MERCURY

Quality Control at Laboratory Training Course

1 – 5 February 2027
London (UK)



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Ref: 15553_314611 **Date:** 1 – 5 February 2027 **Location:** London (UK) **Fees:** 5900 Euro

Introduction:

Laboratory quality control is crucial in scientific education, providing students with hands-on experience to reinforce theoretical knowledge and develop practical skills. However, the accuracy and reliability of laboratory results depend not only on experimental techniques but also on the importance of quality control in laboratory measures implemented throughout the process.

Quality control ensures that the laboratory data are accurate, precise, and consistent, thus enhancing the credibility and validity of scientific findings. Quality control in the laboratory encompasses various principles, methodologies, and practices to monitor and maintain the reliability of experimental results.

This laboratory quality control training systematically evaluates equipment, reagents, procedures, and personnel to identify and rectify errors, inconsistencies, and deviations from standard protocols. By implementing robust laboratory quality control measures, laboratory instructors can instill in students a commitment to precision, accuracy, and reproducibility in their scientific endeavors.

A quality control laboratory technician is critical in maintaining quality standards in scientific experiments and research. In this laboratory quality control course, participants will explore the duties and responsibilities of these specialists, gain insight into the application of quality control measures, and understand the fundamental importance of maintaining lab equipment and ensuring the accurate execution of experiments.

Targeted Groups:

The laboratory quality control training is intended for:

- Equipment Calibration and Maintenance.
- Standardization of Reagents and Procedures.
- Quality Assurance Checks.
- Data Validation and Analysis.
- Documentation and Record Keeping.
- Laboratory quality control training.

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Training Objectives:

At the end of this laboratory quality control course, participants will:

- Understand the fundamental principles of laboratory quality control.
- Learn how to implement quality control procedures in a laboratory setting.
- Gain knowledge of international quality standards and regulatory requirements.
- Develop skills in identifying and minimizing sources of error in laboratory testing.
- Master the use of statistical tools for quality control analysis.
- Enhance the ability to maintain and calibrate laboratory equipment effectively.
- Improve proficiency in documenting and reporting quality control data.
- Learn to conduct internal audits to ensure ongoing compliance with quality standards.
- Understand the role of quality control in maintaining the accuracy and reliability of test results.
- Develop strategies for continuous improvement in laboratory quality management.

Targeted Competencies:

Target competencies in this quality control in laboratory training will:

- Technical Proficiency.
- Critical Thinking and Problem-Solving.
- Attention to Detail.
- Analytical Skills.
- Communication Skills.
- Teamwork and Collaboration.
- Ethical Awareness and Professionalism.
- Continuous Improvement.

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Course Content:

Unit 1: Introduction to Quality Control Principles and Practices:

- Overview of quality control concepts, including accuracy, precision, reliability, and reproducibility.
- Introduction to quality assurance, quality management systems, and regulatory requirements relevant to laboratory operations.

Unit 2: Instrumentation and Equipment Calibration:

- Understand laboratory instrumentation, including operation principles and common equipment types.
- Learn about instrument calibration, verification, and maintenance techniques to ensure accurate and reliable measurements.

Unit 3: Standard Operating Procedures SOPs and Good Laboratory Practices GLP:

- Know the importance of adhering to standardized protocols and procedures in laboratory experiments.
- Train in good laboratory practices, including handling chemicals, samples, and equipment to minimize errors and contamination.

Unit 4: Quality Assurance Checks and Control Measures:

- Understand procedures for routine inspection and verification of laboratory facilities, equipment, and materials.
- Implement quality control measures to identify and rectify errors, inconsistencies, and deviations from standard protocols.

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Unit 5: Data Validation and Statistical Analysis:

- Learn about techniques for validating experimental data, including statistical analysis, comparison with reference values, and control samples.
- Interpret statistical results to assess experimental measurements' accuracy, precision, and reliability.

Unit 6: Documentation and Record Keeping:

- Know the importance of comprehensive documentation and record-keeping in maintaining data integrity and traceability.
- Guide for maintaining laboratory notebooks and recording experimental procedures, observations, and results in a clear and organized manner.

Unit 7: Quality Control Training and Education:

- Training sessions on quality assurance principles, good laboratory practices, and regulatory requirements.
- Integrate quality control concepts into the laboratory course with hands-on exercises and case studies to reinforce learning.

Unit 8: Quality Control in Specific Laboratory Techniques:

- Apply quality control principles to specific laboratory techniques and procedures relevant to the student's field.
- Case studies and practical exercises demonstrate quality control measures in chromatography, spectroscopy, microbiology, and molecular biology techniques.

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Unit 9: Ethical and Regulatory Considerations:

- Discussion of ethical considerations and regulatory requirements governing laboratory research and practice.
- Awareness of issues related to data integrity, confidentiality, conflicts of interest, and responsible research conduct.

Unit 10: Continuous Improvement and Quality Management:

- Strategies for fostering a culture of continuous improvement and quality management in laboratory operations.
- Opportunities for self-assessment, feedback, and professional development to enhance skills and competencies in quality control.