

Qualification of Reviewers for Calibration and Measurement Capabilities

1. Course details

Time and location

October 20 – 22, 2025

Monday to Wednesday, 08:00 – 14:00

Venue: Doha, Qatar

2. Content summary

The Qualification of Reviewers for Calibration and Measurement Capabilities training is a collaborative initiative between the BIPM and GULFMET, developed to build capacity among GULFMET technical experts engaged in the CIPM MRA CMC submission and review processes. The training is designed to provide a structured and comprehensive understanding of the end-to-end workflow—from drafting to publication—for Calibration and Measurement Capabilities (CMCs) within the KCDB environment.

The course aims to ensure that participants are confident in navigating both the technical and procedural elements of the CIPM MRA framework surrounding CMCs. It begins with an overview of the CIPM MRA and the role of CMCs in demonstrating internationally recognized metrological competence. This is followed by guided sessions on using the KCDB web interface, including account registration and the different roles (Writer, Reviewer, TC Chair) involved in the CMC process.

The training will cover key CIPM MRA requirements for CMCs, including specifications, uncertainty expression, metrological traceability, and technical evidence, as well as the Quality Management System (QMS) requirements necessary for CMC approval. GULFMET-specific requirements and regional practices will also be presented, with input from experts in different metrology areas.

Hands-on sessions using the KCDB training platform will allow participants to gain practical experience in writing CMCs and conducting intra-RMO reviews. The course also includes focused modules on the JCRB review stage and the coordinating role of TC Chairs in managing both intra-RMO and JCRB reviews.

Knowledge transfer will be delivered through a mix of presentations, demonstrations, and exercises, including a simulation of the review process. Participants will be required to draft and review CMCs on the KCDB training platform and complete group exercises to reinforce learning. The training will conclude with a certificate award ceremony to recognize participation and achievement.

3. Learning outcomes

The course will strengthen the necessary competences of GULFMET technical experts involved in the drafting, review, and coordination of CMCs through the use of the KCDB tools and procedures under the CIPM MRA.

The course will enable participants to:

- refresh their knowledge about the CIPM MRA:
 - requirements on CMCs, including specifications, uncertainty, traceability, technical evidence, and QMS;
 - the role of CMCs in demonstrating internationally recognized metrological capabilities.
- gain familiarity with the KCDB 2.0:
 - understand how to access and navigate the KCDB web interface;

- understand the different user roles (Writer, Reviewer, TC Chair) and how to register for access;
 - prepare and submit CMCs using the KCDB Writer’s environment;
 - modify existing CMCs, including exporting and re-importing records;
 - understand the review process using the KCDB Reviewer’s environment;
 - understand how to temporarily withdraw (grey out) and reinstate CMCs;
 - navigate the workflow for intra-RMO and JCRB reviews;
 - use the TC Chair environment to coordinate reviews and monitor CMC progress.
- share best practices:
 - apply GULFMET-specific requirements and guidance from experts from different metrology areas.
 - conduct and participate in practical drafting and review exercises on the training platform;
 - engage in group activities and simulations to reinforce understanding of the complete CMC lifecycle.

4. Learning activities

The course provides a comprehensive learning experience through a combination of presentations, demonstrations, group activities, and targeted technical guidance. Participants will engage with the KCDB training platform and work through the full cycle of drafting, reviewing, and managing CMCs in line with CIPM MRA requirements.

Presentations

Participants will receive clear and structured presentations covering:

- the CIPM Mutual Recognition Arrangement (CIPM MRA) and its role in international metrology;
- the CIPM MRA general requirements for CMCs;
- the GULFMET RMO QMS requirements and review;
- the rationale and process for CMC grey-out and reinstatement.
- the TC Chair’s role in coordinating reviews and supporting CMC progress;

Hands-on demonstration (Individual work)

Participants will be guided through the use of the KCDB training platform, including:

- user account registration and role assignment (Writer, Reviewer, TC Chair);
- navigating the KCDB interface and understanding user-specific workspaces;
- drafting new CMCs and submitting them through the Writer environment;
- modifying existing CMCs using export/import functions;
- submitting CMCs for intra-RMO and inter-RMO (JCRB) review.

Group work

Collaborative exercises will allow participants to apply course content and practice the CMC review process. Group activities include:

- peer review of draft CMCs within the training platform;
- simulation of intra-RMO and JCRB review workflows;

- coordinated reviews under TC Chair guidance, including decision-making and communication;
- group discussion and feedback on review findings and improvement suggestions.

Case studies

Discussions with respect to:

- technical expectations for different metrology areas (e.g. uncertainty expression, traceability, evidence);
- best practices and expert advice from regional and international stakeholders;
- case studies highlighting review challenges and solutions across selected areas.

5. Reading and training materials

Participants are required to familiarise with relevant materials and documents before the course. An e-learning account will be necessary for content available on the BIPM e-learning platform.

The following e-learning course is available on the BIPM e-learning platform at: <https://e-learning.bipm.org/>

- CIPM MRA

The following documents are available on the CIPM MRA documents page of the BIPM website at: <https://www.bipm.org/en/cipm-mra/cipm-mra-documents/>:

- Text of the CIPM MRA
- CIPM MRA-G-11 Measurement comparisons in the CIPM MRA
- CIPM MRA-G-13 CMCs in the context of the CIPM MRA
- CIPM MRA-G-12 Quality management systems in the CIPM MRA

The following documents are available on the 'Help on the KCDB' page of the BIPM website at: <https://www.bipm.org/en/cipm-mra/kcdb-help>:

- Getting started on the KCDB web platform

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6. Course requirements

Practical activities will involve direct use of the KCDB training platform. To fully participate in the hands-on sessions and group exercises, participants will require access to a computer or equivalent device with internet access.

Effective learning can only take place when everyone actively participates and freely expresses his/her ideas as well as being enthusiastic and well prepared. Ask, share, and challenge! All attendees must respect the lecturers and other students and behave appropriately.

7. Course schedule

DAY ONE		Contributor
08:00 - 08:30	Registration	
08:30 - 09:00	Introduction and opening of the workshop <ul style="list-style-type: none"> Welcome and opening 	Host
09:00 - 09:30	Presentation: The BIPM and The CIPM MRA	C. Kuanbayev
09:30 - 10:00	Presentation: GULFMET RMO and participation in the CIPM MRA	A. Al-Qarnas
10:00 - 10:30	Coffee Break	
10:30 - 11:00	KCDB demonstration: The KCDB environment	S. Maniguet
11:00 - 12:00	Group work: Search and statistics	A. Maina Participants
12:00 - 12:30	Prayer time	
12:30 - 13:00	KCDB demonstration: Registration of user accounts	S. Maniguet
13:00 - 13:45	Individual exercise: Creation of user account	A. Maina Participants
13:45 - 14:00	Wrap-up of the day and Q&A	All
14:00	Lunch Time	
DAY TWO		Contributor
08:00 - 08:20	Presentation: CIPM MRA general requirements for CMCs	A. Maina
08:20 - 08:40	Case study: KCDB and CC requirements for Physics CMCs	W. Al Kalbani
08:40 - 09:00	Case study: KCDB and CC requirements for Chemistry and Biology CMCs	A. Al Askar
09:00 - 09:20	Case study: KCDB and CC requirements for Ionizing Radiation CMCs	S. Mohamed
09:20 - 09:40	KCDB demonstration: Drafting and submitting a new CMC	S. Maniguet
09:40 - 10:00	Individual exercise: Drafting and submitting CMCs	Participants
10:00 - 10:30	Coffee Break	
10:30 - 11:00	KCDB demonstration: CMC modification, maintenance, grey-out and re-instatement	S. Maniguet
11:00 - 11:30	Presentation: GULFMET requirements for a valid QMS	A. Al Hosani
11:30 - 12:00	Presentation: GULFMET CMC review procedure	J Bartholomew
12:00 - 12:30	Prayer time	

12:30 - 13:00	<i>KCDB demonstration: Reviewer's dashboard</i>	<i>A. Maina</i>
13:00 - 13:40	<i>Group work: Intra RMO review of submitted CMCs</i>	<i>Participants</i>
13:40 - 13:50	<i>Individual exercise: Revision of reviewed CMCs</i>	<i>Participants</i>
13:50 - 14:00	Wrap-up of the day and Q&A	<i>All</i>
14:00	Lunch Time	
DAY THREE		Contributor
08:00 - 08:30	<i>KCDB demonstration: TC Chair's dashboard</i>	<i>A. Maina</i>
08:30 - 09:00	<i>Group work: JCRB review of CMCs</i>	<i>Participants</i>
09:00 - 10:00	<i>Group work: Preparation of presentations on submission and review of CMCs</i>	<i>Participants</i>
10:00 - 10:30	Coffee Break	
10:30 - 12:00	<i>Group presentations</i>	<i>Participants</i>
12:00 - 12:30	Prayer time	
12:30 - 13:00	<i>Course assessment and Feedback</i>	<i>Participants</i>
13:00 - 13:30	Diploma ceremony	<i>Host</i>
13:30 - 14:00	Course closure	<i>NMI representative</i>
14:00	Lunch time	

8. Lecturers

Dr Stéphanie Maniguet, BIPM, Sèvres



Stéphanie Maniguet is the KCDB Coordinator at the BIPM, responsible for the development and management of the Key Comparison Database. She also serves as the Coordinator of the database of the Joint Committee for Traceability in Laboratory Medicine (JCTLM).

Stéphanie also plays an important role in the activities of Digitalization at the BIPM, in line with the strategic objective of making the KCDB and JCTLM databases FAIR and machine actionable.

Chingis Kuanbayev, BIPM, Sèvres



Chingis Kuanbayev is the Head of CBKT and CIPM MRA support of the BIPM. He manages the BIPM Capacity Building and Knowledge Transfer (CBKT) programme, undertakes liaison activities including promotion of the international quality infrastructure with various stakeholder organizations. He also supports BIPM coordination activities related to CIPM MRA mechanisms, specifically through the JCRB Executive Secretary and the KCDB Office.

Prior to joining the BIPM, he represented the Kazakhstani National Metrology Institute in several international and regional organizations focused on Quality Infrastructure. He is an expert in Quality Infrastructure and the implementation of the CIPM MRA.

Anderson Maina, BIPM, Sèvres



Anderson Maina is a Liaison Officer at the BIPM, where he assists in the operation, maintenance, and development of the Key Comparison Database (KCDB), including data publication and user support. He also contributes to the Capacity Building and Knowledge Transfer (CBKT) Programme, supporting the development and delivery of training modules and capacity-building activities.

Before joining the BIPM, he was the Head of Acoustics and Vibration Metrology at the Kenya Bureau of Standards, where he played a key role in advancing Kenya's metrology infrastructure, including publishing the country's first physical Calibration and Measurement Capabilities (CMCs) in the KCDB.

Eng. Abdulelah Al-Qarnas, GSO, Riyadh



Abdulelah Alqarnas is a Head of Metrology at GCC Standardization Organization (GSO), and a GULFMET Secretary. Prior to joining GSO, he was a Head of engineering support in project management and engineering for 10 years. Since 2013, he has worked with the GULFMET secretariat, contributing to the preparation of draft regulations and technical guides related to metrology and monitoring its adoption and implementation processes. Alqarnas holds a bachelor's degree in mechanical engineering and is a Certified Excellence Practitioner (CEP).

Jon Bartholomew, EMI, Abu Dhabi



Jon Bartholomew is Head of the Electrical, Time and Frequency Laboratory at Emirates Metrology Institute (EMI) the national metrology institute of the United Arab Emirates. He is a Chartered Physicist with an MSc in Industrial Measurement Systems from Brunel University, UK. He started work in Electrical Metrology in 1990, working at the National Physical Laboratory, UK and in Saudi Arabia before joining EMI at its founding in 2013. He has also worked as a systems engineer with a focus on process improvement through the modelling of standards, requirements and processes. He is the GULFMET TC chair leader and chair of the GULFMET working group on digital transformation.

Samia Mohamed, FANR, Abu Dhabi



Samia Mohamed is a Senior Specialist at the Secondary Standard Dosimetry Laboratory (SSDL) within the Federal Authority for Nuclear Regulation (FANR), bringing over 15 years of professional experience in the field of ionizing radiation metrology and safety. She holds a Master's degree in Risk and Safety Management from Liverpool John Moores University, UK, and a Bachelor's degree in Biology and Chemistry from the University of Bahrain.

Since 2021, Samia has been serving as the Chair of the Technical Committee on Ionizing Radiation and as a member of the Technical Committee on Quality Systems under GULFMET, contributing to the advancement of regional metrology standards and quality assurance frameworks.

Abdulrahman Al-Askar, SASO, Riyadh



Abdulrahman Al-Askar holds a Bachelor of Science degree in Chemistry from King Saud University, Saudi Arabia. He joined the National Measurement and Calibration Center at SASO in 2014, where he serves as the Head of the Chemical Metrology Department. He has good experience in the production of organic reference materials, gas mixtures and buffer solutions of pH values of 4, 7 and 10.

Abdulrahman has published more than 10 research papers in international journals in the field of chemical metrology. He is actively involved in participating in international conferences and attending scientific committee meetings within the regional metrology organizations. He is the current Chair of the GULFMET Technical Committee for Chemistry.

Eng. Asma Alhosani, EMI, Abu Dhabi



Eng. Asma Alhosani is Lead Metrologist of Mass, Volume, and Flow Laboratories at the Emirates Metrology Institute (EMI).

She holds an M.Sc. in Engineering Management from Abu Dhabi University and a B.Sc. in Physics from the United Arab Emirates University.

With over a decade of experience in Mass and Volume Metrology since 2012, Asma has played a key role in advancing regional and international metrology standards. She currently serves as Chair of the GULFMET Technical Committee for Quality Management Systems and has represented GULFMET on the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) since 2018.

Eng. Waleed Alkalbani, EMI, Abu Dhabi



Waleed AlKalbani received his BSc Degree in Electrical and Electronics Engineering from Al Ghurair University, UAE. He has been working in Electrical, Time and Frequency Metrology since 2012, with experience at UAE Military calibration laboratories.

Waleed is the current Chair of the GULFMET Technical Committee for Electricity, Magnetism, Time and Frequency.



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