Micro Engineering Certification Program

IOT CERTIFICATION COURSE

Course Summary

Course Duration	~ 36 hours
Resource Person	**Nishant Krishna** **Co-Founder and Chief Architect – TechMachinery Labs**
Purpose of the course	This course aims to start with the basics of IoT and finish with advanced concepts. During this time, we will discuss various technologies, standards, use case, and implementations of IoT. By the end of the course, students will be able to understand the entire ecosystem of IoT very well. They also be able to design solutions and solve problems of any complexity.
Deliverables from the resource person	1. Course slides 2. Online live quizzes 3. Class notes with extra information and examples 4. Quick references and Cheat sheets for topics, as required 5. Question papers for exams
Pre-requisites	There are no pre-requisites to this course.

Notes:

1. This course is completely done using online collaboration methods. A part of this can be done in classroom
2. This course can be further customized based on the requirements of NTT Data.
3. Idle participants strengths for this course is 20-50 students.

	Course Outline This course consists of a mix of concepts, activities, and hands-on. Many of these will include activities / demos / recording, and wherever possible hands-on activities. The hands-on are mostly self-guided with help from the trainer.	
Day	**Course Content**	**Duration**
1	IoT primer part 1 - Introduction to IoT - Complexity of IoT world - Machine Learning in context of IoT	3 hours
2	IoT primer part 2 - IoT Applications and use cases - Smart Cities and few examples of IoT standards in various domains - Live quiz and revision	3 hours
3	Introduction to enabling protocols - Introduction to protocols used in Wireless Sensor Networks and IoT. - Different types of networks and their architecture in context of IoT - Designing autonomous IoT services	3 hours
4	IoT use cases and project discussion - Thoughts on IoT use cases - Project discussion - Case study: Smart Cities - Live quiz and revision	3 hours
5	Deep dive into IoT protocols part 1 - Introduction to IoT protocols - Deep dive into IoT protocols including the protocol specification – Bluetooth, ZigBee, NFC - Use cases and application areas of each of these protocols including mesh networking	3 hours
6	Deep dive into IoT protocols part 2 - Deep dive into IoT protocols including the protocol specification – Wi-Fi (802.11ah, 802.11 ax), 5G - Understand how WiFi and Cellular network can be used for IoT communication - Use cases and application areas of each of these	3 hours

	protocols including mesh networking - Live quiz and revision	
7	IoT ecosystem and security part 1 - Web 3.0 and IoT - Introduction to Edge Computing - Edge Computing and IoT - Middleware for IoT, Building IoT Applications, Thoughts on IoT security - Case study: ROOF Computing	3 hours
8	IoT ecosystem and security part 2 - IoT security vs Cybersecurity - Strategies to secure IoT devices - IoT security frameworks - Live quiz and revision	3 hours
9	IoT Standards - Understanding Web of Things - Standardization efforts for IoT – M2M, WSN, RFID, ROOF, etc. - Web of Things vs Internet of Things. - Thoughts on projects related to IoT.	3 hours
10	Cognitive computing Part 1 - Why cognitive computing - Design principles for cognitive computing - Information architecture and getting to structured information - Case study – Anomaly detection using log analysis - Live quiz and revision	3 hours
11	Cognitive computing part 2 - Domain-specific cognition - Cognitive computing in context of IoT with examples of text analysis, NLP and other areas of cognitive computing - Discussion on project ideas in cognitive computing and IoT	3 hours
12	Recap and discussion about IoT projects - Storing IoT data into Bigdata systems and Bigdata	3 hours

	Analytics - Taxonomy of IoT data - Advanced IoT use cases - Future of IoT - Discussion on IoT projects	