

**Theme: Fundamentals of Metrology and Quality (MnQ)**

**Dates: April 25-29, 2015**

**Venue:** Korea Research Institute of Standards and Science (KRISS), Daejeon, Korea

**Organized by:** Global Metrology Academy (GMA), KRISS

**Overview**

**(GMA-GT-2016-02-MnQ)**

The Global Metrology Academy of KRISS offers group courses to meet the needs of metrology HRD of the customers both at home and from abroad who are responsible for metrology and related functions of the quality infrastructure of the nation. Different from other courses which were dealing with technical subjects of metrology, the course [GMA-GT-2016-02-MnQ] intends to address the core fundamentals of metrology and quality which are of significance to the **quality managers and/or directors of national metrology institutes**. The main purpose of the course is to share with the participants the experience that Korea and KRISS have obtained over the past decades in science, technology, innovation and in metrology. At this context, it is strongly recommended that **high-level officials in charge of making policies on the national quality infrastructure** also come and join in the course. It will enable them to get clear perspectives on what and how to do for establishing and refining their national standards system in the future.

The course programs consist of five (5) modules, presenting STI (S&T Innovation) and NSS of Korea, QMS and the CIPM MRA, Impact and Evolving Needs of Metrology. Participants will also be given understanding of KC-CMC-Traceability-Uncertainty in measurement. The course program will also address the impact and evolving needs of metrology. Speakers are invited both from within KRISS laboratories, metrology community of Korea, and from global metrology community as well.

Participants will be given a chance of visiting the laboratories of KRISS engaged in wide range of R&D on measurement standards and the cutting-edge applied measurement technologies. In addition, the GMA is organizing technical visit programs covering the selected calibration laboratory and industry of Korea scheduled at the later part of the course.

**Outline of Course program [*\* Subject to Modification!*]**

Modules	Subjects	Remarks
Orientation (Apr 23)	<b>Introduction and brief tour</b> (Saturday, Apr 23, 2016)	For participants who will have arrived at Daejeon by Friday, 22nd of April 2016
MiG-1 (Day 1)	<b>S&amp;T and NSS of Korea Today</b>	Four (4) invited lectures dealing with Korea's strategy for STI development, the key components of quality infrastructure
MiG-2 (Day 2)	<b>QMS and CIPM MRA</b>	THREE (3) lectures presenting QMS requirements, QMS in practice at KRISS, and KC-CMC-Traceability in measurement
MiG-3 (Day 3)	<b>QMS and CIPM MRA (and Special Lectures)</b>	Two (2) speakers presenting new SI and SRD activities, ONE(1)on uncertainty in measurement,
MiG-4 (Day 4)	<b>Impact and Evolving Needs of Metrology</b>	Three (3) invited lectures (* Afternoon: KRISS Lab tour )
MiG-5 (Day 5)	<b>Evaluation and Closing</b>	Afternoon: Technical visit to industry
TCV-1 (Day 6-7)	<b>Cultural experience of Korea (and departure)</b>	Seoul

Official language of the course: English  
(interpretation service is not available.)

**Knowledge and skills to be**

At the end of the course, participants will become familiar with what Korea and KRISS have achieved over the past decades in the fields of science, technology, innovation and national quality infrastructure. It is envisaged that the course will offer participants broad perspectives and deep insights that will help them more effectively manage and operate their national metrology institutes and make national policy and strategy required for further improving the national competitiveness based on the strong quality infrastructure where metrology plays the key role.

**Who should**

- **Quality managers and/or Directors of national metrology institutes**
- **High-level officials in charge of making policies on quality infrastructure: metrology, standardization, and conformity assessment**

**Application**

**Applications to be Accepted by February 29, 2015**

Welcome to be Partners of Global Metrology Academy!

**Modules and Lectures**

*\* subject to modifications*

Apr 22 (Fri)	<b>Arrival at Daejeon, check-in at <a href="#">the Hotel Graytone</a> in Daejeon</b>	<i>recommended date of arrival at Daejeon, Korea</i>
Apr 23 (Sat)	<b>Orientation &amp; Brief tour in and around Daejeon city</b>	<b>10:00-17:00 (provisional)</b>
Apr 24 (Sun)	<b>Free</b>	
Day 1 (Mon) Apr 25	Opening, Fundamentals of Metrology and Quality	<b>April 25 (Mon)</b>
Session 1	<b>STI and National Standards System of Korea Today</b>	
	(L-1-1) Evolution of Korean S&T Policy and Role of Standards	Dr. Yongsuk JANG, STEPI, KOREA
	(L-1-2) National Standards System of Korea - Metrology	Prof. Dr. Gun-Woong BAHNG, SUNY KOREA
	(L-1-3) Conformity Assessment & Legal Metrology in Korea	Mr. Hee Chan YANG, KATS, KOREA
	(L-1-4) Standards Policy as a National Growth Engine: from Imitator, Innovator, to Innovator	Dr. Donggeun CHOI, KSA, KOREA
Day 2 (Tue) Apr 26	Fundamentals of Metrology and Quality	<b>April 26 (Tue)</b>
Session 2	<b>CIPM MRA and QMS (1)</b>	
	(L-2-1) QMS and the CIPM MRA: why and for what - management/technical requirements (ISO/IEC 17025, ISO 34)	Dr. Hun-Young SO, SHIMADZU
	(L-2-2) QMS in practice at KRIS	Dr. Jongseon PARK, KRIS
	(L-2-3) KC-CMC-Traceability	Dr. Jong Oh CHOI, KRIS
Day 3 (Wed) Apr 27	Fundamentals of Metrology and Quality	<b>April 27 (Wed)</b>
Session 3	<b>Special Lectures</b>	
	[L-3-SL-1] New SI and Fundamental Constants	Dr. Ho Seong LEE, KRIS
	[L-3-SL-2] Standard Reference Data (SRD) Activities in Korea	Dr. Chang Geun KIM, KRIS
	[L-3-SL-3] Presentation of UST	Mr. P. G. LEE, UST
Session 4	<b>CIPM MRA and QMS (2)</b>	
	(L-4-1) Uncertainty in Measurement	Dr. Jong Oh CHOI, KRIS
Day 4 (Thu) Apr 28	Fundamentals of Metrology and Quality	<b>April 28 (Thu)</b>
Session 5	<b>Impact and Evolving Needs of Metrology</b>	
	(L-5-1) Economic Impact of Metrology and of the CIPM MRA	NMIJ, Japan (* to be confirmed)
	(L-5-2) Evolving needs of Metrology in Chemistry (food, health, bio, etc.)	KRIS (* to be confirmed)
	(L-5-3) Evolving needs of Metrology in Materials (materials, nano, nano-bio, safety, etc.)	KRIS (* to be confirmed)
Session 6	<b>Visiting KRIS Laboratories</b>	<b>GMA</b>
	<i>Farewell Dinner</i>	
Day 5 (Fri) Apr 29	Evaluation, Closing, Technical Visit	<b>April 29 (Fri)</b>
Session 7	(AM) Evaluation, Closing	Participants, GMA
Session 8	(PM) Technical Visit to SAMSUNG Innovation Museum (* overnight in Seoul)	Participants, GMA
Day 6 (Sat) Apr 30	<b>Cultural Experience in Seoul</b>	<b>April 30 (Sat)</b>
Session 9	Historic sites and cultural attractions	Participants, GMA
	<b>Departure from Korea: April 30 (Sat) ~</b>	<i>* depending on the flight itinerary</i>
<p><small>* ISO/IEC 17025: 2005 General requirements for the competence of testing and calibration laboratories</small></p> <p><small>* ISO Guide 34: 2009 General requirements for the competence of RM producers</small></p> <p><small>* ISO Guide 35: 2006 Reference materials - general and statistical principles for certification</small></p>		

**Daily Program (\* Provisional)**

*Language of the course: English*

<b>Apr 22 (Fri)</b>	Arrival at ICN airport, down to Daejeon, Check-in at the <b>Hotel Graytone</b>	<i>recommended date of arrival at Daejeon, Korea</i>
<b>Apr 23 (Sat)</b> 10:00-17:00	<b>Orientation &amp; Brief tour in and around Daejeon city</b>	* Ride and lunch offered by KRISS
<b>Apr 24 (Sun)</b>	Free	
<b>Apr 25 (Mon)</b>	<b>Opening &amp; Fundamentals of Metrology and Quality (MnQ)</b>	<b>Seminar room (#1), Technology Service Bldg</b>
08:30-09:00	From Hotel to KRISS (* ride offered by the Hotel)	GMA
09:00-09:45	Greetings and Introduction to KRISS and the GMA course	
10:00-10:30	Opening ceremony	<b>Conference room (Admin. Bldg)</b>
<b>MnQ</b>	<b>Session 1: STI and National Standards System for Korea Today</b>	<b>Seminar room (#1), Technology Service Bldg</b>
10:30-12:00	<b>(L-1-1) Evolution of Korean STI Policy and Role of Standards</b>	Dr. Yongsuk JANG, STEPI
12:00-13:30	Lunch	<b>KRISS cafeteria (floor 2)</b>
13:30-14:30	<b>(L-1-2) National Standards System of Korea - Metrology</b>	Prof. Dr. Gun-Woong BAHNG, SUNY Korea
14:30-14:45	Tea Break	
14:45-15:45	<b>(L-1-3) Conformity Assessment &amp; Legal Metrology in Korea</b>	Mr. Hee Chan YANG, KATS
15:45-16:00	Tea Break	
16:00-17:00	<b>(L-1-4) Standards Policy as a National Growth Engine: from Imitator, Imitator, to Innovator</b>	Dr. Donggeun CHOI, KSA
17:00-17:30	From KRISS to the Hotel (* ride offered by the Hotel)	GMA
<b>Apr 26 (Tue)</b>	<b>Session 2: QMS and CIPM MRA (1)</b>	<b>Seminar room (#1), Technology Service Bldg</b>
09:00-09:30	From Hotel to KRISS (* ride offered by the Hotel)	GMA
09:30-12:00	<b>(L-2-1) QMS, why and for what: management/technical requirements (ISO/IEC 17025, ISO 34)</b>	Dr. Hun-Young SO, SHIMADZU, Korea
12:00-13:00	Lunch	<b>KRISS cafeteria (floor 2)</b>
13:00-13:45	Poster Session [Raising Awareness Activities: by three participants] * to be confirmed	Three (3) participants
13:45-15:15	<b>(L-2-2) QMS in practice at KRISS</b>	Dr. Jongseon PARK, KRISS
15:15-15:30	Tea Break	
15:30-17:00	<b>(L-2-3) KC-CMC-Traceability in Measurement</b>	Dr. Jong Oh CHOI, KRISS
17:00-17:30	From KRISS to Hotel (* ride offered by the Hotel)	GMA
<b>Apr 27 (Wed)</b>	<b>Session 3: Special Lectures</b>	<b>Seminar room (#1), Technology Service Bldg</b>
09:00-09:30	From Hotel to KRISS (* ride offered by the Hotel)	GMA
09:30-10:30	<b>[L-3-SP-1] New SI and Fundamental Constants</b>	Dr. Ho Seong LEE, KRISS
10:30-10:45	Tea Break	
10:45-11:45	<b>[L-3-SP-2] Standard Reference Data (SRD) Activities in Korea</b>	Dr. Chang Geun KIM, KRISS
11:45-12:30	<b>[L-3-SP-3] Presentation of UST (University of Science and Technology)</b>	UST
12:30-13:30	Lunch	<b>KRISS cafeteria (floor 2)</b>
13:00-13:45	Poster Session [Raising Awareness Activities: by three participants] * to be confirmed	Three (3) participants
<b>MnQ</b>	<b>Session 4: QMS and CIPM MRA (2)</b>	
14:00-17:00	<b>[L-4-1] Uncertainty in Measurement</b>	Dr. Jong Oh CHOI, KRISS
<b>Apr 28 (Thu)</b>	<b>Session 5: Impact and Evolving Needs of Metrology</b>	<b>Seminar room (#1), Technology Service Bldg</b>
09:00-09:30	From Hotel to KRISS (* ride offered by Hotel)	GMA
09:30-10:30	<b>[L-5-1] Economic Impact of Metrology and of the CIPM MRA</b>	NMIJ, Japan (* to be confirmed)
10:30-10:45	Tea break	
10:45-11:30	<b>[L-5-2] Evolving needs of Metrology in Chemistry (food, health, bio, etc.)</b>	KRISS (* to be confirmed)
11:30-12:15	<b>[L-5-3] Evolving needs of Metrology in Materials (materials, nano, nano-bio, safety, etc.)</b>	KRISS (* to be confirmed)
12:15-13:15	Lunch	<b>KRISS cafeteria (floor 2)</b>
13:15-14:00	Poster Session [Raising Awareness Activities: by three participants] * to be confirmed	Three (3) participants
14:00-15:00	<b>Lab Visits: Advanced Industrial Measurement Lab (AIM Lab)</b>	GMA
15:00-15:30	<b>Physics Lab (Electricity, Biosignal)</b>	
15:30-16:00	Tea Break	Hue lounge (1st fl., CRM bldg.)
16:00-17:00	<b>CRM Lab</b>	
17:00-17:30	From KRISS to Hotel (* ride offered by the Hotel)	GMA
18:30-20:30	<b>Farewell Dinner</b>	
<b>Apr 29 (Fri)</b>	<b>Evaluation, Closing, Technical Visit</b>	<b>Conference room, (Admin. Bldg)</b>
09:00-09:30	Check out, From Hotel to KRISS (* ride offered by the Hotel)	GMA
09:30-11:00	<b>Evaluation of the course (written &amp; oral)</b>	GMA
11:00-11:30	<b>Closing session</b>	
11:30-12:20	Lunch	<b>KRISS cafeteria (floor 2)</b>
12:20-14:50	from KRISS to Suwon (* ride offered by KRISS)	GMA (Sangwook Seo)
15:00-16:00	<b>Visiting Samsung Innovation Museum (* to be confirmed)</b>	정재민님 (031)200-1636 jayden.chung@samsung.com
16:00-17:30	From Suwon to Seoul, Check in at a Hotel (*Ibis Ambassador Seoul Insa-dong)	(02-6730-1101) * to be confirmed
<b>Apr 30 (Sat)</b>	<b>Cultural Experience in Seoul</b>	
10:00-17:00	<b>Historic sites and cultural attractions</b>	guided by the KRISS travel agent
<b>May 1 (Sun)</b>	<i>Departure: <u>April 30 (Sat)-May 1 (Sun)</u> * depending on the flight itinerary</i>	

### ☐ Qualification

1. The applicant should be officially nominated by the employer, whose official seal and signature should be put on the application/nomination form.
2. The applicant should be an employee of the national metrology institute (NMI) **in charge of QMS** and/or of metrology laboratory of the NMI.
3. The **top management of NMI** and **high-level government policy-makers** responsible for the nation's quality infrastructure are also welcome.
4. The applicant should be a university/college graduate or have equivalent professional experiences and knowledge on the quality infrastructure.
5. For the sake of effectiveness, the applicant is required to have a good command of **English**.
6. The applicant should be healthy both physically and mentally enough to go through the whole programs of the course.

☐ **Requirements:** applications are valid to be submitted to KRISS **by February 29, 2016** together with the following requirements.

1. **An official nomination** by the employer with the official seal and the signature of the top management of the employer;
2. A copy of the **curriculum vitae** of the applicant, describing the academic background and professional experience in detail;
3. A copy of **passport** as valid for more than one year as of the expected date of arrival at Korea (around April 22, 2016);
4. **Laboratory/Country report and Action Plan:** Selected participants are supposed to submit their laboratory/country reports and action plans according to the template to be provided later on; and
5. Plan of sharing the results of his/her study in the GMA course for their institution and the nation

☐ **Number of participants:** each course will be operated with **up to 20 participants**.

## Financial Arrangements

- ☐ Participants and their employers are responsible for paying all expenses of the tuition fees, airline tickets, accommodations and meals, etc. required for the participants' travel to and stay in Korea.
- ☐ Lunches for five (5) working days are offered free to ALL participants.
- ☐ Subject to the availability of fund, additional financial assistance might be discussed for a limited number of people from developing countries.

<b>1. Tuition fees</b>	<p>① <b>Amount: US\$300/US\$600 per person</b></p> <ul style="list-style-type: none"> <li>☞ Two different categories of the tuition fees are applicable according to the economic performance of the applicant's country.</li> <li>☞ <b>Please contact the coordinator, BEFORE making applications, to get confirmed of the tuition fee category applicable for you.</b></li> </ul>
<b>2. Banking information</b>	<p>② Applicants are supposed to remit the tuition fees by bank transfer to the official bank account of KRISS.</p> <ul style="list-style-type: none"> <li>☞ <b>Payment should be made by March 31, 2016 which will make the application complete.</b></li> <li>☞ Please make sure that all the handling and banking charges raised both to the remitter and beneficiary should be paid by the remitter, so that the <b>net amount of tuition fees (US\$500 or US\$1,000) could be received by KRISS</b>.</li> </ul> <p>Official bank account of KRISS</p> <ul style="list-style-type: none"> <li>- Bank name: Kook-Min Bank (Branch: Yuseong Branch)</li> <li>- Swift code: <b>CZNBKRSE</b></li> <li>- Account number: <b>461-01-0184-494</b></li> <li>- Account holder's name: Korea Research Institute of Standards and Science (KRISS)</li> <li>- Bank address: 1F, #468-3, Bongmyeong-dong, Yuseong-gu, Daejeon, Republic of Korea</li> <li>☞ <b>invoices will be issued separately only if requested. (* Receipts might be issued upon the participant's arrival at KRISS.)</b></li> <li>☞ <b>The statement of bank transfer should be sent to KRISS either by Email (<a href="mailto:swseo@kriss.re.kr">swseo@kriss.re.kr</a>) or FAX (+82-42-868-5565) with attention to the course coordinator.</b></li> </ul>
<b>3. Living expenses</b>	<p>Participants are responsible for paying living expenses in Korea including accommodations and meals.</p> <p>For selected participants from the developing world, KRISS might provide free accommodations, subject to its financial availability. Lunches for five (5) working days will be offered free to ALL participants.</p> <p>⑥ Please note that expenses for all other meals shall be paid by the participants.</p> <ul style="list-style-type: none"> <li>☞ Participants are advised to bring some pocket money of their own for incidental expenses.</li> </ul> <p>It is likely that participants will stay at the Hotel Graytone, Dunsan in Daejeon. (<a href="http://www.graytone.co.kr/">http://www.graytone.co.kr/</a>) The room rate (around US\$50 per night per room) includes breakfast, tax, and service charge.</p>
<b>4. Airline tickets</b>	<p>Participants and their employers are responsible for purchasing the airline tickets for the participants.</p>
<b>5. Local Transportation</b>	<p>⑨ The KRISS travel agent will pick up the participants upon their arrival at the Incheon (ICN) international airport of Seoul.</p> <ul style="list-style-type: none"> <li>☞ Participants are requested to advise the course coordinator of their flight itinerary to and from Korea AS SOON AS POSSIBLE.</li> </ul> <p>⑩ The KRISS travel agent will help the participants to take the airport limousine bus bound for Daejeon.</p> <ul style="list-style-type: none"> <li>☞ The bus tickets (around US\$21 one way) are to be bought by the participants.</li> <li>☞ Upon your arrival at the bus stop in Daejeon ("Government Complex-Daejeon"), the staff of the Hotel Graytone will be meeting you to take you to the hotel.</li> </ul>

**Every applicant and participant should commit to read, strictly abide by, and respect the following rules and regulations as specified below that GMA endorses in implementing the group course:**

1. Participants shall conduct themselves at all times in a manner compatible with their status as participants in the subject GMA course;
2. Participants shall attend, to the best of their abilities, all sessions of the GMA group and/or individual courses they are participating in;
3. Participants shall refrain from engaging in political activity or any form of employment for profit or gain;
4. Participants shall return to their home country upon completion of the subject course of GMA and resume work in their country;
5. Participants shall not extend the length of stay in Korea for personal convenience;
6. Participants whose flights are supported by GMA and other donor organizations are not permitted to change their flights for their personal convenience;
7. Participants shall not be accompanied by any member of their family;
8. Participants shall assume responsibility for any personal expenses incurred regardless of implementation of the course; and
9. Participants are required to strictly observe the course schedule and abide by the **rules and regulations stipulated by the KRISS and their sponsors, and the laws of the Republic of Korea.**
10. Any form of harassment or insult, including but not limited to misconduct arising out of racial/ethnic, gender or class discrimination, whether it be physical or verbal, will not be tolerated and will be dealt with in accordance with the laws of the Republic of Korea and the rules and regulations of KRISS.
11. Especially, **sexual harassment**, defined as a form of behavior characterized by sexually connotative words, acts or gestures that could undermine individual dignity and by which the victim takes offense, is regarded as a serious misconduct and will be dealt with accordingly.
12. Offenders who fail to comply with the above **Rules and Regulations** laws shall be subject to punishment in accordance with the laws of the Republic of Korea and the regulations of KRISS, **which include sending an official letter of complaint to the offender's employer and government and instant deportation with ban of the offender's participation in the future GMA programs.**



### Contact Points

For further information about participation in the GMA course, please contact:

<b>Sangwook SEO (Coordinator)</b> Senior Project Manager, Global Metrology Academy (GMA), KRISS	<a href="mailto:swseo@kriss.re.kr">swseo@kriss.re.kr</a> TEL + 82-42-868-5440 Fax + 82-42-868-5565
Dr. Gyeong-Hee NAM Head, Global Metrology Academy (GMA), KRISS	<a href="mailto:ghnam@kriss.re.kr">ghnam@kriss.re.kr</a> TEL + 82-42-868-5412 Fax + 82-42-868-5565