

Foundations of Fourth Industrial Revolution (Industry 4.0)

Course Description

This course introduces learners to the key concepts, technologies, and applications of Industry 4.0. It covers the evolution of industrial revolutions, the core enabling technologies (IoT, AI, Cloud, Big Data), and their role in smart manufacturing and digital transformation. The program also explores business implications, workforce readiness, and future trends including Industry 5.0.

Target Audience

- Engineering & Technology Students
 - Manufacturing & Operations Professionals
 - IT & Automation Specialists
 - Business Leaders & Managers
 - Anyone seeking a quick yet solid foundation in Industry 4.0
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Course Duration: 16 Hours

Module 1: Introduction to Industry 4.0 (2 Hours)

- Evolution from Industry 1.0 to 4.0
 - Defining Industry 4.0 and its key drivers
 - Global impact on business, economy & society
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Module 2: Core Pillars of Industry 4.0 (5 Hours)

- Cyber-Physical Systems & IoT
- Cloud Computing & Edge Computing
- Big Data & Analytics

- Artificial Intelligence & Machine Learning
 - Robotics & Automation (Cobots overview)
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Module 3: Enabling Technologies (3 Hours)

- Smart Sensors & Connectivity (5G basics)
 - Digital Twins
 - Cybersecurity in Industry 4.0
 - Blockchain – brief applications in supply chain
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Module 4: Smart Manufacturing & Applications (3 Hours)

- Smart Factory concept
 - Predictive Maintenance
 - Supply Chain 4.0
 - Case Studies: Automotive, Healthcare
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Module 5: Business Models & Future Trends (3 Hours)

- Business Opportunities in Industry 4.0
- Workforce transformation & skills of the future
- Ethical, legal & societal challenges
- Transition towards Industry 5.0