

Theme: Metrology in Mass and Related Quantities (MRQ)

Dates: March 20 (Mon) - 31 (Fri), 2017

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

Organized by: Global Metrology Academy (GMA), KRISs

Overview

[GMA-GT-2017-01-MRQ]

Applications: by January 20, 2017

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 national quality infrastructure of the nation. The course [GMA-GT-2017-01-MRQ] is the first one scheduled to be offered in 2017. Its main theme is metrology in Mass and Related Quantities (MRQ), to be presented in three (3) technical modules covering the key elements of mass, density, force and torque.

With its main target audience of **intermediate level** of metrologists, the MRQ course will deliver the concepts of the traceability and measurement standards along with other key subjects of metrology in MRQ that participants need to obtain for their future career as leaders in their local and global metrology communities.

As an effort to yield as much practical benefits as possible for participants, every session of the MRQ course is strategically designed that technical lectures are effectively combined with hands-on laboratory sessions to follow. By the end of the course, participants might have better understanding of basic knowledge, skills, and information as up to dated on the key elements of metrology in MRQ. It will enable them to offer better measurement services for their customers. In addition, participants will be given a two-day session of metrology in general (MiG) to learn selected fundamental subjects of metrology, such as national standards system - quality infrastructure, QMS (ISO/IEC 17025). and the CIPM MRA requirements covering key comparison (KC), calibration and measurement capabilities (CMC), traceability and uncertainty in measurement.

Outline of Course program [* *subject to modification!*]

| Modules | Subjects | Chief Lecturers |
|------------------------------|--|--|
| Orientation | Introduction and brief tour (* to be offered for participants who will arrive by Friday of the week before opening.) | GMA |
| MiG (Days 1-2) | Metrology in General - Five (5) lectures dealing with the fundamentals of metrology in general | Dr. Jong Oh CHOI (choijongoh@kriss.re.kr) |
| MRQ | Metrology in Mass and Related Quantities - Three (3) intensive laboratory sessions (ILS) with technical lectures and hands-on exercises combined | Dr. In-Mook CHOI (mookin@kriss.re.kr) |
| MRQ-01 (Day 3-4) | Mass | Dr. Sungjun LEE (lsjun@kriss.re.kr) |
| TV (Days 5-6) | Technical visit & cultural experience in Seoul (* to be confirmed) | GMA |
| MRQ-02 (Day 8) | Density | Dr. Yong Jae LEE (yjlee@kriss.re.kr) |
| MRQ-03 (Day 9-10) | Force & Torque | Dr. Min-Seok Kim (mink@kriss.re.kr) |
| MRQ (Day 11) | Performance Test, Wrap-up discussion & individual visits | Dr. In-Mook CHOI (mookin@kriss.re.kr) |
| MRQ (Day 12) | Course Evaluation and Closing | GMA |

Official language of the course: English

(interpretation service is not available.)

Knowledge
and skills to
be obtained

At the end of the course, participants will become familiar with fundamental knowledge and skills on the key subjects of measurement standards, traceability, calibration and uncertainty in the fields of metrology in mass, density, force and torque. Intensive laboratory sessions (ILS) are effectively combined with lectures and hands-on exercises in ways that allow participants to obtain basic skills required for offering quality services for customers. A two-day session of metrology in general (MiG) will offer participants broad perspectives that will help them grow up to take the leading role in advancing the nation-wide measurement system up to the international level.

Who should
attend!

Metrologists who are working on R&D and measurement services in the fields of metrology in mass, density, force and torque.

Applications

Applications to be accepted: by January 20, 2017

Welcome to be Partners of Global Metrology Academy!

Modules, Lectures, Hands-on Exercises

* subject to modifications

| | | |
|---|---|---|
| March 17 (Fri) | Arrival at Daejeon, check-in at the Hotel Graytone in Daejeon | recommended date of arrival at Daejeon, Korea |
| March 18 (Sat) | Orientation Session | 10:00-17:00 (provisional) |
| March 19 (Sun) | Free | |
| MiG | Metrology in General: fundamentals of metrology and quality | March 20 (Mon) - 21 (Tue) |
| | Five (5) lectures and exercises (uncertainty evaluation) | Lecturers |
| DAY 1 (Mon) Mar 20 | MiG-01 National standards system in Korea-quality infrastructure | Prof. Dr. Gun-Woong BAHNG, SUNY KOREA |
| | MiG-02 QMS, why and for what: management/technical requirements (ISO/IEC 17025) | Dr. Hun-Young SO, SHIMADZU, Korea |
| | MiG-03 QMS in Practice at KRISs | Dr. Jongseon PARK, KRISs |
| DAY 2 (Tue) Mar 21 | MiG-04 KC-CMC-Traceability in Measurement | Dr. Chu-Shik KANG, KRISs |
| | MiG-05 Uncertainty in Measurement (including exercises) | Dr. Jong Oh CHOI, KRISs |
| * ISO/IEC 17025: 2005 General requirements for the competence of testing and calibration laboratories | | |
| MRQ | Metrology in Mass and Related Quantities | Mar 22 (Wed) - 23 (Thu), Mar 27 (Mon) - 30 (Thu) |
| | Intensive Laboratory Session (ILS) with lectures and exercises | (L) Lecture, (H) Hands-on exercises |
| MRQ-01 | MASS | March 22 (Wed) - 23 (Thu) |
| DAY 3 (Wed) Mar 22 | [MRQ-01-L-1] Traceability of Mass Standard | Dr. Sungjun LEE |
| | [MRQ-01-L-2] Calibration of Weights and Evaluation of Uncertainty | Dr. Sungjun LEE |
| | [MRQ-01-H-1] Practice: Handling of Weights and Balance, Calibration of Weights | Mr. Kwang Pyo KIM, Dr. Sungjun LEE |
| DAY 4 (Thu) Mar 23 | [MRQ-01-L-3] Calibration of Electronic Balances | Dr. Sungjun LEE |
| | [MRQ-01-L-4] Weighing Design | Dr. Sungjun LEE |
| | [MRQ-01-H-2] Practice: Calibration of Electronic Balances, Weighing Design | Mr. Kwang Pyo KIM, Dr. Sungjun LEE |
| DAY 5 (Fri) Mar 24 | Technical visit and cultural tour | GMA (staying overnight in Seoul) |
| DAY 6 (Sat) Mar 25 | Cultural experience in Seoul | Coming down to Daejeon |
| DAY 7 (Sun) Mar 26 | Free | |
| MRQ-02 | DENSITY | March 27 (Mon) |
| DAY 8 (Mon) Mar 27 | [MRQ-02-L-1] Density Measurement Standards in KRISs | Dr. Yong Jae LEE |
| | [MRQ-02-L-2] Density Measurement of Liquid and Solid | Dr. Yong Jae LEE |
| | [MRQ-02-H-1] Practice: Demonstration of Density Measurement Equipment at KRISs | Dr. Yong Jae LEE |
| | [MRQ-02-H-2] Practice: Density Measurement of Liquid and Solid (hydrostatic weighing system) | Dr. Yong Jae LEE |
| MRQ-03 | FORCE & TORQUE | March 28 (Tue) - 29 (Wed) |
| DAY 9 (Tue) Mar 28 | [MRQ-03-L-1] Maintenance and dissemination of force Standards | Dr. Min-Seok KIM |
| | [MRQ-03-L-2] Calibration of force measuring device | Dr. Min-Seok KIM |
| | [MRQ-03-L-3] Calibration of tension/compression testing machine | Dr. Jong-Ho KIM |
| | [MRQ-03-H-1] Practice Calibration of tension/compression testing machine | Dr. Jeong-Tae LEE / Mr. Ho-Young LEE |
| DAY 10 (Wed) Mar 29 | [MRQ-03-L-4] Maintenance and dissemination of torque standards | Dr. Min-Seok KIM |
| | [MRQ-03-L-5] Calibration of torque measuring device | Dr. Min-Seok KIM |
| | [MRQ-03-H-2] Practice: Calibration of torque measuring device | Mr. Ho-Young LEE / Mr. Jin-Seok JANG |
| MRQ | Evaluation Test, Individual Lab Visits, Action Plan Development | March 30 (Thu) |
| DAY 11 (Thu) Mar 30 | Performance evaluation test | Participants, GMA |
| | Individual lab visits | Participants |
| | Development and Presentation of Action Plans | Participants, GMA |
| MRQ | Wrap-up and Closing | June 24 (Fri) |
| DAY 12 (Fri) Mar 31 | Course Evaluation, Closing | |
| April 1 (Sat) | Departure: March 31 (Fri) - April 1 (Sat) | * Depending on the flight itinerary |

Daily Program (Provisional)

Language of the course: English

| | | |
|--------------|---|--|
| Mar 17 (Fri) | Arrival at Daejeon, check-in at the Hotel Graytone | |
| Mar 18 (Sat) | Orientation Session | 10:00-17:00 |
| Mar 19 (Sun) | Free | |
| Mar 20 (Mon) | Opening & Metrology in General (MiG) | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| 08:30-09:00 | From Hotel to KRIS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:00-09:45 | Greetings and Introduction to KRIS and the GMA Course | |
| 10:00-10:30 | Opening ceremony | Admin. Bldg (Conference RM, 2nd floor) |
| 10:30-12:30 | MiG-01: National Standards System in Korea-quality infrastructure | Prof. Dr. Gun-Woong BAHNG, SUNY KOREA |
| 12:30-14:00 | Lunch | KRIS cafeteria (2nd floor) |
| 14:00-16:00 | MiG-02: QMS, why and for what: management/technical requirements (ISO/IEC 17025) | Dr. Hun-Young SO, SHIMADZU, Korea |
| 16:00-17:00 | MiG-03: QMS in Practice at KRIS | Dr. Jongseon PARK, KRIS |
| 17:00-17:30 | From KRIS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| Mar 21 (Tue) | Metrology in General (MiG) | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| 08:30-09:00 | From Hotel to KRIS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:00 | MiG-04: KC-CMC-Traceability in Measurement | Dr. Chu-Shik KANG, KRIS |
| 11:00-11:30 | Tea break | |
| 11:30-12:30 | MiG-05: Uncertainty in Measurement | Dr. Jong Oh CHOI, KRIS |
| 12:30-14:00 | Lunch | KRIS cafeteria (floor 2) |
| 14:00-17:00 | MiG-05: Uncertainty in Measurement (including exercises) | Dr. Jong Oh CHOI, KRIS |
| 17:00-17:30 | From KRIS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| MRQ-01 | Mass | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Mar 22 (Wed) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRIS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:30 | [MRQ-01-L-1] Traceability of Mass Standard | Dr. Sungjun LEE |
| 10:30-11:00 | Tea break | |
| 11:00-12:30 | [MRQ-01-L-2] Calibration of Weights and Evaluation of Uncertainty | Dr. Sungjun LEE |
| 12:30-14:00 | Lunch | KRIS cafeteria (2nd floor) |
| 14:00-17:00 | [MRQ-01-H-1] Practice (in two groups) - Handling of weight and balance - Calibration of weights | Dr. Sungjun LEE Mr. Kwang Pyo KIM/Dr. Sungjun LEE |
| 17:00-17:30 | From KRIS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| MRQ-01 | Mass | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Mar 23 (Thu) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRIS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:40 | [MRQ-01-L-3] Calibration of Electronic Balances | Dr. Sungjun LEE |
| 10:40-11:10 | Tea break | |
| 11:10-12:30 | [MRQ-01-L-4] Weighing Design | Dr. Sungjun LEE |
| 12:30-14:00 | Lunch | KRIS cafeteria (2nd floor) |
| 14:00-17:00 | [MRQ-01-H-2] Practice (in two groups) - Calibration of electronic balances and evaluation of uncertainty - Weighing design | Mr. Kwang Pyo KIM/Dr. Sungjun LEE Dr. Sungjun LEE |
| 17:00-17:30 | From KRIS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| Mar 24 (Fri) | Technical Visit and Cultural Experience | GMA |
| 07:30-17:00 | Korea Testing Certification (KTC), Gyeong-Bok-gung Palace (* ride to be offered by KRIS) | * staying overnight at Seoul |
| Mar 25 (Sat) | Cultural Experience | GMA |
| 10:00-14:00 | Historical sites & cultural attractions (Insa-dong, Myeong-dong) | * ride to be offered by KRIS |
| 14:00-16:00 | From Seoul to Daejeon (The Hotel Graytone) | |
| Mar 26 (Sun) | Free | |

| MRQ-02 | | Density | Tech. Service Bldg (Seminar RM #1, 1st floor) |
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| Mar 27 (Mon) | Lectures (L), Hands-on Exercises (H) | | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| 09:30-10:30 | [MRQ-02-L-1] Density Measurement Standards in KRISS | | Dr. Yong Jae LEE |
| 10:30-11:00 | Tea break | | |
| 11:00-12:00 | [MRQ-02-L-2] Density Measurement of Liquid and Solid | | Dr. Yong Jae LEE |
| 12:00-13:30 | Lunch | | KRISS cafeteria (2nd floor) |
| 13:30-14:30 | [MRQ-02-H-1] Practice: Demonstration of density measurement equipment in KRISS | | Dr. Yong Jae LEE |
| 14:30-15:00 | Tea break | | |
| 15:00-17:00 | [MRQ-02-H-2] Practice (in two groups) - Density measurement of liquid and solid (hydrostatic weighing system) | | Dr. Yong Jae LEE |
| 17:00-17:30 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| MRQ-03 | | Force & Torque | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Mar 28 (Tue) | Lectures (L), Hands-on Exercises (H) | | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| 09:30-10:30 | [MRQ-03-L-1] Maintenance and Dissemination of Force Standards | | Dr. Min-Seok KIM |
| 10:30-11:00 | Tea break | | |
| 11:00-12:00 | [MRQ-03-L-2] Calibration of Force Measuring Devices | | Dr. Min-Seok KIM |
| 12:00-13:30 | Lunch | | KRISS cafeteria (2nd floor) |
| 13:30-15:00 | [MRQ-03-L-3] Calibration of Tension/Compression Testing Machine | | Dr. Jong-Ho KIM |
| 15:00-15:30 | Tea break | | |
| 15:30-17:00 | [MRQ-03-H-1] Practice (in two groups) - Calibration of tension/compression testing machine | | Dr. Jeong-Tae LEE / Mr. Ho-Young LEE |
| 17:00-17:30 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| MRQ-03 | | Force & Torque | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Mar 29 (Wed) | Lectures (L), Hands-on Exercises (H) | | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| 09:30-10:30 | [MRQ-03-L-4] Maintenance and Dissemination of Torque Standards | | Dr. Min-Seok KIM |
| 10:30-11:00 | Tea break | | |
| 11:00-12:00 | [MRQ-03-L-5] Calibration of Torque Measuring Devices | | Dr. Min-Seok KIM |
| 12:00-13:30 | Lunch | | KRISS cafeteria (2nd floor) |
| 13:30-16:30 | [MRQ-03-H-2] Practice (in two groups) - Calibration of force/torque measuring device | | Mr. Ho-Young LEE / Mr. Jin-Seok JANG |
| 16:30-17:00 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| 18:15-18:30 | From the Hoel to the Restaurant "La Fiesta" | | walking distance (five minutes) |
| 18:30-20:30 | Farewell dinner | | "La Fiesta" (to be confirmed) |
| 20:30-20:45 | Return to Hotel | | GMA (Sangwook Seo) |
| Mar 30 (Thu) | | Evaluation Test, Individual Lab Visits, Action Plan Development | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| 09:30-11:00 | [Performance Evaluation Test] | | |
| 11:00-12:30 | [Individual Visits to Laboratories of further interest] - Q&A on matters of further interest to participants, including their Action Plans | | participants will be divided into different groups by the subject of individual interest. |
| 12:30-14:00 | Lunch | | KRISS cafeteria (2nd floor) |
| 14:00-16:00 | Elaboration/Presentations of Action plans | | Participants, GMA |
| 16:00-17:00 | Presentation of UST (University of Science and Technology) | | UST |
| 17:00-17:30 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| Mar 31 (Fri) | | Wrap-up & Closing | Admin. Bldg (Conference RM, 2nd floor) |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| 09:30-11:00 | Evaluation of the course (written & oral) | | GMA |
| 11:00-11:30 | Closing ceremony (certificate awarding) | | |
| 11:30-13:00 | Lunch | | KRISS cafeteria (2nd floor) |
| 13:00-13:30 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | | GMA (Sangwook Seo) |
| Apr 1 (Sat) | | Departure (March 31 - April 1) | * depending the flight itinerary of participants |
| <p>* Participants are supposed to take the airport limousine bus bound for Incheon airport. * Ride to the bus stop near the Hotel Graytone will be provided by the Hotel Graytone in cooperation with GMA, KRISS. Dress code: Smart casual (course sessions), Traditional costumes (for the farewell dinner on March 29) ☺ Participants are recommended to get dressed with their traditional costumes at the farewell dinner scheduled on the evening of March 29 (Wed). ☺ Singing, dancing, and any other type of performance by every participant are strongly encouraged! "Carpe diem!"</p> | | | |
| Contact Points For applications and any further information about participation in the course, please contact: | | | |

Sangwook SEO, Senior Coordinator, Global Metrology Academy (GMA), KRISS swseo@kriss.re.kr

Jinyoung LEE, Coordinator, Global Metrology Academy (GMA), KRISS jyoung042@kriss.re.kr

☐ Qualification

1. The applicant should be duly 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) or measurement service laboratory at the time of application.
3. The applicant should be engaged in R&D and services in the areas of metrology in mass and related quantities (MRQ).
4. The applicant should be a university/college graduate or have equivalent professional career and knowledge on theme of the course (MRQ).
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 accepted by January 20, 2017, along 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 six (6) months as of the expected date of arrival at Korea (March 17, 2017);
4. **Laboratory report and Action Plan**: Selected participants are supposed to submit their laboratory reports and draft 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 GMA group course will be operated with around 12 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 ten (10) 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.

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| 1. Tuition fees | <p>① Amount: US\$500/US\$1,000 per person</p> <ul style="list-style-type: none"> ☞ Two different categories of the tuition fees are applicable according to the economic performance of the applicant's country. ☞ Please contact the coordinator, <u>BEFORE making applications, to get confirmed of the tuition fee category applicable for you.</u> |
| 2. Banking information | <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"> ☞ Payment should be made by February 20, 2017 which will make the application complete. ☞ 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 <u>net amount of tuition fees (US\$500 or US\$1,000) could be received by KRISS</u>. <p>Official bank account of KRISS</p> <ul style="list-style-type: none"> - Bank name: Kook-Min Bank (Branch: Yuseong Branch) - Swift code: CZNBRKSE - Account number: 461-01-0184-494 - Account holder's name: Korea Research Institute of Standards and Science (KRIS) - Bank address: 1F, #468-3, Bongmyeong-dong, Yuseong-gu, Daejeon, Republic of Korea <ul style="list-style-type: none"> ☞ invoices will not be issued separately if otherwise requested. (* Receipts might be issued upon the participant's arrival at KRISS.) ☞ <u>The statement of bank transfer should be sent to KRISS either by Email (swseo@kriss.re.kr) or FAX (+82-42-868-5565) with attention to the GMA course coordinator</u> |
| 2. Living expenses | <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. Lunch for ten (10) 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"> ☞ Participants are advised to bring some pocket money of their own for incidental expenses. <p>It is likely that participants will stay at the Hotel Graytone, Dunsan in Daejeon. (http://www.graytone.co.kr/) The room rate (around US\$55 per night per room) includes breakfast, tax, and service charge.</p> |
| 3. Airline tickets | <p>Participants and their employers are responsible for purchasing the airline tickets for the participants.</p> |
| 4. Local Transportation | <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"> ☞ Participants are requested to advise the course coordinator of their flight itinerary to and from Korea AS SOON AS Possible. <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"> ☞ The bus tickets (around US\$23 one way) are to be bought by the participants. ☞ 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. |

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 KRIS and their sponsors, and by 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 KRIS.
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 KRIS, **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.**

**To be a most
Productive & Friendly
Partner in Metrology HRD**

FOR
THE metrologists of
NEXT generations

Contact Points

For any further information about participation in the subject course and GMA programs, please contact:

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|---|---|
| Sangwook SEO (Coordinator) Senior Coordinator, Global Metrology Academy (GMA), KRIS | swseo@kriss.re.kr TEL + 82-42-868-5440 Fax + 82-42-868-5565 |
| Ms. Jinyoung LEE Coordinator, Global Metrology Academy (GMA), KRIS | jyoung0425@kriss.re.kr TEL + 82-42-868-5531 Fax + 82-42-868-5565 |

Theme: Metrology in Length and Dimensional Measurement (LDM)

Dates: May 22 (Mon) - June 2 (Fri), 2017

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

Organized by: Global Metrology Academy (GMA), KRISs

Overview

[GMA-GT-2017-02-LDM]

Applications: by March 17, 2017

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 national quality infrastructure of the nation. The course [GMA-GT-2017-02-LDM] is the second one scheduled to be offered in 2017. Its main theme is metrology in Length and Dimensional Measurement (LDM), to be presented in four (4) technical modules covering the key elements of length standards, angle and straightness, gauge block and length measuring devices, and laser dimensional metrology.

With its main target audience of **intermediate level** of metrologists, the LDM course will deliver the concepts of the traceability and measurement standards along with other key subjects of metrology in LDM that participants need to obtain for their future career as leaders in their local and global metrology communities.

As an effort to yield as much practical benefits as possible for participants, every session of the LDM course is strategically designed that technical lectures are effectively combined with hands-on laboratory sessions to follow. By the end of the course, participants might have better understanding of basic knowledge, skills, and information as up to dated on the key elements of metrology in LDM. It will enable them to offer better measurement services for their customers. In addition, participants will be given a two-day session of metrology in general (MiG) to learn selected fundamental subjects of metrology, such as national standards system - quality infrastructure, QMS (ISO/IEC 17025), and the CIPM MRA requirements covering key comparison (KC), calibration and measurement capabilities (CMC), traceability and uncertainty in measurement.

Outline of Course program [* *subject to modification!*]

| Modules | Subjects | Chief Lecturers |
|------------------------------|---|---|
| Orientation | Introduction and brief tour (* to be offered for participants who will arrive by Friday of the week before opening.) | GMA |
| MiG (Days 1-2) | Metrology in General - Five (5) lectures dealing with the fundamentals of metrology in general | Dr. Jong Oh CHOI (choijongoh@kriss.re.kr) |
| LDM | Metrology in Length and Dimensional Measurement - Four (4) intensive laboratory sessions with technical lectures and exercises combined | Dr. Jong-Ahn KIM (jakim@kriss.re.kr) |
| LDM-01 (Day 3) | Introduction to Length Standards | Dr. Jae Wan KIM (jaewan@kriss.re.kr) |
| LDM-02 (Day 4) | Angle, Straightness | Dr. Jong-Ahn KIM (jakim@kriss.re.kr) |
| TV (Days 5-6) | Technical Visit and Cultural Experience | GMA |
| LDM-03 (Days 8-9) | Gauge Block and Length Measuring Instruments | Dr. Chu-Shik KANG (cshkang@kriss.re.kr) Dr. Tae Bong EOM (tbeom@kriss.re.kr) |
| LDM-04 (Day10) | Laser Dimensional Metrology | Dr. Jonghan JIN (jonghan@kriss.re.kr) |
| LDM (Days 11-12) | Performance Test, Individual Lab Visits, Wrap-up & Closing | Center for Length (GMA) |

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

Knowledge
and skills to
be obtained

At the end of the course, participants will become familiar with fundamental knowledge and skills on the key subjects of measurement standards, traceability, calibration and uncertainty in the fields of metrology in length and dimensional measurement along with the key length measurement devices. Intensive laboratory sessions (ILS) are effectively combined with lectures and hands-on exercises in ways that allow participants to obtain basic skills required for offering quality services for customers. A two-day session of metrology in general (MiG) will offer participants broad perspectives that will help them grow up to take the leading role in advancing the nation-wide measurement system up to the international level.

Who should
attend!

Metrologists who are working on R&D and measurement services in the fields of metrology in length and dimensional metrology.

Applications

Applications to be accepted: by March 17, 2017

Contact Point: Application and Inquiry

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

Sangwook SEO, Senior Coordinator, Global Metrology Academy (GMA), KRISs

swseo@kriss.re.kr

Modules, Lectures, Hands-on Exercises

* subject to modifications

| | | |
|---|--|---|
| May 19 (Fri) | Arrival at Daejeon, check-in at the Hotel Graytone in Daejeon | recommended date of arrival at Daejeon, Korea |
| May 20 (Sat) | Orientation Session | 10:00-17:00 (provisional) |
| May 21 (Sun) | Free | |
| MiG | Metrology in General: fundamentals of metrology and quality | May 22 (Mon) - 23 (Tue) |
| | Five (5) lectures and exercises (uncertainty evaluation) | Lecturers |
| DAY 1 (Mon) May 22 | MiG-01 National standards system in Korea-quality infrastructure | Prof. Dr. Gun-Woong BAHNG, SUNY KOREA |
| | MiG-02 QMS, why and for what: management/technical requirements (ISO/IEC 17025) | Dr. Hun-Young SO, SHIMADZU, Korea |
| | MiG-03 QMS in Practice at KRISs | Dr. Jongseon PARK, KRISs |
| DAY 2 (Tue) May 23 | MiG-04 KC-CMC-Traceability in Measurement | Dr. Chu-Shik KANG, KRISs |
| | MiG-05 Uncertainty in Measurement (including exercises) | Dr. Jong Oh CHOI, KRISs |
| * ISO/IEC 17025: 2005 General requirements for the competence of testing and calibration laboratories | | |
| LDM | Metrology in Length and Dimensional Measurement | May 24 (Wed) - 25 (Thu), May 29 (Mon) - 31 (Thu) |
| | Intensive Laboratory Session (ILS) with lectures and exercises | (L) Lecture, (H) Hands-on exercises |
| LDM-01 | INTRODUCTION OF LENGTH STANDARDS | May 24 (Wed) |
| DAY 3 (Wed) May 24 | [LDM-01-L-1] Length Standards and Traceability | Dr. Cheon Il EOM (cieom@kriss.re.kr) |
| | [LDM-01-L-2] Uncertainty Evaluation of Length Measurement | Dr. Cheon Il EOM |
| | [LDM-01-L-3] Laser Frequency Standards and Calibration | Dr. Ho Suhng SUH (hssuh@kriss.re.kr) |
| | [LDM-01-H-1] Practice: Calibration of Laser Frequency Standards and laser interferometer | Dr. Ho Suhng SUH, Dr. Tae Bong Eom |
| LDM-02 | ANGLE, STRAIGHTNESS | May 25 (Thu) |
| DAY 4 (Thu) May 25 | [LDM-02-L-1] Angle | Dr. Jae Wan KIM (jaewan@kriss.re.kr) |
| | [LDM-02-L-2] Straightness, Flatness, Squareness | Dr. Jong Ahn KIM (jakim@kriss.re.kr) |
| | [LDM-02-H-1] Practice: Calibration of Angle, Straightness, Flatness, Squareness | Dr. Jae Wan KIM, Dr. Jong Ahn KIM |
| DAY 5 (Fri) May 26 | Technical Visit and Cultural Experience | GMA (staying overnight in Seoul) |
| DAY 6 (Sat) May 27 | Cultural Experience in Seoul | Coming down to Daejeon |
| DAY 7 (Sun) May 28 | Free | |
| LDM-03 | GAUGE BLOCK AND LENGTH MEASURING INSTRUMENTS | May 29 (Mon) |
| DAY 8 (Mon) May 29 | [LDM-03-L-1] Gauge Block | Dr. Chu-Shik KANG (cshkang@kriss.re.kr) |
| | [LDM-03-H-1] Practice: Calibration of Gauge Blocks | Dr. Chu-Shik KANG, Ms. Myung Soon KIM |
| | [LDM-03-L-2] Roundness | Dr. Jungjae PARK (jungjae.park@kriss.re.kr) |
| LDM-03 | GAUGE BLOCK AND LENGTH MEASURING INSTRUMENTS | May 30 (Tue) |
| DAY 9 (Tue) May 30 | [LDM-03-L-3] Length Measuring Instruments | Dr. Tae Bong EOM (tbeom@kriss.re.kr) |
| | [LDM-03-H-2] Practice: Calibration of Length Measuring Instruments | Dr. EOM, Dr. Jungjae PARK, Mr. Don Young JEONG |
| LDM-04 | LASER DIMENSIONAL METROLOGY | May 31 (Wed) |
| DAY 10 (Wed) May 31 | [LDM-04-L-1] Surface Texture | Dr. Jonghan JIN (jonghan@kriss.re.kr) |
| | [LDM-04-L-2] Laser-Applied Dimensional Measurement | Dr. Jae Heun WOO (jhwoo@kriss.re.kr) |
| | [LDM-04-H-1] Practice: Surface Texture/Laser-applied Dimensional Measurement | Dr. Jonghan JIN, Dr. Jae Heun WOO |
| LDM | Performance Evaluation Test, Individual Lab Visits | June 1 (Thu) |
| DAY 11 (Thu) Jun 1 | [Performance Evaluation Test] | GMA |
| | [Individual Visits to Laboratories] | Cener for Length |
| | [Development/Presentation of Action Plans] | Participants, GMA |
| | [UST presentation] | UST |
| LDM | Wrap-up and Closing | June 2 (Fri) |
| DAY 12 (Fri) Jun 2 | Evaluation of the Course (written & oral) | Participants, GMA |
| | Closing Session (certificate awarding) | Participants |
| June 3 (Sat) | Departure: June 2 (Fri) - 3 (Sat) | * Depending on the flight itinerary |

Daily Program (Provisional)

Language of the course: **English**

| | | |
|---------------------|---|--|
| May 19 (Fri) | Arrival at Daejeon, check-in at the Hotel Graytone | |
| May 20 (Sat) | Orientation Session | 10:00-17:00 |
| May 21 (Sun) | Free | |
| May 22 (Mon) | Opening & Metrology in General (MiG) | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:00-09:45 | Greetings and Introduction to KRISs and the GMA Course | |
| 10:00-10:30 | Opening ceremony | Admin. Bldg (Conference RM, 2nd floor) |
| 10:30-12:30 | MiG-01: National Standards System in Korea-quality infrastructure | Prof. Dr. Gun-Woong BAHNG, SUNY KOREA |
| 12:30-14:00 | Lunch | KRISs cafeteria (2nd floor) |
| 14:00-16:00 | MiG-02: QMS, why and for what: management/technical requirements (ISO/IEC 17025) | Dr. Hun-Young SO, SHIMADZU, Korea |
| 16:00-17:00 | MiG-03: QMS in Practice at KRISs | Dr. Jongseon PARK, KRISs |
| 17:00-17:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| May 23 (Tue) | Metrology in General (MiG) | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:00 | MiG-04: KC-CMC-Traceability in Measurement | Dr. Chu-Shik KANG, KRISs |
| 11:00-11:30 | Tea break | |
| 11:30-12:30 | MiG-05: Uncertainty in Measurement | Dr. Jong Oh CHOI, KRISs |
| 12:30-14:00 | Lunch | KRISs cafeteria (floor 2) |
| 14:00-17:00 | MiG-05: Uncertainty in Measurement (including exercises) | Dr. Jong Oh CHOI, KRISs |
| 17:00-17:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| LDM-01 | Introduction to Length Standards | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| May 24 (Wed) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:30 | [LDM-01-L-1] Length Standards and Traceability | Dr. Cheon Il EOM |
| 10:30-11:00 | Tea break | |
| 11:00-12:30 | [LDM-01-L-2] Uncertainty Evaluation of Length Measurement | Dr. Cheon Il EOM |
| 12:30-14:00 | Lunch | KRISs cafeteria (2nd floor) |
| 14:00-15:30 | [LDM-01-L-3] Laser Frequency Standards and Calibration | Dr. Ho Suhng SUH |
| 15:30-17:00 | [LDM-01-H-1] Practice (in two groups) - Calibration of Laser Frequency Standards and laser interferometer | Dr. Ho Suhng SUH, Dr. Tae Bong EOM |
| 17:00-17:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| LDM-02 | Angle, Straightness | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| May 25 (Thu) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:45 | [LDM-02-L-1] Angle | Dr. Jae Wan KIM |
| 10:45-11:15 | Tea break | |
| 11:15-12:30 | [LDM-02-L-2] Straightness, Flatness, Squareness | Dr. Jong-Ahn KIM |
| 12:30-14:00 | Lunch | KRISs cafeteria (2nd floor) |
| 14:00-17:00 | [LDM-02-H-1] Practice (in two groups) - Angle, Straightness, Flatness, Squareness | Dr. Jae Wan KIM, Dr. Jong-Ahn KIM |
| 17:00-17:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| May 26 (Fri) | Technical Visit and Cultural Experience | GMA |
| 07:30-17:00 | Korea Testing Certification (KTC), Gyeong-Bok-gung Palace (* ride to be offered by KRISs) | * staying overnight at Seoul |
| May 27 (Sat) | Cultural Experience | GMA |
| 10:00-14:00 | Historical sites & cultural attractions (Insa-dong, Myeong-dong) | * ride to be offered by KRISs |
| 14:00-16:00 | From Seoul to Daejeon (The Hotel Graytone) | |
| May 28 (Sun) | Free | |

| LDM-03 | Gauge Block and Length Measuring Instruments | Tech. Service Bldg (Seminar RM #1, 1st floor) |
|---------------------|--|---|
| May 29 (Mon) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-12:30 | [LDM-03-L-1] Gauge Blocks | Dr. Chu-Shik KANG, KRISS |
| 12:30-14:00 | Lunch | KRISS cafeteria (2nd floor) |
| 14:00-15:30 | [LDM-03-H-1] Practice (in two groups) - Gauge blocks | Dr. Chu-Shik KANG, Ms. Myung Soon KIM |
| 15:30-16:00 | Tea break | |
| 16:00-17:00 | [LDM-03-L-2] Roundness | Dr. Jungjae PARK |
| 17:00-17:30 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| LDM-03 | Gauge Block and Length Measuring Instruments | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| May 30 (Tue) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:30 | [LDM-03-L-3] Length Measuring Instruments | Dr. Tae Bong EOM |
| 11:45-12:30 | [LDM-03-H-2] Practice (in two groups) - Calibration of Length Measuring Instruments | Dr. EOM, Dr. Jungjae PARK, Mr. Don Young JEONG |
| 12:30-14:00 | Lunch | KRISS cafeteria (2nd floor) |
| 14:00-17:00 | [LDM-03-H-2] Practice (Continued) - Calibration of Length Measuring Instruments | Dr. EOM, Dr. Jungjae PARK, Mr. Don Young JEONG |
| 17:00-17:30 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| LDM-04 | Laser Dimensional Metrology | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| May 31 (Wed) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:45 | [LDM-04-L-1] Surface Texture | Dr. Jonghan JIN |
| 10:45-11:15 | Tea break | |
| 11:15-12:30 | [LDM-04-L-2] Laser-Applied Length Measurement | Dr. Jae Heun WOO |
| 12:00-13:30 | Lunch | KRISS cafeteria (2nd floor) |
| 13:30-16:30 | [LDM-04-H-1] Practice (in two groups) - Surface texture, Laser interferometer | Dr. Jonghan JIN, Dr. Jae Heun WOO |
| 16:30-17:00 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 18:15-18:30 | From the Hoel to the Restaurant "La Fiesta" | walking distance (five minutes) |
| 18:30-20:30 | Farewell dinner | "La Fiesta" (to be confirmed) |
| LDM | Performance Evaluation Test, Individual Lab Visits | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| June 1 (Thu) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:00 | [Performance Evaluation Test] | |
| 11:00-12:30 | [Individual Visits to Laboratories of further interest] - Q&A on matters of further interest to participants, including their Action Plans | participants will be divided into different groups by the subject of individual interest. |
| 12:30-14:00 | Lunch | KRISS cafeteria (2nd floor) |
| 14:00-16:00 | Elaboration/Presentations of Action plans | Participants, GMA |
| 16:00-17:00 | Presentation of UST (University of Science and Technology) | UST |
| 17:00-17:30 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| June 2 (Fri) | Wrap-up & Closing | Admin. Bldg (Conference RM, 2nd floor) |
| 08:30-09:00 | From Hotel to KRISS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:00 | Evaluation of the course (written & oral) | GMA |
| 11:00-11:30 | Closing ceremony (certificate awarding) | |
| 11:30-13:00 | Lunch | KRISS cafeteria (2nd floor) |
| 13:00-13:30 | From KRISS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| June 3 (Sat) | Departure (June 2 - 3) | * depending the flight itinerary of participants |

* Participants are supposed to take the airport limousine bus bound for Incheon airport.

* Ride to the bus stop near the Hotel Graytone will be provided by the Hotel Graytone in cooperation with GMA, KRISS.

Dress code: Smart casual (course sessions), Traditional costumes (for the farewell dinner)

☺ Participants are recommended to get dressed with their traditional costumes at the farewell dinner scheduled on the evening of May 31 (Wed).

☺ Singing, dancing, and any other type of performance by every participant are strongly encouraged! "Carpe diem!"

☐ Qualification

1. The applicant should be duly 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) or measurement service laboratory at the time of application.
3. The applicant should be engaged in R&D and services in the areas of length and dimensional metrology (LDM).
4. The applicant should be a university/college graduate or have equivalent professional career and knowledge on theme of the course (LDM).
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 accepted by March 17, 2017, along 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 six (6) months as of the expected date of arrival at Korea (May 19, 2017);
4. **Laboratory report and Action Plan**: Selected participants are supposed to submit their laboratory reports and draft 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 GMA group course will be operated with around 10 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 ten (10) 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.

| | |
|--------------------------------|--|
| 1. Tuition fees | <p>① Amount: US\$500/US\$1,000 per person</p> <ul style="list-style-type: none"> ☞ Two different categories of the tuition fees are applicable according to the economic performance of the applicant's country. ☞ Please contact the coordinator, BEFORE making applications, to get confirmed of the tuition fee category applicable for you. |
| 2. Banking information | <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"> ☞ Payment should be made by April 20, 2017 which will make the application complete. ☞ 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 <u>net amount of tuition fees (US\$500 or US\$1,000) could be received by KRISS</u>. <p>Official bank account of KRISS</p> <ul style="list-style-type: none"> - Bank name: Kook-Min Bank (Branch: Yuseong Branch) - Swift code: CZNBKRSE - Account number: 461-01-0184-494 - Account holder's name: Korea Research Institute of Standards and Science (KRISS) - Bank address: 1F, #468-3, Bongmyeong-dong, Yuseong-gu, Daejeon, Republic of Korea <ul style="list-style-type: none"> ☞ invoices will not be issued separately if otherwise requested. (* Receipts might be issued upon the participant's arrival at KRISS.) ☞ <u>The statement of bank transfer should be sent to KRISS either by Email (swseo@kriss.re.kr) or FAX (+82-42-868-5565) with attention to the GMA course coordinator.</u> |
| 2. Living expenses | <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.</p> <p>Lunch for ten (10) 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"> ☞ Participants are advised to bring some pocket money of their own for incidental expenses. <p>It is likely that participants will stay at the Hotel Graytone, Dunsan in Daejeon. (http://www.graytone.co.kr/)</p> <p>The room rate (around US\$55 per night per room) includes breakfast, tax, and service charge.</p> |
| 3. Airline tickets | <p>Participants and their employers are responsible for purchasing the airline tickets for the participants.</p> |
| 4. Local Transportation | <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"> ☞ Participants are requested to advise the course coordinator of their flight itinerary to and from Korea AS SOON AS Possible. <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"> ☞ The bus tickets (around US\$23 one way) are to be bought by the participants. ☞ 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. |

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 by 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.**

**To be a most
Productive & Friendly
Partner in Metrology HRD**

FOR
THE metrologists of
NEXT generations

Applications and Inquiry!

For any further information about participation in the subject course and GMA programs, please contact:

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|--|---|
| Sangwook SEO (Coordinator) Senior Coordinator, Global Metrology Academy (GMA), KRISS | swseo@kriss.re.kr TEL + 82-42-868-5440 Fax + 82-42-868-5565 |
| Ms. Jinyoung LEE Coordinator, Global Metrology Academy (GMA), KRISS | jyoung0425@kriss.re.kr TEL + 82-42-868-5531 Fax + 82-42-868-5565 |



Theme: Metrology in Thermometry and Humidity (TH)

Dates: Aug 21 (Mon) - Sept 1 (Fri), 2017)* *dates rescheduled!!*

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

Organized by: Global Metrology Academy (GMA), KRISS

Overview

[GMA-GT-2017-03-TH]

Applications: by June 16, 2017

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 national quality infrastructure of the nation. The course [GMA-GT-2017-03-TH] is the third one scheduled to be offered in 2017. Its main theme is metrology in Thermometry and Humidity (TH), to be presented in three (3) technical modules covering the key elements of SPRT Thermometry, Thermocouple Thermometry, and Humidity and Moisture.

With its main target audience of **intermediate level** of metrologists, the TH course will deliver the concepts of the traceability and measurement standards along with other key subjects of metrology in TH that participants need to obtain for their future career as leaders in their local and global metrology communities.

As an effort to yield as much practical benefits as possible for participants, every session of the TH course is strategically designed that technical lectures are effectively combined with hands-on laboratory sessions to follow. By the end of the course, participants might have better understanding of basic knowledge, skills, and information as up to dated on the key elements of metrology in TH. It will enable them to offer better measurement services for their customers. In addition, participants will be given a two-day session of metrology in general (MiG) to learn selected fundamental subjects of metrology, such as national standards system - quality infrastructure, QMS (ISO/IEC 17025), and the CIPM MRA requirements covering key comparison (KC), calibration and measurement capabilities (CMC), traceability and uncertainty in measurement.

Outline of Course program [* subject to modification!]

| Modules | Subjects | Chief Lecturers |
|------------------------------|--|---|
| Orientation | Introduction and brief tour (* to be offered for participants who will arrive by Friday of the week before opening.) | GMA |
| MiG (Days 1-2) | Metrology in General - Five (5) lectures dealing with the fundamentals of metrology in general | Dr. Jong Oh CHOI (choijongoh@kriss.re.kr) |
| TH | Metrology in Thermometry and Humidity - Three (3) intensive laboratory sessions with technical lectures and exercises combined | Dr. Wukchul JOUNG (wukchul.joung@kriss.re.kr) |
| TH-01 (Days 3-4) | SPRT Thermometry | Dr. Wukchul Joung |
| TV (Days 5-6) | Technical Visit and Cultural Experience | GMA |
| TH-02 (Day 8) | Thermocouple Thermometry | Dr. Yong-Gyoo Kim |
| TH-03 (Days 9-10) | Humidity and Moisture | Dr. Byungil Choi |
| TH (Days 11-12) | Performance test, Individual lab visits, Wrap-up & Closing | Center for Thermometry (GMA) |

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

Knowledge and skills to be obtained

Who should attend!

Applications

At the end of the course, participants will become familiar with fundamental knowledge and skills on the key subjects of measurement standards, traceability, calibration and uncertainty in the fields of metrology in thermometry and humidity along with the key measuring instruments. Intensive laboratory sessions (ILS) are effectively combined with lectures and hands-on exercises in ways that allow participants to obtain basic skills required for offering quality services for customers. A two-day session of metrology in general (MiG) will offer participants broad perspectives that will help them grow up to take the leading role in advancing the nation-wide measurement system up to the international level.

Metrologists who are working on R&D and measurement services in the fields of metrology in thermometry and humidity.

Applications to be accepted: by June 16, 2017

Contact Point: Application and Inquiry

For applications and further information about participation in the course, please contact:
Sangwook SEO, Senior Coordinator, Global Metrology Academy (GMA), KRISS

swseo@kriss.re.kr

Program Overview: Modules, Lectures, Hands-on Exercises * subject to modifications

| | | |
|--|--|---|
| Aug 18 (Fri) | Arrival at Daejeon, check-in at the Hotel Graytone in Daejeon | recommended date of arrival at Daejeon, Korea |
| Aug 19 (Sat) | Orientation Session | 10:00-17:00 (provisional) |
| Aug 20 (Sun) | Free | |
| MiG | Metrology in General: fundamentals of metrology and quality | Aug 21 (Mon) - 22 (Tue) |
| | Five (5) lectures and exercises (uncertainty evaluation) | Lecturers |
| DAY 1 (Mon) Aug 21 | MiG-01 National standards system in Korea-quality infrastructure | Prof. Dr. Gun-Woong BAHNG, SUNY KOREA |
| | MiG-02 QMS, why and for what: management/technical requirements (ISO/IEC 17025) | Dr. Hun-Young SO, SHIMADZU, Korea |
| | MiG-03 QMS in Practice at KRISs | Dr. Jongseon PARK, KRISs |
| DAY 2 (Tue) Aug 22 | MiG-04 KC-CMC-Traceability in Measurement | Dr. Chu-Shik KANG, KRISs |
| | MiG-05 Uncertainty in Measurement (including exercises) | Dr. Jong Oh CHOI, KRISs |
| <small>* ISO/IEC 17025: 2005 General requirements for the competence of testing and calibration laboratories</small> | | |
| TH | Metrology in Thermometry and Humidity | Aug 23(Wed) - 24(Thu), Aug 28(Mon) - 31(Thu) |
| | Intensive Laboratory Session (ILS) with lectures and exercises | (L) Lecture, (H) Hands-on exercises |
| TH-01 | SPRT THERMOMETRY | Aug 23 (Wed) |
| DAY 3 (Wed) Aug 23 | [TH-01-L-1] Introduction to Temperature | Dr. Yong-Gyoo KIM (dragon@kriss.re.kr) |
| | [TH-01-L-2] Mise en Pratique of Kelvin (ITS-90) | Dr. Wukchul JOUNG (wukchul.joung@kriss.re.kr) |
| | [TH-01-L-3] Resistance Thermometry | Dr. Wukchul JOUNG |
| | [TH-01-L-4] SPRT Calibration (including uncertainty evaluation) | Dr. Wukchul JOUNG |
| TH-01 | SPRT THERMOMETRY | Aug 24 (Thu) |
| DAY 4 (Thu) Aug 24 | [TH-01-L-4] SPRT Calibration (including uncertainty evaluation) | Dr. Wukchul JOUNG |
| | [TH-01-H-1] Practice - SPRT Calibration | Dr. Wukchul JOUNG |
| | [TH-01-H-2] Practice - Realization of TPW, Sn and Zn Fixed-Points | Dr. JOUNG, Ms. Young Hee Lee, Mr. Sunghun KIM |
| DAY 5 (Fri) Aug 25 | Technical visit and cultural tour | GMA (staying overnight in Seoul) |
| DAY 6 (Sat) Aug 26 | Cultural experience in Seoul | Coming down to Daejeon |
| DAY 7 (Sun) Aug 27 | Free | |
| TH-02 | THERMOCOUPLE THERMOMETRY | Aug 28 (Mon) |
| DAY 8 (Mon) Aug 28 | [TH-02-L-1] Introduction to Thermocouple Thermometry | Dr. Yong-Gyoo KIM (dragon@kriss.re.kr) |
| | [TH-02-H-1] Practice - Calibration of Thermocouples | Dr. Yong-Gyoo KIM, Ms. Young Hee LEE |
| TH-03 | HUMIDITY AND MOISTURE | Aug 29 (Tue) |
| DAY 9 (Tue) Aug 29 | [TH-03-L-1] Basic Theory of Humidity | Dr. Byung Il CHOI (cbi@kriss.re.kr) |
| | [TH-03-L-2] Humidity Standards | Dr. Byung Il CHOI |
| | [TH-03-L-3] Humidity Measurement and Humidity Sensors | Dr. Sang-Wook LEE (sangwook@kriss.re.kr) |
| | [TH-03-L-4] Principle and Method for Moisture Measurement | Dr. Sang-Wook LEE |
| TH-03 | HUMIDITY AND MOISTURE | Aug 30 (Wed) |
| DAY 10 (Wed) Aug 30 | [TH-03-H-1/2/3] Practice - Calibration of Dew-Point Hygrometer, RH Hygrometer, and Moisture Meters | Mr. Jong Chul KIM, Mr. Sang Bong WOO |
| | [TH-03-L-5] Uncertainty of humidity calibration | Dr. Byung Il CHOI |
| | [TH-03-H-1/2/3] Practice - Calibration of Dew-Point Hygrometer, RH Hygrometer, and Moisture Meters | Mr. Jong Chul KIM, Mr. Sang Bong WOO |
| TH | Performance Evaluation Test, Individual Lab Visits | Aug 31 (Thu) |
| DAY 11 (Thu) Aug 31 | [Performance Evaluation Test] | GMA |
| | [Individual Visits to Laboratories] | Cener for Thermometry |
| | [Development/Presentation of Action Plans] | Participants, GMA |
| | [UST presentation] | UST |
| TH | Wrap-up and Closing | Sept 1 (Fri) |
| DAY 12 (Fri) Sept 1 | Evaluation of the Course (written & oral) | Participants, GMA |
| | Closing Session (certificate awarding) | Participants |
| Sept 2 (Sat) | Departure: Sept 1(Fri) - 2(Sat) | * Depending on the flight itinerary |

Daily Program (Provisional)

Language of the course: English

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| Aug 18 (Fri) | Arrival at Daejeon, check-in at the Hotel Graytone | |
| Aug 19 (Sat) | Orientation Session | 10:00-17:00 |
| Aug 20 (Sun) | Free | |
| Aug 21 (Mon) | Opening & Metrology in General (MiG) | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| 08:30-09:00 | From Hotel to KRIS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:00-09:45 | Greetings and Introduction to KRIS and the GMA Course | |
| 10:00-10:30 | Opening ceremony | Admin. Bldg (Conference RM, 2nd floor) |
| 10:30-12:30 | MiG-01: National Standards System in Korea-quality infrastructure | Prof. Dr. Gun-Woong BAHNG, SUNY KOREA |
| 12:30-14:00 | Lunch | KRIS cafeteria (2nd floor) |
| 14:00-16:00 | MiG-02: QMS, why and for what: management/technical requirements (ISO/IEC 17025) | Dr. Hun-Young SO, SHIMADZU, Korea |
| 16:00-17:00 | MiG-03: QMS in Practice at KRIS | Dr. Jongseon PARK, KRIS |
| 17:00-17:30 | From KRIS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| Aug 22 (Tue) | Metrology in General (MiG) | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| 08:30-09:00 | From Hotel to KRIS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:00 | MiG-04: KC-CMC-Traceability in Measurement | Dr. Chu-Shik KANG, KRIS |
| 11:00-11:30 | Tea break | |
| 11:30-12:30 | MiG-05: Uncertainty in Measurement | Dr. Jong Oh CHOI, KRIS |
| 12:30-14:00 | Lunch | KRIS cafeteria (floor 2) |
| 14:00-17:00 | MiG-05: Uncertainty in Measurement (including exercises) | Dr. Jong Oh CHOI, KRIS |
| 17:00-17:30 | From KRIS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| TH-01 | SPRT Thermometry | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Aug 23 (Wed) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRIS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:30 | [TH-01-L-1] Introduction to Temperature | Dr. Yong-Gyoo KIM |
| 10:30-11:00 | Tea break | |
| 11:00-12:00 | [TH-01-L-2] Mise en Pratique of Kelvin (ITS-90) | Dr. Wukchul JOUNG |
| 12:00-13:30 | Lunch | KRIS cafeteria (2nd floor) |
| 13:30-15:00 | [TH-01-L-3] Resistance Thermometry | Dr. Wukchul JOUNG |
| 15:00-17:00 | [TH-01-L-4] SPRT Calibration (including uncertainty evaluation) | Dr. Wukchul JOUNG |
| 17:00-17:30 | From KRIS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| TH-01 | SPRT Thermometry | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Aug 24 (Thu) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRIS (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:30 | [TH-01-L-4] SPRT Calibration (including uncertainty evaluation) | Dr. Wukchul JOUNG |
| 10:30-11:00 | Tea break | |
| 11:00-12:00 | [TH-01-H-1] Practice - [Group A & B] SPRT Calibration | Dr. Wukchul JOUNG |
| 12:00-13:30 | Lunch | KRIS cafeteria (2nd floor) |
| 13:30-15:00 | [TH-01-H-2] Practice - [Group A] Realization of TPW | Dr. Wukchul JOUNG and Ms. Young Hee LEE |
| | [TH-01-H-3] Practice - [Group B] Realization of Sn and Zn Fixed-Points | Dr. Wukchul JOUNG and Mr. Sunghun KIM |
| 15:00-15:30 | Tea break | |
| 15:30-17:00 | [TH-01-H-3] Practice - [Group A] Realization of Sn and Zn Fixed-Points | Dr. Wukchul JOUNG and Mr. Sunghun KIM |
| | [TH-01-H-2] Practice - [Group B] Realization of TPW | Dr. Wukchul JOUNG and Ms. Young Hee LEE |
| 17:00-17:30 | From KRIS to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| Aug 25 (Fri) | Technical Visit and Cultural Experience | GMA |
| 07:30-17:00 | Korea Testing Certification (KTC), Gyeong-Bok-gung Palace (* ride to be offered by KRIS) | * staying overnight at Seoul |
| Aug 26 (Sat) | Cultural Experience | GMA |
| 10:00-14:00 | Historical sites & cultural attractions (Insa-dong, Myeong-dong) | * ride to be offered by KRIS |
| 14:00-16:00 | From Seoul to Daejeon (The Hotel Graytone) | |
| Aug 27 (Sun) | Free | |

| TH-02 | Thermocouple Thermometry | Tech. Service Bldg (Seminar RM #1, 1st floor) |
|---------------------|--|---|
| Aug 28 (Mon) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:30 | [TH-02-L-1] Introduction to thermocouple thermometry | Dr. Yong-Gyoo KIM |
| 10:30-11:00 | Tea break | |
| 11:00-12:00 | [TH-02-L-1] Introduction to thermocouple thermometry (continued) | Dr. Yong-Gyoo KIM |
| 12:00-13:30 | Lunch | KRISs cafeteria (2nd floor) |
| 13:30-15:00 | [TH-02-H-1] Practice - Calibration of Thermocouples | Dr. Yong-Gyoo KIM, Ms. Young Hee LEE |
| 15:00-15:30 | Tea break | |
| 15:30-17:00 | [TH-02-H-1] Practice - Calibration of Thermocouples | Dr. Yong-Gyoo KIM, Ms. Young Hee LEE |
| 17:00-17:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| TH-03 | Humidity and Moisture | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Aug 29 (Tue) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-10:30 | [TH-03-L-1] Basic Theory of Humidity | Dr. Byung Il CHOI |
| 10:30-11:00 | Tea break | |
| 11:00-12:00 | [TH-03-L-2] Humidity Standards | Dr. Byung Il CHOI |
| 12:00-13:30 | Lunch | KRISs cafeteria (2nd floor) |
| 13:30-15:00 | [TH-03-L-3] Humidity Measurement and Humidity Sensors | Dr. Sang-Wook LEE |
| 15:00-15:30 | Tea break | |
| 15:30-17:00 | [TH-03-L-4] Principle and Method for Moisture Measurement | Dr. Sang-Wook LEE |
| 17:00-17:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| TH-03 | Humidity and Moisture | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Aug 30 (Wed) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:00 | [TH-03-H-1] Practice - [Group A] Calibration of Dew-Point Hygrometer | Mr. Jong Chul KIM |
| | [TH-03-H-2] Practice - [Group B] Calibration of RH Hygrometer | Mr. Sang Bong WOO |
| 11:00-12:00 | [TH-03-L-5] Uncertainty of Humidity Calibration | Dr. Byung Il CHOI |
| 12:00-13:30 | Lunch | KRISs cafeteria (2nd floor) |
| 13:30-15:00 | [TH-03-H-3] Practice - [Group A] Calibration of Moisture Meters | Mr. Jong Chul KIM |
| | [TH-03-H-1] Practice - [Group B] Calibration of Dew-Point Hygrometer | Mr. Sang Bong WOO |
| 15:00-15:30 | Tea break | |
| 15:30-17:00 | [TH-03-H-2] Practice - [Group A] Calibration of RH Hygrometer | Mr. Jong Chul KIM |
| | [TH-03-H-3] Practice - [Group B] Calibration of Moisture Meters | Mr. Sang Bong WOO |
| 17:00-17:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 18:15-18:30 | From the Hoel to the Restaurant "La Fiesta" | walking distance (five minutes) |
| 18:30-20:30 | Farewell dinner | "La Fiesta" (to be confirmed) |
| TH | Performance Evaluation Test, Individual Lab Visits | Tech. Service Bldg (Seminar RM #1, 1st floor) |
| Aug 31 (Thu) | Lectures (L), Hands-on Exercises (H) | Hands-on session: Laboratories in charge |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:00 | [Performance Evaluation Test] | |
| 11:00-12:30 | [Individual Visits to Laboratories of further interest] - Q&A on matters of further interest to participants, including their Action Plans | participants will be divided into different groups by the subject of individual interest. |
| 12:30-14:00 | Lunch | KRISs cafeteria (2nd floor) |
| 14:00-16:00 | Elaboration/Presentations of Action plans | Participants, GMA |
| 16:00-17:00 | Presentation of UST (University of Science and Technology) | UST |
| 17:00-17:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| Sept 1 (Fri) | Wrap-up & Closing | Admin. Bldg (Conference RM, 2nd floor) |
| 08:30-09:00 | From Hotel to KRISs (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| 09:30-11:00 | Evaluation of the course (written & oral) | GMA |
| 11:00-11:30 | Closing ceremony (certificate awarding) | |
| 11:30-13:00 | Lunch | KRISs cafeteria (2nd floor) |
| 13:00-13:30 | From KRISs to Hotel (* ride offered by the Hotel Graytone) | GMA (Sangwook Seo) |
| Sept 2 (Sat) | Departure (Sept 1 - 2) | * depending the flight itinerary of participants |

* Participants are supposed to take the airport limousine bus bound for Incheon airport.

* Ride to the bus stop near the Hotel Graytone will be provided by the Hotel Graytone in cooperation with GMA, KRISs.

※ **Dress code: Smart casual (course sessions), Traditional costumes (for the farewell dinner)**

☺ Participants are recommended to get dressed with their traditional costumes at the farewell dinner scheduled on the evening of Aug 30 (Wed).

☺ Singing, dancing, and any other type of performance by every participant are strongly encouraged! "Carpe diem!"

☐ Qualification

1. The applicant should be duly 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) or measurement service laboratory at the time of application.
3. The applicant should be engaged in R&D and services in the areas of metrology in thermometry and humidity (TH).
4. The applicant should be a university/college graduate or have equivalent professional career and knowledge on theme of the course (TH).
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 accepted by June 16, 2017, along 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 six (6) months as of the expected date of arrival at Korea (Aug 18, 2017);
4. **Laboratory report and Action Plan:** Selected participants are supposed to submit their laboratory reports and draft 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 GMA group course will be operated with around 10 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 ten (10) 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.

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| 1. Tuition fees | <p>① Amount: US\$500/US\$1,000 per person</p> <ul style="list-style-type: none"> ☞ Two different categories of the tuition fees are applicable according to the economic performance of the applicant's country. ☞ Please contact the coordinator, BEFORE making applications, to get confirmed of the tuition fee category applicable for you. |
| 2. Banking information | <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"> ☞ Payment should be made by July 21, 2017 which will make the application complete. ☞ 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 net amount of tuition fees (US\$500 or US\$1,000) could be received by KRISS. <p>③ Official bank account of KRISS</p> <ul style="list-style-type: none"> - Bank name: Kook-Min Bank (Branch: Yuseong Branch) - Swift code: CZNBKRSE - Account number: 461-01-0184-494 - Account holder's name: Korea Research Institute of Standards and Science (KRIS) - Bank address: 1F, #468-3, Bongmyeong-dong, Yuseong-gu, Daejeon, Republic of Korea ☞ invoices will not be issued separately if otherwise requested. (* Receipts might be issued upon the participant's arrival at KRIS.) ☞ The statement of bank transfer should be sent to KRIS either by Email (swseo@kriss.re.kr) or FAX (+82-42-868-5565) with attention to the GMA course coordinator. |
| 2. Living expenses | <p>④ Participants are responsible for paying living expenses in Korea including accommodations and meals.</p> <p>⑤ For selected participants from the developing world, KRIS might provide free accommodations, subject to its financial availability.</p> <ul style="list-style-type: none"> ☞ Lunch for ten (10) working days will be offered free to ALL participants. <p>⑥ Please note that expenses for all other meals shall be paid by the participants.</p> <ul style="list-style-type: none"> ☞ Participants are advised to bring some pocket money of their own for incidental expenses. <p>⑦ It is likely that participants will stay at the Hotel Graytone, Dunsan in Daejeon. (http://www.graytone.co.kr/)</p> <ul style="list-style-type: none"> ☞ The room rate (around US\$55 per night per room) includes breakfast, tax, and service charge. |
| 3. Airline tickets | <p>⑧ Participants and their employers are responsible for purchasing the airline tickets for the participants.</p> |
| 4. Local Transportation | <p>⑨ The KRIS 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"> ☞ Participants are requested to advise the course coordinator of their flight itinerary to and from Korea AS SOON AS Possible. <p>⑩ The KRIS travel agent will help the participants to take the airport limousine bus bound for Daejeon.</p> <ul style="list-style-type: none"> ☞ The bus tickets (around US\$23 one way) are to be bought by the participants. ☞ 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. |

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 by 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.**

**To be a most
Productive & Friendly
Partner in Metrology HRD**

**FOR
THE metrologists of
NEXT generations**

Applications and Inquiry!

For any further information about participation in the subject course and GMA programs, please contact:

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|--|---|
| Sangwook SEO (Coordinator) Senior Coordinator, Global Metrology Academy (GMA), KRISS | swseo@kriss.re.kr TEL + 82-42-868-5440 Fax + 82-42-868-5565 |
| Ms. Jinyoung LEE Coordinator, Global Metrology Academy (GMA), KRISS | jyoung0425@kriss.re.kr TEL + 82-42-868-5531 Fax + 82-42-868-5565 |