

Digital Twins & Predictive Maintenance in Manufacturing

COURSE OVERVIEW

This course explores how advanced digital technologies are revolutionizing industrial operations by integrating virtual replicas of physical assets with actual data analytics. The course combines theoretical frameworks with practical case studies to demonstrate how these technologies enhance operational visibility, reliability and cost effectiveness across manufacturing systems. Participants will gain insights into the principles, design and implementation of digital twins, as well as how predictive maintenance strategies use AI, IoT, and machine learning to forecast equipment failures, optimize production efficiency and minimize downtime.

WHO SHOULD ATTEND?

This course is tailored for manufacturing engineers, maintenance professionals, plant managers, operations supervisors, reliability engineers and digital transformation leaders seeking to enhance asset performance through data driven technologies. It is also valuable for IT specialists, industrial automation experts, and decision makers involved in implementing Industry 4.0 initiatives within manufacturing environments.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Understand the core concepts and architecture of digital twin technology.
- Apply predictive analytics and AI models for maintenance planning and decision-making.
- Integrate IoT sensors and data streams to monitor equipment health in real time.
- Develop strategies to reduce unplanned downtime and extend asset lifespan.
- Evaluate the ROI and business impact of digital twin and predictive maintenance solutions.
- Use digital twin insights to optimize production efficiency and operational performance.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- How digital twins simulate manufacturing processes to optimize efficiency and reduce waste.
- Using real-time data for predictive maintenance to prevent equipment failures and minimize downtime.
- Enhancing product design and quality through virtual prototyping and testing.
- Improving operational decision-making with AI-driven insights from digital models.
- Ways digital twins support supply chain management and logistics optimization.
- The role of digital twins in accelerating time-to-market and increasing customization flexibility.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.

1. A GTC end-of-course certificate
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded