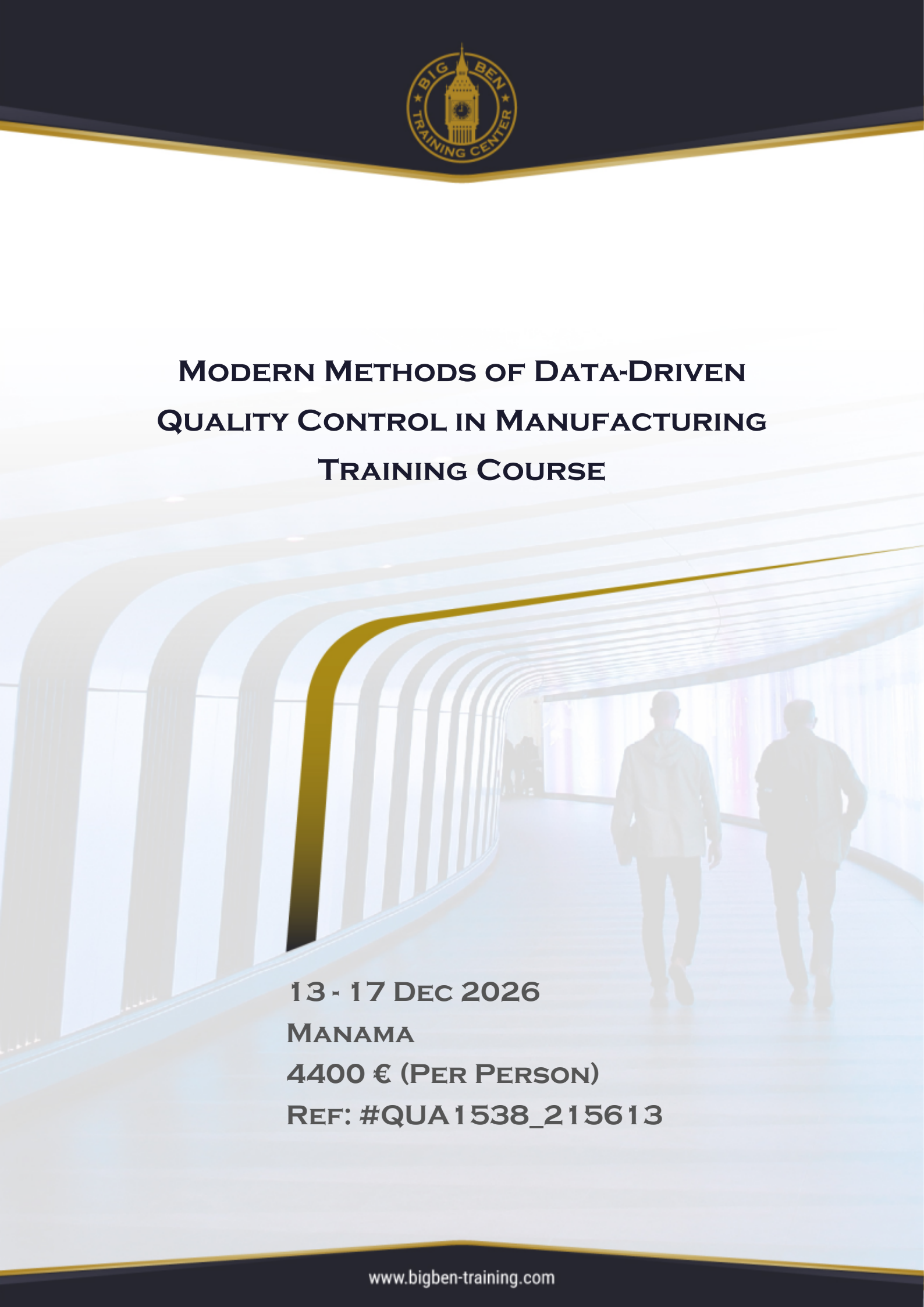
Modern Methods of Data-Driven Quality Control in Manufacturing Training Course



13 - 17 Dec 2026

Manama

4400 € (Per Person)

Ref: #QUA1538_215613

Course Introduction / Overview:

In the manufacturing sector, quality control has evolved from a reactive process of inspecting finished products to a proactive, data-driven strategy. This training course is designed to provide manufacturing professionals, quality engineers, and plant managers with the framework and practical skills to implement a modern, data-driven quality control system. It goes beyond a simple focus on traditional statistical methods to explore how to leverage real-time data, IoT, and statistical process control (SPC) to prevent defects before they happen. We will explore how to set up a robust data collection system, analyze process variations, and use predictive analytics to identify potential quality issues. The curriculum is informed by the foundational work of global academics like Walter A. Shewhart, whose work on statistical process control is the bedrock of modern quality management. His Shewhart cycle, the precursor to the Plan-Do-Check-Act cycle, provides a valuable framework for a culture of continuous improvement. This program provides a clear blueprint for turning a complex manufacturing process into a predictable, high-quality, and highly efficient operation. BIG BEN Training Center is committed to empowering manufacturing professionals to produce with excellence.

Target Audience / This training course is suitable for:

- Manufacturing and production managers.
- Quality engineers and inspectors.
- Process improvement specialists.
- Plant managers.
- Data analysts in manufacturing.
- Supply chain managers.
- Operations supervisors.

Target Sectors and Industries:

- Manufacturing and production.
- Automotive and aerospace.
- Electronics and technology.
- Pharmaceutical and medical devices.
- Consumer goods.
- Food and beverage processing.
- Government agencies and regulatory bodies.

Target Organizations Departments:

- Quality Assurance.
- Operations and manufacturing.
- Supply chain management.
- Production and engineering.
- Data analytics and IT.
- Research and Development (R&D).
- Product development.

Course Offerings:

By the end of this course, the participants will have able to:

- Design and implement a data-driven quality control system.
- Apply statistical process control (SPC) to monitor processes.
- Use data to identify and analyze root causes of defects.
- Leverage technology like IoT for real-time quality monitoring.
- Develop a plan for continuous process improvement.
- Communicate quality data and insights to stakeholders.
- Integrate quality control with supply chain management.
- Develop a personal roadmap for quality leadership.

Course Methodology:

This training course uses a highly interactive and case-based methodology to ensure participants gain actionable skills in data-driven quality control. The program incorporates detailed case studies of companies that have successfully used data to transform their quality processes, as well as those that have failed due to a lack of proper data analysis or system design. We will use interactive workshops and data analysis exercises to practice critical skills like creating a control chart, performing a process capability analysis, and building a quality dashboard. The course includes a hands-on group project where participants will work together to design a full quality control system for a fictional production line. BIG BEN Training Center believes that hands-on training is essential for mastering these new ways of working. Our expert facilitators will guide discussions and provide personalized feedback, ensuring that participants leave with the confidence and practical experience needed to lead a more quality-driven manufacturing organization.

Course Agenda (Course Units):

Unit One: Foundations of Data-Driven Quality

- The evolution of quality control.
- The role of data in modern manufacturing.
- Introduction to Statistical Process Control (SPC).
- Key quality metrics and KPIs.
- Building a culture of data-driven decisions.

Unit Two: Statistical Tools for Quality Control

- Control charts for variables and attributes.
- Process capability analysis (Cp, Cpk).
- Sampling plans and inspection.
- Root cause analysis with data.
- Introduction to quality software.

Unit Three: Leveraging Technology for Quality

- The Internet of Things (IoT) in manufacturing.
- Automated data collection systems.
- Real-time quality monitoring.
- Predictive analytics for defect prevention.
- Integrating quality systems with ERP.

Unit Four: Implementation and Process Improvement

- Designing a quality control system.
- Developing a control plan.
- Implementing a continuous improvement loop.
- Integrating with Lean principles.
- Communicating with the shop floor and management.

Unit Five: The Future of Manufacturing Quality

- Smart factories and Quality 4.0.
- The role of AI and machine learning.
- Managing supply chain quality.
- Building a personal roadmap for quality leadership.
- The impact of quality on the bottom line.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can manufacturing leaders, who are often focused on maximizing output, balance the need for speed with the critical, long-term investments in data and quality systems?

What unique qualities does this course offer compared to other courses?

This training course is a highly specialized program that focuses on the modern, data-driven approach to quality control, which sets it apart from traditional quality management courses. We go beyond a simple focus on tools to provide a holistic framework for leveraging technology and data to prevent defects before they occur. Our curriculum is tailored to address the specific needs of manufacturing professionals, providing them with the frameworks to design and implement a quality system that is both efficient and effective. The course distinguishes itself by emphasizing not only the technical skills needed to analyze data but also the strategic and leadership skills required to drive a culture of continuous improvement. By focusing on both the practical and the strategic aspects of data-driven quality, this program provides an invaluable skill set that is essential for any professional committed to a career in modern manufacturing.