Laboratory Quality Management to ISO 17025 Standards Training Course

OGT-1098 · 5 days · 15 CPD hours · English

OVERVIEW

Laboratory accuracy, technical competence and reliable testing procedures are essential for organisations operating in the oil and gas industry. Laboratories are responsible for generating analytical results that support product quality assessments, operational decisions, regulatory compliance and commercial transactions. Maintaining confidence in these results requires a structured quality management system, technically competent personnel, validated testing methods and properly controlled measurement processes. The Laboratory Quality Management to ISO 17025 Standards Training Course provides professionals with the knowledge and practical skills required to establish, implement, maintain and improve laboratory quality management systems in accordance with ISO/IEC 17025 requirements.

ISO/IEC 17025 is the internationally recognised standard specifying general requirements for the competence, impartiality and consistent operation of testing and calibration laboratories. It provides a framework for demonstrating that laboratories can produce technically valid results through controlled procedures, appropriate equipment, qualified personnel and effective quality assurance practices. This course explores the standard's requirements and explains how laboratories can translate them into practical operational controls.

As part of the Quality Control and Product Analysis for Oil & Gas category, the programme addresses laboratory activities commonly associated with petroleum testing, crude oil analysis, fuel quality assessment, chemical testing and calibration services. Participants examine how laboratory quality management principles influence analytical reliability, measurement traceability, testing consistency and customer confidence.

The course covers the essential components of ISO 17025 implementation, including laboratory accreditation, management system requirements, technical competence, document control, equipment management, method validation, measurement uncertainty, proficiency testing and calibration. It also examines sampling procedures, handling of test items, quality control of analytical results, internal audits and corrective action management.

Particular attention is given to the technical challenges faced by oil and gas laboratories, where inaccurate measurements or inconsistent testing practices can affect product specifications, operational efficiency and regulatory obligations. Participants explore how to evaluate testing methods, monitor equipment performance, assess measurement uncertainty and investigate deviations that may compromise the validity of laboratory results.

Through practical exercises, technical discussions and industry-related case studies, the Laboratory Quality Management to ISO 17025 Standards Training Course helps participants understand how to apply standard requirements within their professional responsibilities. They develop the ability to identify compliance gaps, improve laboratory procedures, maintain reliable records and support continuous improvement initiatives.

Delivered within the professional training framework of Oil & Gas Training Institute, this programme supports laboratory professionals and quality management specialists seeking to strengthen technical competence, improve testing reliability and prepare their organisations for ISO 17025 accreditation or ongoing conformity assessment.

OBJECTIVES

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

1. **Explain** the structure, principles and requirements of ISO/IEC 17025 and their application to testing and calibration laboratories.
2. **Interpret** management system and technical competence requirements to establish an effective laboratory quality management framework.
3. **Develop** controlled laboratory procedures, technical records and quality documentation to support consistent operations and accreditation requirements.
4. **Evaluate** testing and calibration methods using appropriate verification and method validation techniques.
5. **Calculate and interpret** measurement uncertainty using relevant statistical approaches and measurement data.
6. **Assess** equipment performance, calibration status and metrological traceability to maintain measurement reliability.
7. **Implement** proficiency testing and inter-laboratory comparison activities to evaluate laboratory performance.
8. **Conduct** internal audits and identify non-conformities against applicable ISO 17025 requirements.
9. **Investigate** root causes of laboratory deviations and develop effective corrective actions.
10. **Design** practical strategies for maintaining accreditation readiness, improving laboratory performance and strengthening continuous improvement processes.

TRAINING METHODOLOGY

The Laboratory Quality Management to ISO 17025 Standards Training Course uses a practical, technically focused and interactive learning approach. It combines instructor-led teaching with laboratory-related exercises and industry case studies to help participants understand how ISO 17025 requirements can be applied within actual testing and calibration environments.

The methodology is structured around the following approaches:

Interactive Presentations and Technical Discussions

Participants explore ISO 17025 clauses, accreditation principles, laboratory management requirements and technical competence expectations through structured presentations. Instructor-led discussions clarify complex requirements and explain their relevance to oil and gas testing laboratories.

Practical Quality Management Exercises

Participants work through exercises involving document control, laboratory procedure development, equipment monitoring, quality records and non-conformity reporting. These activities help translate standard requirements into practical laboratory management practices.

Method Validation and Measurement Exercises

Technical exercises introduce method verification, method validation, precision, accuracy, repeatability, reproducibility and measurement uncertainty. Participants examine laboratory data and practise interpreting analytical performance indicators.

Industry-Based Case Studies

Case studies explore situations involving inaccurate petroleum test results, equipment calibration failures, inconsistent sampling practices, laboratory deviations and accreditation assessment findings. Participants identify underlying issues and recommend suitable corrective measures.

Internal Audit Simulations

Participants practise assessing laboratory processes against selected ISO 17025 requirements. They learn to identify evidence, recognise non-conformities, document findings and evaluate corrective action effectiveness.

Group Activities and Knowledge Exchange

Collaborative exercises encourage participants to discuss laboratory challenges, compare operational practices and share professional experiences. Group activities also support the development of practical implementation strategies.

Assessment and Learning Evaluation

Knowledge checks, scenario-based questions and practical exercises are used to assess participants' understanding of ISO 17025 requirements and their ability to apply relevant quality management principles.

ORGANISATIONAL IMPACT

Implementing an effective ISO 17025-based laboratory quality management system can strengthen an organisation's technical capabilities, operational reliability and confidence in analytical results. This course helps organisations develop the professional knowledge required to improve laboratory performance and establish consistent quality management practices.

Improved Laboratory Accuracy and Reliability

Participants learn how to strengthen testing and calibration procedures through method validation, equipment control, measurement traceability and quality assurance activities. These practices help reduce analytical errors and improve confidence in laboratory results.

Stronger Compliance and Accreditation Readiness

Understanding ISO 17025 requirements enables organisations to identify compliance gaps, improve documentation and establish systematic controls. This supports preparation for laboratory accreditation assessments and helps maintain conformity with applicable requirements.

Better Operational Efficiency

Standardised laboratory procedures, controlled documentation and effective equipment management can reduce unnecessary repetition, testing delays and avoidable operational disruptions. Improved processes also support more effective use of laboratory resources.

Enhanced Risk Management

The course develops awareness of technical risks associated with inaccurate measurements, equipment failures, unsuitable testing methods and inadequate quality controls. Participants learn how to identify these risks and introduce appropriate preventive measures.

Improved Decision-Making

Reliable laboratory data supports decisions involving crude oil quality, petroleum product specifications, process optimisation and product acceptance. Better control of analytical activities helps organisations make decisions based on more dependable technical information.

Increased Customer and Stakeholder Confidence

Consistent laboratory operations and technically valid results strengthen confidence among customers, suppliers, regulators and other stakeholders. Accreditation can also improve recognition of laboratory competence and support access to markets where accredited testing is required.

Continuous Improvement and Performance Monitoring

Participants learn how to use internal audits, corrective actions, proficiency testing results and quality indicators to evaluate laboratory performance. These approaches encourage a structured culture of continuous improvement.

Stronger Technical Team Competence

The programme improves employees' understanding of laboratory quality requirements and encourages greater accountability across technical and management functions. This supports better collaboration between laboratory personnel, quality teams and operational departments.

PERSONAL IMPACT

The Laboratory Quality Management to ISO 17025 Standards Training Course provides participants with specialised technical knowledge and practical competencies that can strengthen their professional performance.

Advanced Understanding of ISO 17025

Participants develop a structured understanding of the standard's requirements and how they apply to testing and calibration activities. This knowledge helps them manage laboratory responsibilities with greater technical confidence.

Improved Laboratory Quality Management Skills

Participants gain practical insight into preparing quality documentation, maintaining technical records, managing equipment and implementing laboratory quality controls.

Greater Technical Confidence

Understanding method validation, measurement uncertainty, calibration and proficiency testing enables participants to engage more confidently in technical discussions and laboratory performance evaluations.

Enhanced Auditing and Problem-Solving Abilities

Participants improve their ability to identify non-conformities, examine technical evidence, investigate deviations and recommend corrective actions.

Better Professional Decision-Making

The programme develops the ability to assess laboratory processes, interpret quality data and determine whether testing activities are producing technically reliable results.

Improved Accreditation and Compliance Knowledge

Participants become more familiar with accreditation expectations, assessment processes and the evidence required to demonstrate laboratory competence.

Career Development Opportunities

Knowledge of ISO 17025 can support professional development in laboratory quality management, quality assurance, technical supervision, laboratory auditing and accreditation-related responsibilities.

Practical Workplace Application

Participants can apply their learning to laboratory procedures, equipment management, analytical testing, quality control activities and continuous improvement initiatives.

WHO SHOULD ATTEND

This course is designed for professionals responsible for laboratory quality, testing accuracy, technical operations, calibration activities and management system compliance, particularly within the oil and gas industry.

It is particularly suitable for:

- **Laboratory Managers and Supervisors:** Professionals responsible for laboratory operations, technical performance, resource management and quality system implementation.

- **Quality Assurance and Quality Control Managers:** Specialists responsible for establishing quality procedures, monitoring laboratory performance and maintaining compliance with applicable standards.
- **Laboratory Quality Managers:** Professionals involved in implementing, maintaining and improving ISO 17025-based quality management systems.
- **Laboratory Analysts and Technicians:** Personnel conducting petroleum testing, chemical analysis, physical testing and other laboratory activities who need to understand quality and technical requirements.
- **Calibration and Metrology Professionals:** Specialists responsible for equipment calibration, measurement traceability, uncertainty evaluation and instrument performance.
- **Technical Managers and Department Heads:** Professionals overseeing laboratory activities and ensuring that testing processes meet organisational and customer requirements.
- **Internal Auditors and Compliance Officers:** Personnel responsible for assessing laboratory management systems, identifying non-conformities and monitoring corrective actions.
- **Accreditation Coordinators and Consultants:** Professionals supporting laboratories through accreditation preparation, documentation development and conformity assessment activities.
- **Research and Development Professionals:** Specialists involved in analytical methods, testing procedures and the technical evaluation of laboratory results.
- **Oil and Gas Quality Control Specialists:** Professionals working in refineries, petrochemical facilities, upstream operations and petroleum product testing laboratories.

The course is also valuable for professionals seeking to develop their knowledge of international laboratory competence requirements or transition into laboratory quality management responsibilities.

COURSE OUTLINE

Introduction to ISO 17025 and Laboratory Quality Management Fundamentals

Technical Competence, Equipment Management and Measurement Traceability

Testing Methods, Method Validation and Measurement Uncertainty

Proficiency Testing, Non-Conformities and Internal Auditing

ISO 17025 Implementation, Accreditation Readiness and Continuous Improvement

SCHEDULED DATES

Dates	Venue	Format	Fee
18 - 22 Jan 2027	Abu Dhabi, United Arab Emirates	In person	On request
18 - 22 Jan 2027	Abuja, Nigeria	In person	On request
18 - 22 Jan 2027	Accra, Ghana	In person	On request
18 - 22 Jan 2027	Addis Ababa, Ethiopia	In person	On request
18 - 22 Jan 2027	Al Ain, United Arab Emirates	In person	On request
18 - 22 Jan 2027	Al Khobar, Saudi Arabia	In person	On request
18 - 22 Jan 2027	Alberta, Canada	In person	On request
18 - 22 Jan 2027	AlUla, Saudi Arabia	In person	On request
18 - 22 Jan 2027	Amman, Jordan	In person	On request
18 - 22 Jan 2027	Amsterdam, The Netherlands	In person	On request
18 - 22 Jan 2027	Athens, Greece	In person	On request
18 - 22 Jan 2027	Baku, Azerbaijan	In person	On request
18 - 22 Jan 2027	Barcelona, Spain	In person	On request
18 - 22 Jan 2027	Berlin, Germany	In person	On request
18 - 22 Jan 2027	Boston, USA	In person	On request
18 - 22 Jan 2027	Brussels, Belgium	In person	On request
18 - 22 Jan 2027	Budapest, Hungary	In person	On request
18 - 22 Jan 2027	Cairo, Egypt	In person	On request
18 - 22 Jan 2027	Cape Town, South Africa	In person	On request
18 - 22 Jan 2027	Casablanca, Morocco	In person	On request
18 - 22 Jan 2027	Dammam, Saudi Arabia	In person	On request
18 - 22 Jan 2027	Dhahran, Saudi Arabia	In person	On request
18 - 22 Jan 2027	Doha, Qatar	In person	On request
18 - 22 Jan 2027	Dubai, United Arab Emirates	In person	On request
18 - 22 Jan 2027	Edinburgh, United Kingdom	In person	On request

Dates	Venue	Format	Fee
18 - 22 Jan 2027	Edmonton, Canada	In person	On request
18 - 22 Jan 2027	Frankfurt, Germany	In person	On request
18 - 22 Jan 2027	Geneva, Switzerland	In person	On request
18 - 22 Jan 2027	Houston, USA	In person	On request
18 - 22 Jan 2027	Istanbul, Turkey	In person	On request
18 - 22 Jan 2027	Jakarta, Indonesia	In person	On request
18 - 22 Jan 2027	Jeddah, Saudi Arabia	In person	On request
18 - 22 Jan 2027	Jubail, Saudi Arabia	In person	On request
18 - 22 Jan 2027	Khamis Mushait, Saudi Arabia	In person	On request
18 - 22 Jan 2027	Kigali, Rwanda	In person	On request
18 - 22 Jan 2027	Kuala Lumpur, Malaysia	In person	On request
18 - 22 Jan 2027	Lisbon, Portugal	In person	On request
18 - 22 Jan 2027	Liverpool, United Kingdom	In person	On request
18 - 22 Jan 2027	London, United Kingdom	In person	On request
18 - 22 Jan 2027	Los Angeles, USA	In person	On request
18 - 22 Jan 2027	Luanda, Angola	In person	On request
18 - 22 Jan 2027	Madrid, Spain	In person	On request
18 - 22 Jan 2027	Manama, Bahrain	In person	On request
18 - 22 Jan 2027	Marbella, Spain	In person	On request
18 - 22 Jan 2027	Marrakech, Morocco	In person	On request
18 - 22 Jan 2027	Miami, USA	In person	On request
18 - 22 Jan 2027	Milan, Italy	In person	On request
18 - 22 Jan 2027	Munich, Germany	In person	On request
18 - 22 Jan 2027	Muscat, Oman	In person	On request
18 - 22 Jan 2027	Nairobi, Kenya	In person	On request
18 - 22 Jan 2027	New York, USA	In person	On request

Dates	Venue	Format	Fee
18 - 22 Jan 2027	Nice, France	In person	On request
18 - 22 Jan 2027	Oslo, Norway	In person	On request
18 - 22 Jan 2027	Paris, France	In person	On request
18 - 22 Jan 2027	Port Louis, Mauritius	In person	On request
18 - 22 Jan 2027	Prague, Czech Republic	In person	On request
18 - 22 Jan 2027	Pretoria, South Africa	In person	On request
18 - 22 Jan 2027	Riyadh, Saudi Arabia	In person	On request
18 - 22 Jan 2027	Rome, Italy	In person	On request
18 - 22 Jan 2027	Sarajevo, Bosnia and Herzegovina	In person	On request
18 - 22 Jan 2027	Sharm El Sheikh, Egypt	In person	On request
18 - 22 Jan 2027	Singapore, Singapore	In person	On request
18 - 22 Jan 2027	Stockholm, Sweden	In person	On request
18 - 22 Jan 2027	Tokyo, Japan	In person	On request
18 - 22 Jan 2027	Toronto, Canada	In person	On request
18 - 22 Jan 2027	Tromso, Norway	In person	On request
18 - 22 Jan 2027	Vienna, Austria	In person	On request
18 - 22 Jan 2027	Zagreb, Croatia	In person	On request
18 - 22 Jan 2027	Zurich, Switzerland	In person	On request
18 - 22 Jan 2027	Online, Virtual	Online	On request

CERTIFICATE