

Course No. 1507

Industrial Internet of Things (IIoT) Training Course

INDUSTRIAL AUTOMATION & DIGITAL TECHNOLOGIES
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Industrial Internet of Things (IIoT) Training Course provides a comprehensive and practical framework for understanding, designing, implementing, and managing connected industrial environments. The course focuses on how industrial organizations can use connected sensors, machines, control systems, industrial networks, edge technologies, cloud platforms, and data analytics to improve operational visibility, asset performance, maintenance, productivity, safety, and decision-making.

The program examines the architecture and components of Industrial Internet of Things environments, including sensors, connected equipment, industrial gateways, edge computing, communication networks, data platforms, and analytical applications. Participants will learn how operational data moves from industrial assets through connected networks into processing and analytics environments, creating opportunities for real-time monitoring, predictive maintenance, process optimization, and improved operational control.

A major focus of the course is the practical application of IIoT across industrial operations. Participants will explore condition monitoring, asset performance management, predictive maintenance, energy monitoring, production optimization, quality management, remote monitoring, and operational dashboards. The course also addresses how IIoT initiatives can be aligned with business objectives and evaluated based on operational value, scalability, security, integration requirements, and organizational readiness.

The course further addresses industrial connectivity, data management, interoperability, cybersecurity, edge and cloud computing, system integration, and implementation planning. Through practical exercises and industrial case studies, participants will develop an understanding of how to evaluate IIoT opportunities, define appropriate architectures, select relevant technologies, manage implementation risks, and develop a practical roadmap for connected industrial operations.

Objectives

- Analyze the fundamental architecture, components, and operating principles of Industrial Internet of Things environments during the first day of the course.
- Evaluate industrial assets, processes, and operational requirements to identify suitable IIoT use cases and improvement opportunities.

- Design a practical IIoT architecture connecting industrial equipment, sensors, gateways, networks, edge systems, data platforms, and analytical applications.
- Apply appropriate approaches to industrial data collection, processing, storage, visualization, and analysis within an IIoT environment.
- Develop IIoT applications for condition monitoring, predictive maintenance, asset performance, energy management, and operational optimization.
- Assess industrial communication, connectivity, interoperability, and system integration requirements for IIoT projects.
- Evaluate cybersecurity, data protection, access control, and operational risks associated with connected industrial environments.
- Apply edge computing and cloud-based approaches to support real-time industrial data processing and operational decision-making.
- Assess IIoT project feasibility based on operational value, technology requirements, scalability, integration complexity, and organizational readiness.
- Develop an actionable IIoT implementation roadmap covering priorities, use cases, architecture, governance, risks, and performance measures.

Who Should Attend

The Industrial Internet of Things (IIoT) Training Course is designed for professionals involved in industrial operations, engineering, automation, instrumentation and control, maintenance, information technology, operational technology, digital transformation, data analytics, and industrial systems. It is particularly relevant to industrial engineers, automation engineers, control engineers, instrumentation specialists, maintenance professionals, OT specialists, IT professionals, data analysts, and digital transformation specialists.

The course is also suitable for operations managers, maintenance managers, engineering managers, plant managers, asset management professionals, reliability specialists, industrial project managers, cybersecurity professionals, technology managers, and digital transformation leaders. It is highly relevant to executives and decision makers in government entities, ministries, public-sector organizations, oil and gas companies, energy organizations, utilities, manufacturing companies, logistics operations, and large industrial corporations seeking to improve operational performance through connected assets, industrial data, automation, and digital technologies.

Learning Outcomes

- Explain the architecture, components, technologies, and business applications of the Industrial Internet of Things.
- Identify suitable IIoT use cases based on operational requirements, asset criticality, data availability, and business priorities.
- Design a basic IIoT architecture connecting sensors, industrial equipment, gateways, networks, edge platforms, and data systems.
- Evaluate industrial connectivity and communication requirements for connected equipment and systems.
- Develop practical approaches for collecting, processing, storing, and visualizing industrial data.
- Apply IIoT concepts to predictive maintenance, condition monitoring, asset performance, production optimization, and energy management.
- Assess the role of edge computing and cloud technologies in industrial data processing and decision-making.
- Identify cybersecurity and operational risks associated with connected industrial assets and IIoT networks.
- Evaluate the feasibility and potential business value of IIoT initiatives using operational and strategic criteria.
- Develop an implementation roadmap for an IIoT project, including use cases, architecture, priorities, risks, governance, and performance indicators.

Course Outline

DAY 01

Industrial Internet of Things Foundations and Architecture

- Introduction to the Industrial Internet of Things and connected industrial operations
- Difference between traditional automation, industrial connectivity, and IIoT
- IIoT architecture and key technology layers
- Industrial sensors, actuators, machines, and connected assets
- Industrial gateways and data acquisition
- Industrial networks and communication technologies
- Edge computing and industrial data processing

DAY 01 — CONTINUED

- Cloud platforms and industrial data environments
- IIoT data flows from assets to business applications

PRACTICAL APPLICATION

Mapping a connected industrial environment and identifying key IIoT components and data flows

DAY 02

Industrial Data, Connectivity and System Integration

- Industrial data collection and acquisition
- Sensor selection and data quality considerations
- Industrial communication and connectivity requirements
- Integration of operational technology and information technology
- Interoperability and integration challenges
- Edge-to-cloud data architectures
- Industrial data storage and management
- Real-time data processing and visualization
- Industrial dashboards and operational monitoring

PRACTICAL APPLICATION

Designing a connected data architecture for an industrial facility

DAY 03

IIoT Applications for Operations, Maintenance and Asset Performance

- IIoT for predictive and condition-based maintenance
- Asset performance monitoring
- Equipment health and condition monitoring
- Failure indicators and maintenance data analysis

DAY 03 — CONTINUED

- IIoT for production optimization
- Energy monitoring and efficiency improvement
- Quality monitoring and process optimization
- Remote equipment monitoring and operational visibility
- Industrial performance dashboards and key performance indicators

PRACTICAL APPLICATION

Developing an IIoT use case for predictive maintenance and asset performance improvement

DAY 04

IIoT Cybersecurity, Risk and Operational Resilience

- Cybersecurity challenges in connected industrial environments
- Security considerations for sensors, gateways, networks, and connected assets
- Identity, authentication, authorization, and access management
- Industrial network segmentation and secure connectivity
- Data protection and secure data transmission
- Vulnerability and risk assessment for IIoT environments
- Third-party and cloud security considerations
- Monitoring and responding to security events
- Business continuity and operational resilience

PRACTICAL APPLICATION

Conducting an IIoT cybersecurity risk assessment and developing appropriate security controls

DAY 05

IIoT Strategy, Implementation and Digital Transformation

- Developing an organizational IIoT strategy
- Identifying and prioritizing high-value IIoT use cases
- Assessing technology, operational, and organizational readiness

DAY 05 — CONTINUED

- IIoT project planning and implementation phases
- Business value, cost considerations, and investment evaluation
- Scalability and integration requirements
- Governance, ownership, and performance management
- IIoT performance indicators and benefits realization
- Developing an industrial digital transformation roadmap

FINAL WORKSHOP

Designing an end-to-end IIoT implementation roadmap for a selected industrial environment

Register or Request More Information

Course page: <https://quest-training.com/courses/industrial-internet-of-things-iiot-training-course>

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