Advanced Laboratory Management and Quality Control Systems Training Course

21 - 25 Dec 2026

Boston

7500 € (Per Person)

Ref: #HOS1094_110472

Course Introduction / Overview:

This comprehensive training course provides an in-depth exploration of the principles and practices essential for effective laboratory management and the implementation of robust quality control systems. In today's competitive and highly regulated environment, laboratories are under constant pressure to deliver accurate, reliable, and timely results. This program is meticulously designed to equip participants with the skills needed to navigate these challenges, ensuring operational excellence and compliance with international standards such as ISO 17025. Drawing upon the foundational quality principles of pioneers like W. Edwards Deming, who emphasized continuous improvement and system-thinking, the course delves into the practical application of these concepts within a laboratory setting. Participants will learn to build and maintain a quality management system from the ground up, covering everything from documentation and process control to risk management and internal audits. BIG BEN Training Center has developed this course to bridge the gap between theoretical knowledge and practical application, referencing key concepts found in texts like "Juran's Quality Handbook" to provide a solid framework for achieving laboratory accreditation and fostering a culture of quality that permeates every aspect of the operation. This is the definitive training for professionals committed to elevating their laboratory's performance and credibility.

Target Audience / This training course is suitable for:

- Laboratory Managers and Supervisors.
- Quality Assurance and Quality Control Managers.
- Senior Laboratory Technicians and Technologists.
- Research and Development Scientists.
- Laboratory Directors and Heads of Departments.
- Regulatory Affairs Specialists.
- Internal and External Auditors.
- Compliance Officers.
- Individuals preparing for laboratory accreditation processes.

Target Sectors and Industries:

- Pharmaceutical and Biotechnology Industries.
- Medical and Clinical Diagnostic Laboratories.
- Food and Beverage Testing and Safety.
- Environmental Testing and Monitoring Agencies.
- Chemical and Petrochemical Industries.
- Forensic Science Laboratories.
- Manufacturing and Materials Testing.
- Governmental Regulatory Bodies and Public Health Organizations.
- Academic and Research Institutions.

Target Organizations Departments:

- Quality Control (QC) Department.
- Quality Assurance (QA) Department.
- Research and Development (R&D).
- Laboratory Operations.
- Regulatory Compliance and Affairs.
- Health, Safety, and Environment (HSE).
- Production and Manufacturing.
- Internal Audit Department.

Course Offerings:

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

- Develop and implement a comprehensive Quality Management System (QMS) based on ISO 17025 standards.
- Master the principles of Good Laboratory Practice (GLP) for enhanced data integrity and reliability.
- Design effective Standard Operating Procedures (SOPs) and manage laboratory documentation.
- Implement statistical process control (SPC) for monitoring and improving laboratory processes.
- Conduct thorough method validation, verification, and uncertainty measurement.
- Lead and manage effective internal audits and prepare for external accreditation assessments.
- Apply root cause analysis to investigate non-conformities and implement corrective and preventive actions (CAPA).
- Manage laboratory resources, including personnel, equipment, and finances, more efficiently.
- Foster a strong culture of quality and continuous improvement within the laboratory team.
- Utilize risk management techniques to proactively identify and mitigate potential laboratory failures.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, engaging, and practical, ensuring that participants can immediately apply their learning in the workplace. We move beyond traditional lecture-based formats to create a dynamic learning environment that fosters deep understanding and skill development. The course heavily utilizes real-world case studies of laboratory successes and failures, allowing participants to analyze complex situations and develop critical problem-solving skills. Interactive group discussions and workshops encourage the sharing of experiences and best practices among peers from various industries. Participants will engage in hands-on exercises, such as drafting sections of a quality manual, developing a risk assessment matrix, and role-playing internal audit scenarios. These practical sessions are designed to build confidence and competence in applying quality control tools and management principles. Our expert instructors facilitate the learning process, providing personalized feedback and guiding participants through complex topics. The program emphasizes a blended approach, combining theoretical knowledge with practical application to ensure a comprehensive and lasting educational experience.

Course Agenda (Course Units):

Unit One: Foundations of Laboratory Quality Management

- Introduction to Laboratory Management and Leadership.
- Understanding Quality Concepts and the Cost of Poor Quality.
- Overview of International Standards: ISO 17025, ISO 9001, and GLP.
- The Role of a Quality Management System (QMS) in the Laboratory.
- Key Terminology in Quality Assurance and Quality Control.
- Regulatory and Compliance Requirements in Various Industries.
- Establishing a Culture of Quality and Continuous Improvement.

Unit Two: Implementing a Quality Management System (QMS)

- Designing and Structuring the Quality Manual.
- Developing and Controlling Laboratory Documentation and Records.
- Defining Roles, Responsibilities, and Authorities.
- Management Review and its Importance in QMS.
- Process Mapping and Control of Laboratory Operations.
- Supplier and Subcontractor Evaluation and Management.
- Handling Customer Feedback and Complaints Effectively.

Unit Three: Technical Requirements and Quality Control Tools

- Personnel Competency, Training, and Authorization.
- Laboratory Facilities and Environmental Conditions Management.
- Equipment Calibration, Verification, and Maintenance Programs.
- Method Validation, Verification, and Development.
- Measurement Uncertainty and its Estimation.
- Ensuring the Quality of Test and Calibration Results through Proficiency Testing.
- Statistical Process Control (SPC) and Control Charting Techniques.

Unit Four: Auditing, Compliance, and Corrective Actions

- Planning and Conducting Effective Internal Audits.
- Preparing for External Audits and Accreditation Assessments.
- Identifying and Documenting Non-conformities.
- Root Cause Analysis Techniques (e.g., Fishbone, 5 Whys).
- Implementing Corrective and Preventive Actions (CAPA).
- Risk Management and Assessment in the Laboratory.
- Ensuring Data Integrity and Traceability.

Unit Five: Advanced Laboratory Management and Leadership

- Strategic Planning and Setting Laboratory Objectives.
- Financial Management and Budgeting for the Laboratory.
- Effective Leadership, Communication, and Team Management Skills.
- Introduction to Laboratory Information Management Systems (LIMS).
- Lean Principles and Process Optimization in the Laboratory.
- Managing Change and Innovation in a Laboratory Environment.
- Future Trends in Laboratory Quality and Management.

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 a laboratory's culture, beyond its documented procedures, be the most critical factor in sustaining long-term quality and preventing systemic failures?

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

This course distinguishes itself by offering a holistic and integrated perspective on laboratory management, moving beyond mere compliance with standards. While many programs focus narrowly on the technical aspects of quality control or the clauses of ISO 17025, this training course weaves together the critical pillars of technical competence, robust quality systems, and effective leadership. We emphasize a risk-based thinking approach throughout the curriculum, empowering participants not just to follow procedures but to understand the principles behind them and to proactively identify and mitigate potential issues before they arise. The curriculum is built on a foundation of practical application, using real-world case studies and interactive workshops that challenge participants to solve complex problems they would encounter in their own laboratories. Rather than simply presenting information, our expert facilitators guide participants in developing the critical thinking and decision-making skills necessary for modern laboratory leadership. The course uniquely addresses the "human factor" in quality, dedicating significant time to fostering a culture of continuous improvement, which is the true engine of sustainable operational excellence. Participants leave not just with knowledge, but with a strategic framework for transforming their laboratory's performance.