BOARD INFINITY

COURSE 3 OF 4 · ADVANCES IN MANUFACTURING TECHNOLOGY SPECIALIZATION

Key Industry 4.0 Technologies in Manufacturing - 2

Full course syllabus - every module, video lesson, reading and assignment, from AI and big data to blockchain, extended reality, cloud computing and cyber security.

Board Infinity
Instructor · Offered on Coursera

4	57	17	2 weeks
Modules	Video lessons	Assignments	At 10 hours a week

INSIDE THE COURSE

01	Artificial Intelligence and Big Data Analytics	4 hours to complete
02	Blockchain Technology	4 hours to complete
03	Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR)	4 hours to complete
04	Cloud Computing and Cyber Security	6 hours to complete

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https://www.coursera.org/learn/key-industry-4-point-0-technologies-in-manufacturing--2

01 ABOUT THE COURSE

From AI to the secure cloud factory.

Key Industry 4.0 Technologies in Manufacturing - 2 is a comprehensive introduction to the technologies driving Industry 4.0 in the manufacturing sector: artificial intelligence, machine learning, deep learning, big data analytics, blockchain, virtual, augmented and mixed reality, cloud computing and cyber security. You learn how these technologies interact to create smart factories, improve production processes and drive innovation.

Everything is delivered through short video lectures, readings, real-world case studies and graded quizzes - 57 videos, 13 readings and 17 assignments in all. It is the third course of the Advances in Manufacturing Technology specialization and is pitched at intermediate level.

WHO IT'S FOR

Manufacturing engineers
Implementing Industry 4.0 technologies on the shop floor and in production systems.

Production managers
Improving production efficiency and staying current with manufacturing technology.

Industrial engineers
Integrating advanced technologies into processes, layouts and operations.

Technology professionals
And anyone interested in understanding and implementing Industry 4.0 technologies.

WHAT YOU'LL LEARN

01 **Grasp the fundamentals** Modules 1-4
Grasp the fundamentals of Industry 4.0 technologies and their real-world applications

02 **Analyze case studies** Modules 1-4
Analyze case studies to evaluate the impact of these technologies and predict future trends

03 **Develop implementation skills** Modules 1-4
Develop practical skills necessary for effectively implementing Industry 4.0 technologies in manufacturing processes

02 SYLLABUS

Four modules, one smart factory.

2 weeks to complete at 10 hours a week. Flexible schedule - learn at your own pace.

01 Artificial Intelligence and Big Data Analytics

AI fundamentals, ML, DL and big data in manufacturing

4 hours
14 videos

BY THE END OF THIS MODULE YOU CAN

- Explain AI fundamentals, its components and applications in manufacturing
- Differentiate AI, machine learning, deep learning and big data analytics
- Evaluate real-world case studies of AI and big data in manufacturing
- Assess their impact on manufacturing processes and the trends ahead

CONTENTS: 14 videos (66 min) · 3 readings (90 min) · 4 assignments (105 min) · 1 plugin (5 min)

TOPICS: What is Artificial Intelligence; Difference between AI, ML, DL and Big Data Analytics; Real-World Applications; Quick Course Check-In (plugin)

You'll leave with: a working understanding of how AI and big data analytics raise manufacturing efficiency and innovation, grounded in real case studies.

02 Blockchain Technology

Blockchain basics, smart contracts and manufacturing use cases

4 hours
13 videos

BY THE END OF THIS MODULE YOU CAN

- Explain the basics of blockchain and the role of smart contracts
- Describe decentralization, immutability and consensus mechanisms
- Identify the security features of blockchain technology
- Map real-world blockchain applications and future trends in manufacturing

CONTENTS: 13 videos (70 min) · 3 readings (90 min) · 4 assignments (105 min)

TOPICS: Introduction to Blockchain and Smart Contracts; Key Features of Blockchain Technology; Blockchain Applications in Manufacturing Industry

You'll leave with: a clear view of how blockchain and smart contracts bring trust, traceability and security to manufacturing processes.

03 Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR)

Extended reality for training, design and maintenance

4 hours
12 videos

BY THE END OF THIS MODULE YOU CAN

- Explain VR and AR and the key differences between them
- Define extended reality (XR) and mixed reality (MR)
- Assess the impact of XR and MR on the manufacturing industry
- Apply AR to training, VR to product design and XR to remote maintenance

CONTENTS: 12 videos (66 min) · 3 readings (90 min) · 4 assignments (105 min)

TOPICS:
- What is Virtual Reality and Augmented Reality?
- Definitions of Extended Reality (XR) and Mixed Reality (MR)
- Use Cases of Augmented Reality and Virtual Reality

You'll leave with: practical use cases for AR in training, VR in prototyping and XR for remote assistance - and where these technologies are heading.

04 Cloud Computing and Cyber Security

Cloud models, migration and securing the connected factory

6 hours
18 videos

BY THE END OF THIS MODULE YOU CAN

- Explain cloud computing fundamentals, types and advantages
- Compare cloud service models, deployment models and hybrid or multi-cloud setups
- Plan cloud migration strategies for manufacturers
- Identify Industry 4.0 cyber threats and the security measures that counter them

CONTENTS: 18 videos (103 min) · 4 readings (120 min) · 5 assignments (120 min)

TOPICS:
- Introduction to Cloud Computing
- Cloud Service and Cloud Computing Deployment Models
- Introduction to IT and Cyber Security
- Applications of Cloud Computing and Cyber Security in Manufacturing

You'll leave with: the know-how to plan cloud-based manufacturing systems and the security measures that keep them safe, backed by real-world case studies.

03 TOOLS & SKILLS

The themes that run through the course.

AI & big data analytics — Module 1

Artificial intelligence, machine learning, deep learning and big data analytics applied to manufacturing.

In this course: Compare AI, ML, DL and big data, then study case studies and their impact on production.

Blockchain & smart contracts — Module 2

Decentralization, immutability, consensus mechanisms and security features of blockchain networks.

In this course: Use cases of smart contracts and real-world blockchain applications in Manufacturing 4.0.

VR, AR & mixed reality — Module 3

Virtual, augmented, extended and mixed reality and their impact on the manufacturing industry.

In this course: AR in manufacturing training, VR for design and prototyping, remote assistance and maintenance.

Cloud computing & cyber security — Module 4

Service and deployment models, hybrid and multi-cloud environments, and information security in manufacturing.

In this course: Cloud migration strategies, cloud-based analytics and the cyber security measures that protect them.

SKILLS YOU LEAVE WITH

Data & intelligence

- AI components & applications
- Machine learning & deep learning
- Big data analytics in manufacturing
- Case-study impact analysis

Trust & XR

- Blockchain & smart contracts
- Consensus & immutability
- AR for training, VR for prototyping
- XR & MR for maintenance

Cloud & security

- Cloud service & deployment models
- Cloud migration strategies
- Hybrid & multi-cloud environments
- Cyber security for Industry 4.0

04 CERTIFICATE & CAREER

Finish with a shareable certificate.

Add it to LinkedIn
Add this credential to your LinkedIn profile, resume, or CV.

Share it anywhere
Share it on social media and in your performance review.

Earned, not attended
Awarded on completion of the 17 graded assignments across all four modules.

Course 3 of 4
Part of the Advances in Manufacturing Technology Specialization from Board Infinity.

ROLES THE COURSE SUPPORTS

Manufacturing Engineer · Production Manager · Industrial Engineer · Smart Factory Specialist · Manufacturing Data Analyst · Cloud & OT Security Specialist

Board Infinity

Instructor · Offered on Coursera

Intermediate level · Taught in English · 3 languages available · Flexible schedule

Ready to put Industry 4.0 technology to work?

Enrollment, lessons, grading and the certificate all happen on Coursera.

Enroll on Coursera

Course page: coursera.org/learn/key-industry-4-point-0-technologies-in-manufacturing--2

Want a coach alongside the course?

Board Infinity 1:1 coaching is a separate, optional Board Infinity offering - it is not part of the Coursera course.
Details: https://www.boardinfinity.com/career-coaching/

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