



Quality Management & Operational Excellence

Advanced Quality Control with Artificial Intelligence and Machine Learning

Course Introduction

The **Advanced Quality Control with Artificial Intelligence and Machine Learning** course provides an in-depth understanding of how AI and ML technologies can revolutionize quality control processes in modern manufacturing and service industries. Delivered by BOOST, this course equips professionals with the skills to leverage cutting-edge AI and ML techniques for enhancing quality management systems, automating defect detection, and optimizing production quality.

Participants will explore how AI algorithms can analyze large datasets to predict failures, identify quality issues in real-time, and automate decision-making, thus improving efficiency, reducing waste, and increasing customer satisfaction. The course includes practical case studies and hands-on experience in applying AI and ML techniques to real-world quality control challenges.

Target Audience

- Quality control managers and professionals
- Data scientists and analysts in manufacturing and service industries
- AI/ML engineers interested in quality control applications
- Production managers and process engineers
- Anyone interested in advancing their understanding of AI and ML in quality management systems

Learning Objectives

1. Understand the role of Artificial Intelligence and Machine Learning in modern quality control processes.

2. Implement AI and ML-based models for predictive maintenance and quality forecasting.
3. Analyse and interpret data using advanced statistical methods and AI tools for quality control.
4. Apply AI and ML techniques to automate defect detection and improve production quality.
5. Integrate AI and ML technologies into existing quality management systems.
6. Evaluate the impact of AI/ML-driven quality control on operational efficiency and customer satisfaction.

Course Outline

• 01 DAY ONE

Introduction to Quality Control and AI/ML Technologies

- Overview of Quality Control (QC) systems and their importance in modern industries
- Introduction to Artificial Intelligence (AI) and Machine Learning (ML)
- How AI and ML are transforming quality control and manufacturing processes
- Understanding the role of data in AI/ML for quality control
- Key concepts: Supervised vs. unsupervised learning, neural networks, and deep learning
- Exploring the types of data used in AI/ML models for quality control

• 02 DAY TWO

Data Collection, Preparation, and Analysis for AI/ML

- The importance of data quality in AI/ML applications
- Methods for collecting and preparing data for AI/ML models
- Data cleaning, normalization, and feature selection
- Statistical analysis techniques for quality control (e.g., regression analysis, hypothesis testing)
- Using AI tools for data visualization and anomaly detection

• 03 DAY THREE

AI and ML Techniques for Predictive Maintenance and Quality Forecasting

- Introduction to predictive maintenance and its role in quality control
- Building predictive models using AI and ML: Regression models, time series forecasting, and decision trees
- Applying machine learning algorithms for defect detection and anomaly prediction

• 04 DAY FOUR

Automation of Defect Detection Using AI and Machine Learning

- Introduction to automated defect detection in quality control
- Using computer vision and image recognition for defect detection
- Training ML models to recognize defects and anomalies in production processes

• 05 DAY FIVE

Integration, Impact Evaluation, and Future of AI/ML in Quality Control

- Integrating AI and ML systems with existing quality management frameworks
- Evaluating the impact of AI/ML-driven quality control systems on operational efficiency
- Managing the transition to AI-powered quality control systems

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 28, 2025	May 2, 2025	5 days	4950.00 \$	Spain - Madrid
April 28, 2025	May 2, 2025	5 days	4950.00 \$	England - London
Aug. 25, 2025	Aug. 29, 2025	5 days	4250.00 \$	UAE - Dubai

FROM	TO	DURATION	FEES	LOCATION
Nov. 3, 2025	Nov. 7, 2025	5 days	4250.00 \$	UAE - Abu Dhabi