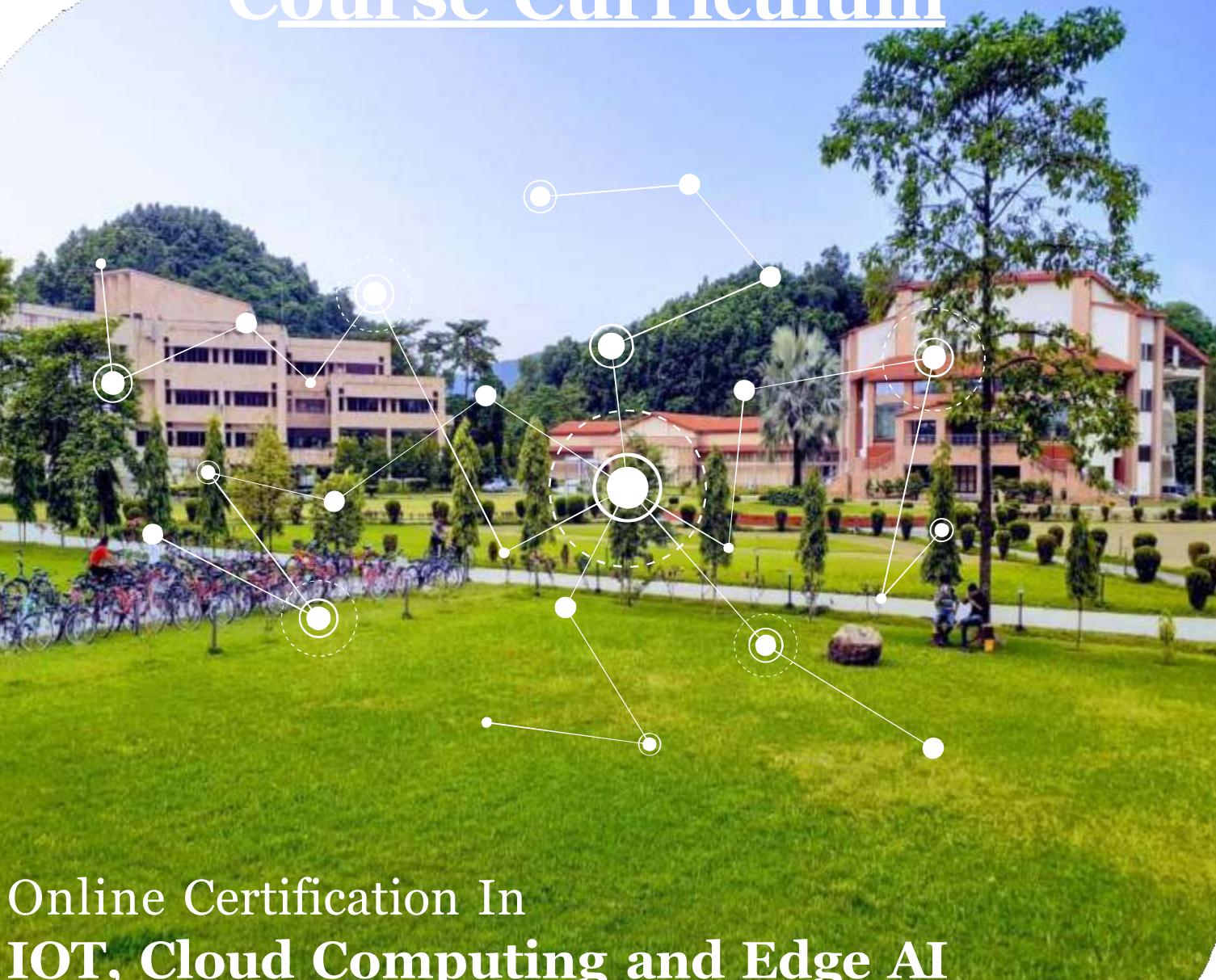


3 Months (80 Hrs)

Course Curriculum



Online Certification In
IOT, Cloud Computing and Edge AI

By E&ICT Academy, IIT Guwahati

ABOUT THE IIT GUWAHATI



Indian Institute of Technology Guwahati, the sixth member of the IIT fraternity, was established in 1994. The academic programme of IIT Guwahati commenced in 1995. At present the Institute has eleven departments and three inter-disciplinary academic centres covering all the major engineering, science and humanities disciplines, offering BTech, BDes, MA, MDes, MTech, MSc and PhD programmes. Within a short period of time, IIT Guwahati has been able to build up world class infrastructure and a reputation for itself.

ABOUT E&ICT ACADEMY, IIT GUWAHATI

Electronics and ICT Academy aims to provide specialized training to the faculties of Engineering, Arts, Commerce, Science colleges and Polytechnics institutes by developing short term training programmes on fundamental and advanced topics in IT, Electronics & Communication, Product Design, Manufacturing. In addition, the Academy conducts specialized customized training programmes and research promotion workshops for corporate sector & educational institutions.



PROGRAM CURRICULUM: LEARNING PATH

Master **Industry- IOT, Cloud Computing and Edge AI** through the most relevant curriculum designed by E&ICT Academy, IIT Guwahati and leaders from the industry.

Introduction to IoT and Architecture

Module

01

What is IoT, IoT Architecture, IoT Applications, IoT Gateways, Middleware

IoT Protocols

Module

02

HTTP/REST, MQTT, COAP, AMQP, Websockets, 6LoWPAN

Node-RED

Module

03

Installation of Nodejs, Installation of Node-Red, Node-Red Dashboard

IOT Security

Module

04

Introduction to mbed TLS and SSL, Importance of IoT application, AES encryption

IoT/ ML Cloud Computing

Module

05

Cloud Computing, Deployment Models, AWS-IoT Core, Google IoT Cloud, LORA IoT

Machine Learning with IoT

Module

06

Data Acquisition, Data Filtering and Pre-Processing, Tensorflow Lite, TinyML,

COURSE CURRICULUM

Introduction to IoT and Architecture

O 1

Module-1: Introduction to IoT and Architecture

- a. What is IoT
- b. IoT applications in different domains
- c. Trends in IoT Market
- d. Smart things
- e. Gateway
- f. Middleware
- g. Edge vs Cloud functional partitioning

IoT Protocols

O 2

Module-1: IoT Protocols

- a. HTTP/REST
- b. MQTT
- c. COAP
- d. AMQP
- e. WEBSOCKETS
- f. 6LoWPAN

Module-1: Node-RED

- a. Installation of Nodejs on Laptop
- b. Installation of Node-red on local
- c. Local broker installation
- d. Connection between local broker and Node-RED
- e. Node-RED dashboard

Hands-on :

NodeMCU Webserver & Node-RED Dashboard based monitoring system

Module-1: IOT Security

- a. Introduction to mbed TLS and SSL
- b. Importance of security in IoT application
- c. Use of hardware accelerated AES encryption on ARM MCU

Module-1: IoT/ ML Cloud Computing

- a. Cloud Computing
- b. Benefits of Cloud
- c. Deployment Models
- d. AWS-IOT Core/ SageMaker and Greengrass
- e. Google IOT Cloud
- f. Thingspeak
- g. LORIOT
- h. IBM Bluemix

Hands-On: Smart Environmental monitoring

Sending sensor data to AWS Cloud and create dashboard

Live sensor data upload to IBM BLUEMIX

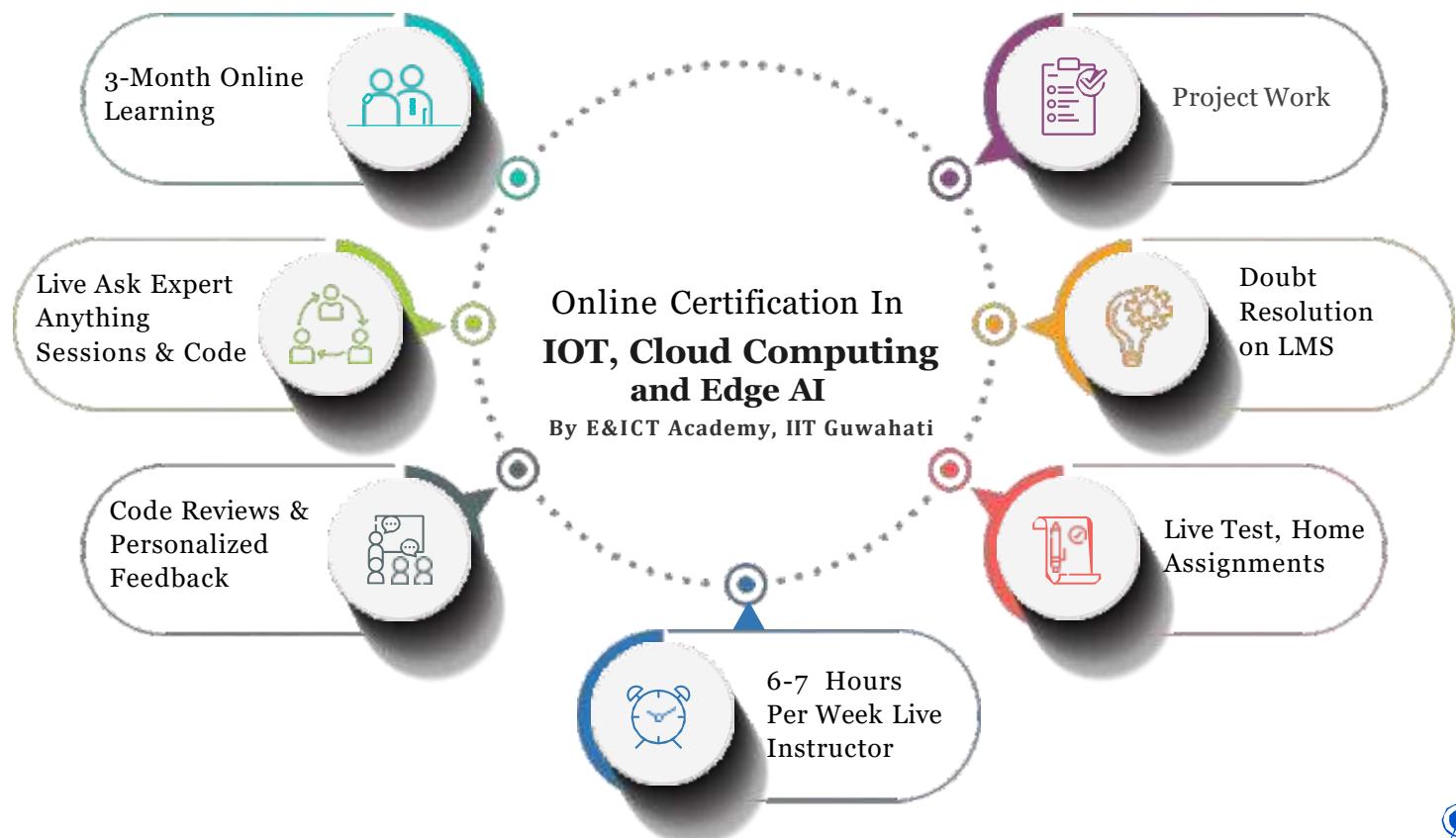
Module-1: Machine Learning with IoT

- a. Data Acquisition
- b. Data filtering and Pre-processing
- c. Tensorflow Lite
- d. TinyML
- e. AWS- IOT Core
- f. Google Collab
- g. Build, Train, and Deploy a ML Model on Edge device

Hands-ON: Vibration analysis using Edge impulse and IoT development board

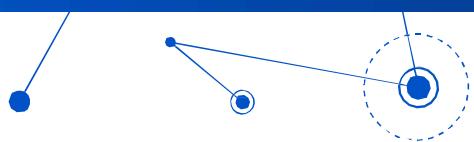
PROGRAM PEDAGOGY

Learn from one of the best faculty in India through live online sessions. While Academic Professors will help you learn IoT, Cloud Computing & Edge AI concepts, industry experts will impart practical knowledge of IoT, Cloud Computing & Edge AI through real world projects.



TOOLS, LANGUAGES & FRAMEWORKS

CONTACT DETAILS



Program Information:

Online Certification In IoT, Cloud Computing and Edge AI
By E&ICT Academy, IIT Guwahati



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