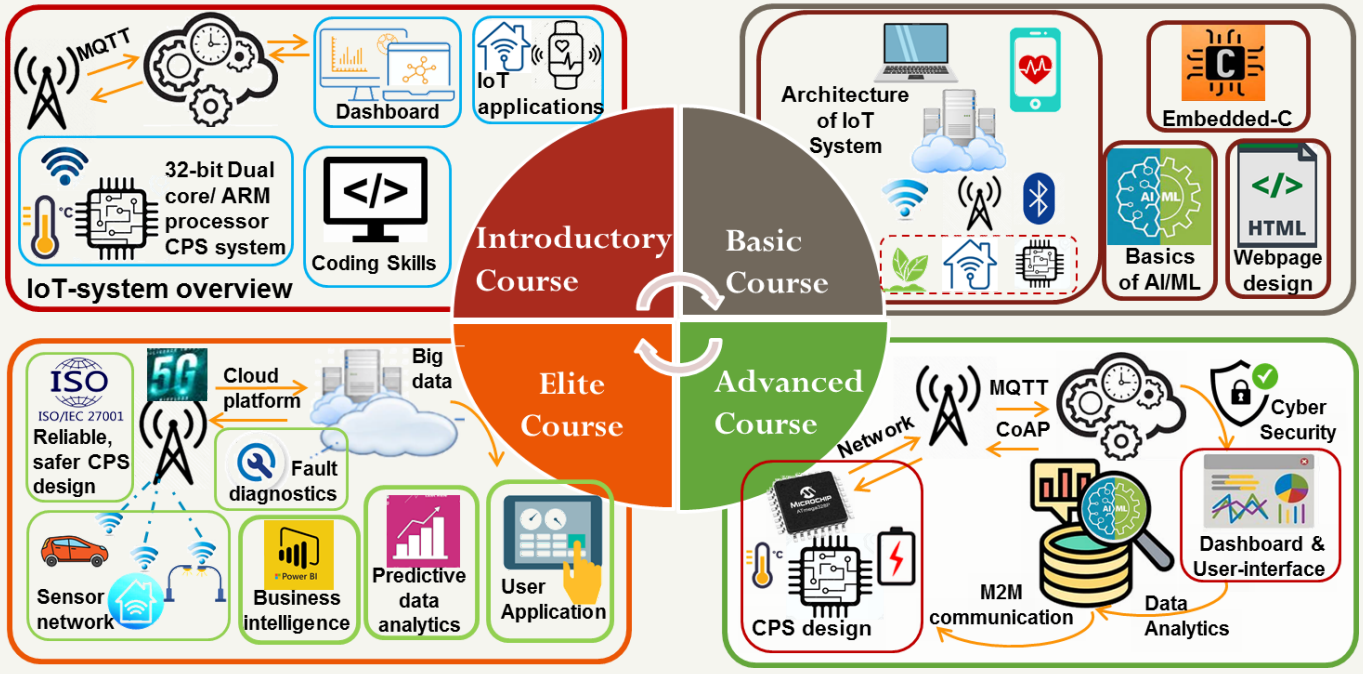
TIH Foundation for IoT and IoE (TIH-IoT) at IIT Bombay has been set up as a Section-8 company (not-for-profit) by IIT Bombay under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS), being implemented by the Department of Science and Technology (DST), Government of India. Technology Innovation Hub for IoT and IoE (TIH-IoT) at IIT Bombay is focusing on creating a self-sustaining innovation continuum by fostering translational research for technology & product development, building highly knowledgeable human resources, and a vibrant start-up ecosystem, in the technology vertical of the Internet of Things (IoT). The goal is to help India become a pioneer in technology-led economic growth and prepare the country to be the world leader in the technology arena.

Certified Courses Offered

The key motivation to offer certified courses is to develop skilled IoT professionals in the industry. Completing short goals through certified courses which will have value in the industry hiring, would be an attraction for entry level and working professionals. Moreover, our TIH-IoT would benefit by channelizing the industry problems through this large pool of skilled personnel. The IoT-course structure has various levels, and each level has its own value. Each level will encompass various theoretical and practical modules which will be delivered through lecture sessions and lab sessions. The course structure is divided into four major levels (Introductory, Basic, Advanced, Elite) to reach out to a large group of enthusiasts with or without knowledge of components of IoT/technical background. The duration of each course will be between 35 and 40 hrs. The individual course completion certificate will be provided after completion of every course. The IoT-expert certificate will be provided for a candidate who successfully completes all four courses.

Introductory Course on IoT

The objective of this first-level course is to provide a basic introduction to the participants on developing an IoT-based system, including the various components of such a system. These systems can be deployed in industries or as prototypes for research in IoT. The course will cover aspects that need to be considered in design, implementation, hands-on experience in building such a system. Participants will become familiar and comfortable with the general IoT framework. The lecture parts will cover systems-level aspects of sensors, networks



Structure of Certified Courses

and computing involved in IoT systems. There will be associated dedicated hands-on lab sessions that will provide the details of building such a system for simple use cases. This will include interfacing a basic IoT system to some sensors, the associated interfacing, communication, computation, and analysis of data acquired through the IoT sensor setup. The lecture and lab sessions will be integrated to give a complete picture of a basic IoT system. This course will be a pre-requisite for other advanced courses that will build on this course and will specialize in specific aspects of the course or be targeted to specific application areas.

Course Details

Title: Introductory Course on IoT

Duration: One week (40 hours)

Course Dates:
The course will be conducted in three batches:
June 13 to June 18, 2022
June 20 to June 25, 2022
July 04 to July 09, 2022

Please note that the content will be similar in three batches.

Sessions Schedule: 9:00 am to 6:30 pm

Mode: Offline/In-person

Venue: LC 002, Lecture Hall Complex, infinity corridor, IIT Bombay

Suggested Participants:
- Engineering/Science/Design students and Faculty
- Personnel from Industries and Academia

Pre-Requisites:
- Basics of microprocessor/microcontroller
- Basics of electronics
- Knowledge of basic programming skills (C, Python preferred)
- Participants must carry their own laptop with specifications: i3 processor, 4 GB RAM, 500 GB HDD, Windows 8 or 10
- Participants must carry their own smartphone: an Android Mobile phone
- Participants should have Gmail-ID for cloud registration

Registration Details:
Start of Registration: May 19, 2022
End of Registration: June 09, 2022

Registration fees: INR 10,000/- (inclusive of GST)
Registration fee includes participation in all theory and lab sessions, a kit for experiment purposes (only during lab sessions), course material, welcome kit, tea/coffee and lunch for the course duration.

Group registration discount: A group of three (3) participants will get a 10% discount each

Special discount scheme for Academia:

1) A group of 10 participants will get 10% discount each.
2) There will be free registration for one faculty with a group of 10 participants.
3) Letter of appreciation to the institute/ department for 10 or more participants.
4) Continuous interactions regarding various initiatives by TIH-IoT, IIT Bombay.

Accommodation:
Accommodation at IIT-Bombay/ SAMEER guest house on payment basis

Registration procedure:
Please register on the given link: https://www.tih.iitb.ac.in/iot-course/

Resource Faculty:
The course content will be delivered by the experienced faculty from IIT Bombay and Industrial Experts in the domain of IoT.

Examination: There will be a short examination on the last day of the schedule.

Certificate: A course completion certificate will be provided to the applicants after successful completion of the course (75% attendance is mandatory).

Course Curriculum
Module 1: IoT-system introduction, fundamentals, benefits/challenges, architecture, applications, case-study

Module 2: Sensors and actuator interfaces; signal conditioning, read-out circuits, signal processing

Module 3: Networking and cloud computing in IoT, IoT network protocols like MQTT/HTTP, wireless communication, IoT security, and privacy

Module 4: Data Analysis for IoT-specific use cases, computing, and data handling

Module 5: Industry expert session on recent advancements in IoT

Lab Sessions: Introduction to IoT-kit, interfacing sensor, ADC, connectivity of IoT-CPS system with cloud and control using dashboard, send/receive data to server, data Analysis. Labs will be conducted using hardware system consisting of 32-bit dual core/Arm cortex M4 microprocessor and Wi-Fi network processor.
Programming skills include exposure to various IDEs like CCS/Energia/Thonny Python IDE and programming languages like Embedded C/Javascript/ RedNode/Python, API-based programming, dashboard designing, etc.