Engineering Quality Assurance and Control Training Course

26 - 30 Oct 2026

Casablanca

4500 € (Per Person)

Ref: #QUA4559_283321

Course Introduction / Overview:

This course provides a comprehensive framework for understanding and implementing robust Quality Assurance (QA) and Quality Control (QC) systems within an engineering context. Moving beyond mere compliance, this program delves into the core principles of Total Quality Management (TQM) to foster a culture of continuous improvement and operational excellence. Participants will explore the foundational philosophies of quality pioneers like Joseph M. Juran, whose insights in his seminal work, the "Quality Control Handbook," established many of the practices still in use today. The curriculum is designed to bridge the gap between theoretical quality concepts and their practical application in complex engineering projects, from design and procurement to construction and commissioning. BIG BEN Training Center has structured this course to empower engineers with the tools and methodologies needed to prevent defects, optimize processes, and deliver projects that consistently meet and exceed stakeholder expectations. By mastering techniques such as Statistical Process Control (SPC), Root Cause Analysis (RCA), and Failure Mode and Effects Analysis (FMEA), attendees will be equipped to drive tangible improvements in efficiency, reliability, and profitability, ensuring their organization maintains a competitive edge through superior quality standards.

Target Audience / This training course is suitable for:

- Quality Assurance Engineers and Managers.
- Quality Control Inspectors and Supervisors.
- Project Engineers and Project Managers.
- Manufacturing and Production Engineers.
- Civil, Mechanical, and Electrical Engineers.
- Process Improvement Specialists.
- Operations and Site Managers.
- Procurement and Supply Chain Professionals involved in technical specifications.
- R&D and Product Development Team Members.
- Junior engineers seeking to specialize in quality management.

Target Sectors and Industries:

- Construction and Infrastructure Development.
- Manufacturing and Industrial Production.
- Oil and Gas Exploration and Production.
- Aerospace and Defense.
- Automotive and Transportation.
- Power Generation and Utilities.
- Pharmaceuticals and Medical Device Manufacturing.
- Telecommunications and Technology.
- Governmental bodies and public sector project management offices.
- Consulting Engineering Firms.

Target Organizations Departments:

- Engineering and Design.
- Quality Assurance and Quality Control.
- Project Management.
- Operations and Production.
- Procurement and Contracts.
- Research and Development (R&D).
- Health, Safety, and Environment (HSE).
- Maintenance and Reliability.
- Commissioning and Handover.

Course Offerings:

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

- Differentiate clearly between the proactive nature of Quality Assurance and the reactive nature of Quality Control.
- Implement the seven basic tools of quality to analyze and solve engineering problems.
- Apply Statistical Process Control (SPC) techniques to monitor and control processes effectively.
- Develop and interpret control charts for variable and attribute data.
- Conduct a thorough Root Cause Analysis (RCA) using methods like the 5 Whys and Fishbone diagrams.
- Lead and participate in Failure Mode and Effects Analysis (FMEA) to proactively identify and mitigate risks.
- Understand the framework and clauses of the ISO 9001 Quality Management System standard.
- Prepare and execute internal quality audits and document non-conformance reports (NCRs).
- Formulate a comprehensive project-specific Quality Plan (PQP).
- Evaluate the Cost of Quality (CoQ) and its impact on project profitability.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, experiential, and directly applicable to the professional challenges faced by engineers. We believe that adult learning is most effective when it combines foundational knowledge with hands-on practice. The course moves beyond traditional lectures to incorporate a blended learning approach, featuring detailed case studies from real-world engineering projects that illustrate both successes and failures in quality management. Participants will engage in collaborative group workshops to practice using quality tools, such as creating Pareto charts and Ishikawa diagrams to solve simulated engineering problems. Interactive sessions, facilitated discussions, and brainstorming activities encourage the sharing of diverse experiences and perspectives. A significant portion of the program is dedicated to practical exercises, including the development of a sample Quality Plan and conducting a mock internal audit. Continuous feedback is provided by the instructor and through peer-review sessions, ensuring that participants can confidently apply the learned concepts and techniques immediately upon their return to the workplace. This dynamic and engaging environment fosters deep learning and skill mastery.

Course Agenda (Course Units):

Unit One: Fundamentals of Engineering Quality Management

- Introduction to Quality Assurance (QA) and Quality Control (QC).
- The evolution of quality management and key pioneers like Deming and Juran.
- Understanding Total Quality Management (TQM) principles.
- The structure and benefits of a Quality Management System (QMS).
- Exploring the ISO 9001:2015 standard for quality management.
- The concept of Cost of Quality (CoQ) and its components.
- The role of leadership in fostering a quality culture.

Unit Two: Statistical Process Control and Core QC Tools

- Introduction to Statistical Process Control (SPC).
- The seven basic tools of quality control.
- Developing and using Check Sheets, Histograms, and Pareto Charts.
- Constructing and interpreting Cause-and-Effect (Fishbone) Diagrams.
- Utilizing Scatter Diagrams and Stratification for data analysis.
- Creating and analyzing Control Charts for variables (X-bar & R charts).
- Creating and analyzing Control Charts for attributes (p, np, c, u charts).

Unit Three: Advanced Quality Assurance Methodologies

- Introduction to Failure Mode and Effects Analysis (FMEA).
- Conducting Design FMEA (DFMEA) and Process FMEA (PFMEA).
- Principles of quality auditing and the audit lifecycle.
- Planning and conducting effective internal and supplier audits.
- Managing supplier quality and incoming material inspection.
- The importance of calibration for inspection, measuring, and test equipment.
- Effective quality documentation and records management.

Unit Four: Problem-Solving and Continuous Improvement

- Systematic approaches to problem-solving in engineering.
- Implementing the 8D (Eight Disciplines) problem-solving process.
- Advanced Root Cause Analysis (RCA) techniques.
- Introduction to Lean principles and waste reduction.
- The Kaizen philosophy for continuous improvement.
- Benchmarking for performance improvement.
- Using quality objectives and KPIs to drive progress.

Unit Five: Implementing QA/QC in Engineering Projects

- Developing a comprehensive Project Quality Plan (PQP).
- The role of Inspection and Test Plans (ITPs).
- Managing non-conformances and implementing corrective actions.
- Integrating quality management with project risk management.
- Final project handover, documentation, and lessons learned.
- Workshop: Developing a mini-PQP for a sample engineering project.
- Course review, final assessment, and action planning.

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:

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

Beyond preventing defects, how can a proactive quality culture fundamentally transform an engineering organization's innovation and competitive advantage?

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

This course distinguishes itself by focusing on the integration of a quality mindset into the engineering lifecycle, rather than merely teaching a collection of standalone tools. While other programs may concentrate on the mechanics of Statistical Process Control or auditing procedures, this training emphasizes the strategic application of these techniques to solve complex, real-world engineering challenges. We move beyond the "what" to explore the "why" and "how," ensuring participants understand the principles behind the methods. The curriculum is uniquely structured from an engineer's perspective, using case studies and examples drawn directly from manufacturing, construction, and technology sectors. This contextual relevance ensures that the learning is not abstract but immediately applicable. Furthermore, the course places a strong emphasis on proactive and preventative quality assurance strategies, such as FMEA and robust quality planning, equipping participants to mitigate risks before they impact project timelines and budgets. The interactive workshops and collaborative problem-solving sessions are designed to build critical thinking and leadership skills, empowering attendees to become true agents of change who can champion a culture of continuous improvement within their organizations.