



**KLG INTERNATIONAL**  
LOCALIZED GLOBAL KNOWLEDGE



# LQMAT COURSE

Laboratory Quality  
Manager and Laboratory  
Assessor (LQMAT)



**LIMITED  
SEATS**

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**SECURE YOUR SEAT**



**qualityaustria**  
Succeed with Quality



## **Onsite & Virtual**

9 Interrelated Workshops +  
Examination



## **Selective Attendance**

Your choice - our delivery



## **Certification**

Completion Certificate



## **Recognition**

Recognized in 30+ countries  
world-wide

**13-24 October 2025**

**Dubai, UAE On site and  
Remote**



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## KLG INTERNATIONAL GROUP COURSE

# MODULAR TRAINING PROGRAM

## WHAT WE OFFER



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## OVERVIEW

The European Organization for Quality training course is designed to teach laboratory personnel and future laboratory assessors how to install, maintain and improve Laboratory Quality Management System that meets the requirements of ISO/IEC 17025:2017 and ISO 15189:2022 Standards, and applicable for the testing laboratories of any size and any activities. In addition, this course gives essential knowledge required for Laboratory Quality Manager to act as the management representative and as the promoter of the customer requirements awareness throughout the organization and for Laboratory Assessors to apply management skills required in the execution of an audit. After this training the participants will be able to perform internal and third-party audits proving conformance with the relevant standards and technical recommendations (e.g. ISO 17025:2017 and ISO 15189:2022) taking laboratory orientation into account where necessary.

**This modular training program includes 9 interrelated workshop and examination:**

-  **Workshop 01:** Internal Quality Control & Statistical Tools
-  **Workshop 02:** Quality Control & Control Charts (ANOVA)
-  **Workshop 03:** Uncertainty in Analytical Measurements
-  **Workshop 04:** Method Selection, Verification & Validation
-  **Workshop 05:** Metrological Traceability
-  **Workshop 06:** Proficiency Testing & Quality Assurance
-  **Workshop 07:** Laboratory Quality Management Systems
-  **Workshop 08:** Risk Management & Information Security
-  **Workshop 09:** Laboratory Audit
- 

**Enhance your  
expertise & get  
certified – Enroll  
today!**

**The workshops also can be attended selectively, and the participants will be awarded a certificate of completion.**

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## KLG INTERNATIONAL GROUP COURSE

# MODULAR TRAINING PROGRAM



## TARGET AUDIENCE

Laboratory managers, quality assurance officers, and laboratory staff dealing with quality of analysis and/or calibration in food, environmental, electronic, chemical, and pharmaceutical laboratories; laboratory assessors.

## MINIMUM REQUIREMENTS TO PARTICIPANTS

It is recommended that participants of the training course have either a university degree or equivalent in chemistry, physics, engineering or relevant field or secondary education plus two years' experience in testing or calibration laboratory.

## WORKING LANGUAGE OF THE TRAINING COURSE

English

## CERTIFICATES

Upon successful completion of the examination the participants are entitled to apply for **European Organization for Quality (EOQ)** certificates of Laboratory Quality Assurance Managers and Assessors. The certificate is valid in 34 countries. EOQ certificate is subject to EOQ rules and regulations.



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## KLG INTERNATIONAL GROUP COURSE

# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 1

## Internal Quality Control for Laboratories. Basic Statistical Tools



#### WEEK 1

FUNDAMENTALS OF LABORATORY  
QUALITY AND STATISTICAL TOOLS

#### 09:00 - 10:30

- Registration and Welcome
- Introduction of Participants
- Objectives and Scope of the Program
- Quality Management System vs. Quality Control
- Errors in Quantitative Testing: Gross, Random, and Systematic Errors
- Accuracy and Precision: Repeatability and Reproducibility
- Handling Systematic Errors in Testing and Calibration Laboratories

#### 10:30 - 10:45 Coffee Break

#### 10:45 - 12:30

- Characteristics of Data Population: Mean and Standard Deviation
- Normal (Gaussian) Distribution and Other Distributions
- Tolerance and Confidence Intervals
- Propagation of Errors
- Reporting Results: Decision-Making Based on Uncertainty

#### 12:30 - 13:30 Lunch Break

#### 13:30 - 14:45

- Significance Tests
- Paired T-test
- F-test for Comparison of Standard Deviations
- Outliers Test
- Testing for Normality

#### 14:45 - 15:00 Coffee Break

#### 15:00 - 17:00 Group Work: Statistical Analysis in Laboratories

- Interpreting Precision and Accuracy, Applying Confidence Intervals in Lab Testing, Identifying Outliers, Applying significance tests.

## KLG INTERNATIONAL GROUP COURSE

# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 2

### Quality Control Mechanisms. Application of Control Charts



#### WEEK 1

FUNDAMENTALS OF LABORATORY  
QUALITY AND STATISTICAL TOOLS

#### 09:00 - 10:30

- Ensuring Measurement System Stability
- Quality Control (QC) Mechanisms and Elements
- Control Charts: Shewhart Chart, Z-score Chart, R Chart
- Use of Reference Materials in QC
- Critical Differences in Measurement

#### 10:30 - 10:45 Coffee Break

#### 10:45 - 12:30 Group Work: Practical Statistical Exercises

#### 12:30 - 13:30 Lunch Break

Analysis of Variance (ANOVA) for Laboratories

#### 13:30 - 14:45

- Understanding ANOVA
- Estimating Variance Components
- Analyzing the Significance of Results
- Applications of ANOVA in Testing and Research Laboratories

#### 14:45 - 15:00 Coffee Break

#### 15:00 - 17:00 Group Work: ANOVA in Practice

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# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 3

## Quantifying Uncertainty in Analytical Measurements



#### WEEK 1

FUNDAMENTALS OF LABORATORY  
QUALITY AND STATISTICAL TOOLS

#### 09:00 - 10:30

- Definition and Sources of Uncertainty
- Process of Uncertainty Estimation
- Methods for Estimating Uncertainty
- Top-down and Bottom-up Approaches: Pros and Cons
- Detailed process of Bottom-up Approach.
- Standard and Expanded Uncertainty Calculation
- Reporting Uncertainty

#### 10:30 - 10:45 Coffee Break

#### 10:45 - 12:30 Group Work: Estimating Uncertainty in Laboratory Data. Practicing Bottom-up Approach.

#### 12:30 - 13:30 Lunch Break

#### 13:30 - 14:45 Top-down approach in uncertainty estimation.

#### 14:45 - 15:00 Coffee Break

#### 15:00 - 17:00 Group Work: Case Studies in Uncertainty Estimation. Top-down approach.

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# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 4

### Selection, Verification, and Validation of Methods



#### WEEK 1

FUNDAMENTALS OF LABORATORY  
QUALITY AND STATISTICAL TOOLS

#### 09:00 - 10:30

- Internationally Recognized Method Validation Practices
- Validation of Methods: Inter-Laboratory Study vs. In-House Validation

#### 10:30 - 10:45 Coffee Break

#### 10:45 - 12:30

- Performance Characteristics of Analytical Methods
- Internal Quality Control in Method Validation
- Use of Control Charts for Monitoring Methods
- Measurement Uncertainty in Method Validation
- Verifying Performance During Routine Use
- Adapting Validated Methods to Laboratory Needs

#### 12:30 - 13:30 Lunch Break

#### 13:30 - 14:45

- Precision and Trueness Study
- Compliance with Regulatory Limits
- Reducing Measurement Uncertainty
- Optimizing Testing Strategies

#### 14:45 - 15:00 Coffee Break

#### 15:00 - 17:00 Group Work: Practical Method Validation

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# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 5

### Ensuring Validity of Results - Metrological Traceability



#### WEEK 1

FUNDAMENTALS OF LABORATORY  
QUALITY AND STATISTICAL TOOLS

#### 09:00 - 10:30

- Definition and Importance of Traceability
- Traceability in Laboratory Quality Systems
- International System of Units (SI)
- Certified Reference Materials (CRM) and Their Applications
- Calibration and Long-term Equipment Performance

#### 10:30 - 10:45 Coffee Break

#### Workshop: Proficiency Testing and Quality Assurance

#### 10:45 - 12:30

- ISO Guidelines for Proficiency Testing (PT)
- Planning PT Projects
- Homogeneity and Stability Testing
- Assigning Property Values and Uncertainties
- PT Results Analysis and Performance Indicators

#### 12:30 - 13:30 Lunch Break

#### 13:30 - 14:45 Group Work: Proficiency Testing Case Study

#### 14:45 - 15:00 Coffee Break

#### 15:00 - 17:00 Final discussions and preparation for Week 2.

#### End of Week 1

**NOTE:** THERE ARE NO CLASSES ON WEEKENDS (SATURDAY AND SUNDAY)

#### CERTIFICATION OPTIONS

If you complete only Week 1, you will receive a Confirmation of Attendance.

You may opt to attend Week 2 and take the final examination at a later stage.



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# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 6

## Understanding Laboratory Quality Management Systems Structural and Resource Requirements of the Standards



#### WEEK 2

LABORATORY QUALITY MANAGEMENT  
AND AUDITS

#### 9:00 – 10:30 AM

- Overview of ISO/IEC 17025:2017 and ISO 15189:2022 standards and their implications for laboratories
- Interrelation with ISO 9001:2015, other ISO management standards and international regulations
- History and evolution of quality requirements in chemical analytical measurements
- National Quality Infrastructure and the International Accreditation Network
- General requirements of the standards: Impartiality and Confidentiality—how to ensure them in the laboratory

#### 10:30 – 10:45 AM – Coffee Break

#### 10:45 AM – 12:30 PM

- Definition of Roles and Responsibilities
- Qualification and competence requirements for laboratory personnel
- Knowledge management principles
- Facilities and environmental conditions
- Equipment management, calibration, and traceability
- Externally provided products and services: Managing Subcontractors

#### 12:30 – 1:30 PM – Lunch

#### 1:30 – 2:45 PM

#### Process Requirements of ISO 17025:2017 and ISO 15189:2022

- Review of requests, tenders, and contracts
- Sample handling for testing and calibration
- Reporting test results
- Management of complaints and non-conformities

#### 2:45 – 3:00 PM – Coffee Break

#### 3:00 – 5:00 PM – Group Workshop: Case Study on Compliance with ISO Standards

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# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 7

## Management System Requirements, Risk Management and Information Security



### WEEK 2

LABORATORY QUALITY MANAGEMENT  
AND AUDITS

#### 9:00 – 10:30 AM

- Management System Requirements and Responsibilities
- Documentation hierarchy: policies, procedures, records, and traceability
- Process-based approach: defining, documenting, and monitoring processes
- Key Performance Indicators (KPIs) for process monitoring
- Control of Data and Information Management Systems
- Information Security Based on ISO 27001: Implications for laboratory data handling
- Digitalization and Artificial Intelligence in Quality Control and Laboratory Management

#### 10:30 – 10:45 AM – Coffee Break

#### 10:45 AM – 12:30 PM – Practical Workshop: Documentation and Process Mapping

#### 12:30 – 1:30 PM – Lunch

#### 1:30 – 2:45 PM

- Corrective and Preventive Actions
- Risk-Based Thinking: Managing risks and opportunities in laboratory management
- Internal audits, management reviews, and continuous improvement cycles

#### 2:45 – 3:00 PM – Coffee Break

#### 3:00 – 5:00 PM – Group Workshop: Implementing Risk-Based Thinking in Laboratory Management

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# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

## DAY 8

### Laboratory Audits – Part I



## WEEK 2

LABORATORY QUALITY MANAGEMENT  
AND AUDITS

#### 9:00 – 10:30 AM

- Legal and Regulatory Aspects: National and international legislation
- Accreditation standards and guidance documents
- ISO 19011:2018 – Guidelines for Auditing Management Systems
- Accreditation vs. certification: Key differences
- Ensuring audit impartiality and integrity

#### 10:30 – 10:45 AM – Coffee Break

#### 10:45 AM – 12:30 PM

- Audit Planning and Preparation
- Roles and responsibilities of Assessors, Auditees, and Clients
- Internal vs. external audits: Key differences
- Combined System Audits and Joint Audits
- Control of quality records and documentation
- Audit Program Review and Monitoring

#### 12:30 – 1:30 PM – Lunch

#### 1:30 – 2:45 PM

- Conducting an audit:
  - Audit checklists and documentation
  - Evidence collection
  - Communication during audits
  - Non-conformity identification and reporting

#### 2:45 – 3:00 PM – Coffee Break

#### 3:00 – 5:00 PM – Group Workshop: Preparing an Audit Plan

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# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 9

### Laboratory Audits – Part II



#### WEEK 2

LABORATORY QUALITY MANAGEMENT  
AND AUDITS

#### 9:00 – 10:30 AM

- Audit Process Activities
- Follow-up Actions and Corrective Measures

#### 10:30 – 10:45 AM – Coffee Break

#### 10:45 AM – 12:30 PM

- Psychological aspects of auditing
- Communication Strategies for Auditors
- Act – Observe – Analyze – Learn approach
- Training for Quality Managers and Assessors
- Maintenance of assessor qualifications

#### 12:30 – 1:30 PM – Lunch

#### 1:30 – 3:30 PM – Group Workshop: Audit Role-Play Simulation

#### 3:30 – 5:00 PM – Preparation for the Examination

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# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### DETAILED PROGRAM

#### DAY 10

### Examination and Certification



#### WEEK 2

LABORATORY QUALITY MANAGEMENT  
AND AUDITS

#### 9:00 – 10:00 AM

- Written Examination: Multiple-choice questions

#### 10:00 – 11:00 AM

- Oral Examination: Case study and Individual Interviews

#### 11:00 – 11:30 AM – Coffee Break

#### 11:30 AM – 1:00 PM

- Oral Examination: Case study and Individual Interviews (continues)

#### 1:00 – 2:00 PM – Lunch

#### 2:00 – 3:30 PM

- Announcement of Examination Results

#### Closing Ceremony





## KLG INTERNATIONAL GROUP COURSE

# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### OUR TRAINERS



### Abdul Ghani Shakhashiro

Abdul Ghani Shakhashiro is a seasoned expert with over 30 years of experience in the environmental, pharmaceutical, food, and nuclear industries. He has led quality management initiatives, proficiency testing, and certified reference material production worldwide. Formerly heading AQCS at the IAEA's Seibersdorf Laboratories, he managed global proficiency testing programs and the production of certified reference materials. He has worked across 15 countries implementing ISO 9001, ISO 14001, and ISO 17025. An experienced lead auditor, trainer, and coach, he specializes in laboratory quality management systems, method validation, statistical data application for process optimization, and auditing. Since 2013, Abdul has been Director of Proficiency Testing at IARMA Limited in Vienna, continuing to drive excellence in quality assurance and analytical performance.

### Dr. Evgeniya Soboleva

Dr. Evgeniya Soboleva is an experienced chemist, auditor, and quality management expert with extensive international experience in environmental research, accreditation, and consultancy. She holds a master's in chemistry and MBA from the British Open University, and a Doctorate in Physical Chemistry. Certified in multiple ISO management systems, she has conducted over 800 audits globally. As CEO of KLG International Group, she provides audit, accreditation, and training services. Previously, she held key roles at Certification Bodies Quality Austria GmbH, IAEA, and University of London managing international projects in sustainability, energy, and environmental monitoring. She has advised UN organizations, USAID, and governments on accreditation and industrial policies. A published researcher, she has contributed extensively to analytical chemistry and environmental science, quality management and compliance.

## KLG INTERNATIONAL GROUP COURSE

# LABORATORY QUALITY MANAGER AND LABORATORY ASSESSOR (LQMAT)

### OUR TRAINERS



### Lorens Peter Sibbesen

Lorens Peter Sibbesen is an experienced consultant and trainer specializing in laboratory quality management, accreditation, metrology, proficiency testing (PT), sustainability, and quality infrastructure. With a Master's in Applied Chemical Engineering and a diploma in Education, Lorens has over 30 years of expertise working with laboratories and quality systems. He has led international projects, trained professionals in over 20 countries, and worked with organizations like EUROLAB and Eurachem. His specialties include ISO/IEC 17025, method validation, proficiency testing, food safety management, and sustainability standards. Lorens has also been instrumental in building national quality infrastructures in various regions, such as the Caribbean, Africa, and the Pacific. Lorens is a key member of the scientific community, serving as the Danish representative at the Eurachem General Assembly, Chairman of the Eurachem Working Group on Method Validation (MVWG), and a member of the Eurachem Executive Committee (EC). His extensive technical knowledge and practical experience make him a sought-after expert in laboratory quality, accreditation, and metrology.

### REGISTRATION

Please register using the link on our website:  
<https://klginternational.com/laboratory-quality-management>

**or via email at**  
[office@klginternational.com](mailto:office@klginternational.com)

If you have any questions about the course, please contact  
**Dr. Evgenia Soboleva**  
[esoboleva@klginternational.com](mailto:esoboleva@klginternational.com)