COURSE OVERVIEW

Course Name:
(CN-CIoTP+) CertNexus Certified Internet of Things (IoT) Practitioner

COURSE DURATION: 3 Days

Gauteng:
3rd Floor, 34 Whitely Road
Melrose Arch
Johannesburg
2196

Gauteng:
192 on Bram
192 Bram Fischer Drive
Ferndale, Randburg
Johannesburg
2160

Cape Town:
3rd Floor, Thomas Pattullo Building
19 Jan Smuts St
Cape Town
8000

Durban:
9 Mountview Close
Broadlands
Mount Edgecombe
Durban
4302

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INTRODUCTION

The Internet of Things (IoT) promises a wide range of benefits for industry, energy and utility companies, municipalities, healthcare, and consumers. Data can be collected in extraordinary volume and detail regarding almost anything worth measuring, such as public health and safety, the environment, industrial and agricultural production, energy, and utilities. New data analysis tools have been optimized for the massive amounts of data that IoT produces, enabling well informed decisions to be made quickly. But putting IoT systems into place can be a complicated proposition, and fraught with hazards. Solutions may involve devices and technologies from many different vendors, requiring a good understanding of software and hardware and strategies to integrate them, as well as the risks associated with security, privacy, and the safety of those whose working and living environments are managed by these systems. IT professionals often have little or no experience working with embedded systems, sensor networks, actuators, real-time systems, and other components that are common to IoT, so this course provides a foundation for understanding how these components work with other systems that IT professionals typically have more experience working with - such as networks, cloud computing, and applications running on servers, desktop computers, and mobile devices.

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In this course, students will learn general strategies for planning, designing, developing, implementing, and maintaining an IoT system through various case studies and by assembling and configuring an IoT device to work in a sensor network. Students will create an IoT device based on an ESP8266 microcontroller, implementing various common IoT features, such as analogue and digital sensors, a web-based interface, MQTT messaging, and data encryption.

DELIVERY METHOD

Our courses have flexible delivery options:

- In-person classroom training at the Impactful training facilities
  - Johannesburg, Durban, Cape Town
- Virtual instructor-led training
- Nationally: on-site at the client

TARGET AUDIENCE

This course is designed for IT professionals with baseline skills in computer hardware, software support, and development who want to learn how to design, develop, implement, operate, and manage Internet of Things devices and related systems. The student is interested in learning more about embedded systems, microcontroller programming, IoT security, and the development life cycle for IoT projects. While students will gain hands-on experience assembling a prototype IoT device and using software development tools, these activities are closely guided, so previous experience in electronics assembly and programming are not required. This course prepares students for taking the CertNexus Certified Internet of Things (IoT) Practitioner (Exam ITP-110).

PREREQUISITES

To ensure your success in this course you should be an experienced computer user who is comfortable setting up and configuring computers and electronic devices.

COURSE OBJECTIVES

In this course, you will learn how to apply Internet of Things technologies to solve real-world problems.
You will:

- Plan an IoT implementation.
- Construct and program an IoT device.
- Communicate with an IoT device using wired and wireless connections.
- Process sensor input and control an actuator on an IoT device.
- Manage security, privacy, and safety risks on IoT projects.
- Manage an IoT prototyping and development project throughout the development lifecycle

COURSE CONTENT

Lesson 1: Planning an IoT Implementation

- Topic A: Select a General Architecture for an IoT Project
- Topic B: Identify Benefits and Challenges of IoT

Lesson 2: Constructing and Programming an IoT Device

- Topic A: Select and Configure a Processing Unit
- Topic B: Select a Microcontroller Power Source
- Topic C: Use a Software Development Kit to Program an IoT Device

Lesson 3: Communicating with an IoT Device

- Topic A: Communicate Using Wired Connections
- Topic B: Communicate Using Wireless Connections
- Topic C: Communicate Using Internet Protocols

Lesson 4: Processing IoT Data

- Topic A: Process IoT Device Input and Output
- Topic B: Process Data in the Cloud
- Topic C: Provide Machine to Machine Communication

Lesson 5: Managing Risks on IoT Projects

- Topic A: Identify IoT Security and Privacy Risks
- Topic B: Manage IoT Security and Privacy Risks
- Topic C: Manage IoT Safety Risks

Lesson 6: Undertaking an IoT Project

- Topic A: Identify Real World Applications for IoT
- Topic B: Follow the IoT Development Lifecycle

Appendix A: Mapping Course Content to Certified Internet of Things Practitioner (CIoTP) (Exam ITP 110) .