Training course outline
ITU Centres of Excellence for Asia-Pacific - IoT Academy

Title	Big Data, IIoT & Industry 4.0: Approaches & Security Considerations
Modality	Online instructor led
Dates	05 Sep 2022 – 18 Sep 2022
Duration	14 Days
Registration deadline	17 August 2022
Training fees	USD 100.00
Objectives	Due to successive technological advancements, developments, and innovations, the global industrial landscape has drastically transformed over the last years. The fourth industrial revolution (Industry 4.0) aims at transforming previous generation's industries into intelligent ones by incorporating IoT as innovative technology. Internet of Things (IoT) is a rapidly growing concept that has dramatically contributed to the industry 4.0 realization.
Course code	22OI27826ASP-E

1.LEARNING OBJECTIVES

This online training course aims to introduce participants to the Big Data, Industrial IoT and Industry 4.0 concept and security considerations of industrial systems and their abilities for enhancing and improving productivity and cost reduction in industries. It will specifically focus on topics that address intelligent systems and their usage for industry 4.0 and some use cases in this area.

2. LEARNING OUTCOMES

Upon completion of this training course, participants will be able to:

- identify the IioT, trend and IoT capabilities for enhancing industries productivity;
- understand concepts, goals, and frameworks related to IioT and Industry 4.0, including key aspects required to develop smart and intelligent systems;
- identify the security considerations of new industrial systems that using IoT capabilities to achieving the industry 4.0 goals,

- identify big data solutions and strategies such as open data and data analytics services for new generation of industries.
- identify different IioT and related technology applications for realizing industry 4.0; and
- review the various case studies in the area of using IioT and industry 4.0 solutions and services in this area.

3. TARGET POPULATION

Industries, organizations, ICT experts, policymakers, regulators, companies, service & solution providers and academia that are involved in the Internet of Things and Industry 4.0.

4. ENTRY REQUIREMENTS

Those interested in the field of Big Data, IioT & Industry 4.0 Approaches & Security Considerations can participate in this training course.

5. TUTORS/INSTRUCTORS

IoT Academy international tutors and and other invited experts.

6. TRAINING COURSE CONTENTS

Week 1
- Week 1-1 Introduction to IIoT and 4th industrial revolution
- Week 1-2 Designing and developing IIoT systems
- Week 1-3 Industry 4.0 Architecture
- Week 1-4 Big data solutions and strategies for new generation of industries
- Week 1-5 Overview of Industrial IoT security and key aspects for Securing industry 4.0 solutions
- Week 1-6 The IIoT across the globe: standardization, industry bodies and initiatives

Week 2
- Week 2-1 The Industrial IoT: from operational efficiency to innovation
- Week 2-2 Energy consumption optimization in the 4th industrial revolution
- Week 2-3 The role of IIoT and industry 4.0 achievements in the environmental impacts of industries
- Week 2-4 The role of IIoT and Industry 4.0 in primary industries
- Week 2-5 IIoT and Industry 4.0 case studies – smart farming and livestock monitoring
- Week 2-6 IIoT and Industry 4.0 case studies – country report

7. TRAINING COURSE SCHEDULE

Week	Topic	Exercises and interactions
Week 1	1) Week 1-1 Introduction to IIoT and 4th industrial revolution 2) Week 1-2 Designing and developing IIoT systems 3) Week 1-3 Industry 4.0 Architecture 4) Week 1-4 Big data solutions and strategies for new generation of industries 5) Week 1-5 Overview of Industrial IoT security and key aspects for Securing industry 4.0 solutions 6) Week 1-6 The IIoT across the globe: standardization, industry bodies and initiatives	**This week, each participant has to:** - Read of the PDF slides uploaded in the course page for week 1 - Post their questions or ideas to the discussion forum - Attend a live zoom session scheduled for Saturday - 14:00hrs-15:00hrs (GMT+4.30) - Complete a self-test quiz 1 **Note:** Participants should pay attention to the course announcements they receive in their panel and email.
Week 2	1) Week 2-1 The Industrial IoT: from operational efficiency to innovation 2) Week 2-2 Energy consumption optimization in the 4th industrial revolution 3) Week 2-3 The role of IIoT and industry 4.0 achievements in the environmental impacts of industries 4) Week 2-4 The role of IIoT and Industry 4.0 in primary industries 5) Week 2-5 IIoT and Industry 4.0 case studies – smart farming and livestock monitoring 6) Week 2-6 IIoT and Industry 4.0 case studies – country report	**This week, each participant has to:** - Read of the PDF slides uploaded in the course page for week 2 - Post their questions or ideas to the discussion forum - Attend a live zoom session scheduled for Wednesday - 14:00hrs-15:00hrs (GMT+4.30) - Upload an assignment in the course panel that considered by the tutors - Complete a self-test quiz 2 **Note:** Participants should pay attention to the course announcements they receive in their panel and email.

8. METHODOLOGY (Didactic approach)

Course Materials: The relevant course material will be made available on the website.

Online Discussion Forums: Participants are expected to participate actively in discussion forums on selected topics throughout the week.

Chat Sessions: Online chat sessions with the tutors will take place Saturday and Wednesday from 14:00– 15:00 Hrs. Iran Time (GMT+4.30). All participants are expected to join the chat sessions as they will be graded.

Quizzes: Two mandatory online quiz will be held at the end of each week.

Assignment: There will be a mandatory assignment for the course.

9. EVALUATION AND GRADING

Besides the tests and their assignment score, participants will be evaluated according to their substantive posts on the discussion forum, active participation in the online chat sessions and other course activities, reflecting both the quantity and quality of time spent on the course. The evaluation details and criteria for certificates is as follows.

Quiz #1:	30%
Quiz #2	30%
Individual Assignment:	20%
2 Chat Sessions (5% per session)	10%
2 Discussion Forum (5% per forum)	10%
Total Evaluation:	**100%**

IMPORTANT: A PASSING MARK OF 60% IS REQUIRED FOR OBTAINING A COMPLETION CERTIFICATE.

9. TRAINING COURSE COORDINATION

Course coordinator:	**ITU coordinator:**
Name: Mr. Hamid Naghizadeh Email address: edu@iotaci.com	Name: Mr. Sean Doral Email address: sean.doral@itu.int