INTERNET OF THINGS FOUNDATION

Syllabus

CLOUD CREDENTIAL COUNCIL

CCC Internet of Things FOUNDATION Certified by EXIN

Scope and Purpose of this Document

The purpose of this document is to inform all parties interested in the Internet of Things Foundation course of the areas covered in the course.

Internet of Things (IoT) Foundation

Welcome to the era of Digital Revolution (the last known Industrial Revolution took place centuries ago) where, today, the Internet of Things is one of the most critical components for the rapid digitization of businesses across the world.

Internet of Things is gaining immense popularity owing to the business acumen it offers. Companies across multiple industries are recognizing the need of connectivity and the potential transformation which connectivity can bring. As more and more objects get embedded with sensors and start communicating, the new information network will create new business models, impact existing business models, improve business processes, and shrink costs.

This course offers understanding on the IoT technology and provides a detailed glimpse on the business potential it currently offers. The course has essential components which can enable and support in decision making process for executives and users alike. This will allow them to analyze the future strategy and align themselves to match or get ahead of the competition.

Target Audience

The Internet of Things (IoT) Foundation course audience includes all teams across the Management and Business functions, including:

- C - Level Executives and Senior Management
- General Managers including Business Development Managers (Marketing, Sales)
- IT Project & Programme Management, Risk Management and IT Service Management
- Business Analysts, Marketing and Sales Executives
- Entrepreneurs and Investors
- Consultants, Professionals in IT service related fields

Course Requirements

Basic knowledge of Internet, Cloud Computing, Big Data concepts, Networking
Recommended: Cloud Technology Associate Certification or Big Data Foundation.
Basic familiarity with Agile, Scrum, Lean, and ITSM principles is beneficial.

Certification Requirements

You will receive the required certification from EXIN on successful completion of the Internet of Things (IoT) - Foundation.

Exam Details

The characteristics of the Internet of Things (IoT) Foundation exam are:

***Exam Format**:*

Closed-book format
Web-Based

***Questions**:*

40 multiple choice questions

***Passing Score**:*

65%

***Exam Duration**:*

60 minutes
15 minutes extra time for non-native English speakers.

Learning Level of the Syllabus

The modern version of Bloom's taxonomy of learning is a widely used classification framework for course syllabi and assessments for certification. The taxonomy classifies learning into six ascending levels.

Level 1- the Knowledge Level: Exhibit memory of previously learned materials by recalling facts, terms, basic concepts and answers.

Level 2 - the Comprehensive Level: Demonstrative understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.

Level 3 - the Application Level: Using new knowledge. Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.

Level 4 - the Analysis Level: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalization.

Level 5 - the Evaluate Level: Present and defend opinions by making judgements about information, validity of ideas or quality of work based on a set of criteria.

Level 6 - the Creation Level: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions

The level of this course is level 1-2 (Knowledge and comprehensive)
.

Syllabus

In the following tables, the key aspects of the Internet of Things (IoT) Foundation syllabus are described.

Module 1: Course Introduction

Topics	Learning Objectives	References
Course Overview Course Learning Objectives Course Agenda Activities and Lab Activities Course Book Module Summary	• Explain the course overview • Describe course agenda • List the course learning objectives • Relate to activities and lab activities of the course	N/A

Module 2: Concepts and Terminologies

Topics	Learning Objectives	References
• Introduction: Internet, Things and IoT • IoT Types, History and Evolution of IoT • Cyber-Physical Systems and differences among IoE, M2M. and IoT • Facts and Figures Around IoT Application Areas	• Relate to Internet, things, and Internet of Things (IoT). • Recognize the types of IoT: Consumer IoT (CIoT) and Industrial IoT (IIoT) and the comparison between them. • Explain the history and evolution of IoT and the Hype Cycle of emerging technologies. • List characteristics of things and benefits of IoT. • State characteristics and lifecycle of Cyber-Physical System (CPS). • Distinguish between IoT, Machine-to-Machine (M2M), and Internet of Everything (IoE). • Discuss the facts and figures around IoT. • Describe IoT application areas.	https://www.happiestminds.com/Insights/internet-of-things/ https://www.i-scoop.eu/internet-of-things-guide/what-is-consumer-internet-of-things-ciot/ https://www.itransition.com/blog/the-history-and-future-of-the-internet-of-things https://www.nist.gov/el/cyber-physical-systems http://internetofthingsagenda.techtarget.com/definition/machine-to-machine-M2M

Module 3: Business Orientation

Topics	Learning Objectives	References
• Drivers of IoT • Benefits of a Connected World • IoT Business: Opportunities, Benefits, and Challenges • IoT Monetization Strategies and Models	• List the key drivers for the evolution of IoT and relate to the significance of drivers. • Relate to benefits and capabilities of a connected world. • Identify IoT opportunities for business applications. • Recognize IoT opportunities for manufacturers, developers, analytics, and business organizations which collect data and monitor new equipment. • Recall the key barriers in adopting IIoT and requirements of IIoT. • Examine monetization opportunities, monetization strategies, and monetization models arising out of IoT. • Describe the applicability of monetization models.	https://www.keysight.com/upload/cmc_upload/All/01_Explosion_of_the_Internet_of_Things_What_does_it_mean_for_wireless_devices.pdf https://mutualmobile.com/posts/iot-connected-world-present-and-bright-future https://www.inc.com/comcast/five-iot-applications.html https://www.channelinsider.com/networking/slideshows/pinpointing-promising-opportunities-in-iot.html **(Please note: This article is currently not available. The article, or a replacing article, will be made available as soon as possible.)** https://ahmedbanafa.blogspot.com/2015/04/the-industrial-internet-of-things-iiot.html https://nordicapis.com/top-5-api-monetization-business-models/

Module 4: Basic Building Block of IoT - Architecture

Topics	Learning Objectives	References
• Architecture of IoT components • Network Components Within IoT	• Explain the basic building blocks of IoT including sensors, processors, gateways, and applications. • Distinguish between sensors and actuators. • Relate to generic factors of sensors. • Explain the architectural layers of IoT. • Define the working of IoT. • Describe the key requirements of IoT network. • Distinguish between IP version 4 (IPv4) and IP version 6 (IPv6). • Describe communication technologies used in IoT including Wi-Fi, Bluetooth, Near Field Communication (NFC), ZigBee, and IPv6 over Low power Wireless Personal Area Networks (6LoWPAN), Z-Wave. • Relate to smart environment application and service domains.	https://www.c-sharpcorner.com/UploadFile/f88748/internet-of-things-part-2/ https://techdifferences.com/difference-between-sensors-and-actuators.html https://www.micrium.com/iot/internet-protocols/ http://ccm.net/faq/298-what-is-wifi-and-how-does-it-work https://www.electronics-notes.com/articles/connectivity/bluetooth/what-is-bluetooth-technology-basics-summary.php https://www.eetimes.com/author.asp?doc_id=1285236 https://internetofthingsagenda.techtarget.com/definition/Z-Wave

Module 5: Enabling Technologies of IoT

Topics	Learning Objectives	References
• Role of Social Media and Mobility in IoT • Role of Big Data and Analytics in IoT • Role of Cloud Computing in IoT	• *Relate to the enabling technologies that support IoT and their challenges. • *Recall the role of social media and mobility in IoT. • *Describe the role of big data and analytics in IoT. • *State the role of cloud computing in IoT. • *Relate to best practices for the selection of the right cloud model, analytics platform, and mobile devices.	https://www.ipwatchdog.com/2016/11/28/enabling-technologies-internet-things/id=75039/ https://www.whizlabs.com/blog/iot-and-big-data/ https://blog.resellerclub.com/what-is-the-role-of-cloud-computing-in-iot/ https://searchbusinessanalytics.techtarget.com/essentialguide/IoT-analytics-guide-Understanding-Internet-of-Things-data https://www.tutorialspoint.com/big_data_analytics/big_data_analytics_overview.htm https://pdfs.semanticscholar.org/e15f/34880b9a74b4484dc67950a8fa91be247531.pdf

Module 6: IoT Security and Top Governance Issues

Topics	Learning Objectives	References
• IoT Security Challenges • Causes of IoT Security Breaches • IoT Security Risks	• Describe security concerns that plague IoT. • Examine current and future security risks related to IoT. • Recognize top 10 causes of security and privacy breaches from OWASP. • Examine the scenarios of IoT security and privacy breaches. • State security flaws and mitigation measures for enterprises and consumers. • Recite top governance issues with IoT.	https://www.entrepreneur.com/article/292104 https://www.computer.org/csdl/magazine/ic/2015/04/mic2015040056/13rRUB6SpTW https://www.veracode.com/directory/owasp-top-10

Module 7: IoT Case Studies and Future Predictions

Topics	Learning Objectives	References
• IoT Usage Scenarios • IoT Growth Perspectives • IoT Future Predictions	• Describe typical usage scenarios of IoT. • *Recognize growth perspectives of IoT. • Observe future predictions for IoT.	https://iot.ieee.org/iot-scenarios.html https://www.forbes.com/sites/louiscolumbus/2018/06/06/10-charts-that-will-challenge-your-perspective-of-iots-growth/#4269faaf3ecc https://us.norton.com/internetsecurity-iot-5-predictions-for-the-future-of-iot.html