



Sharing knowledge and experience in metrology

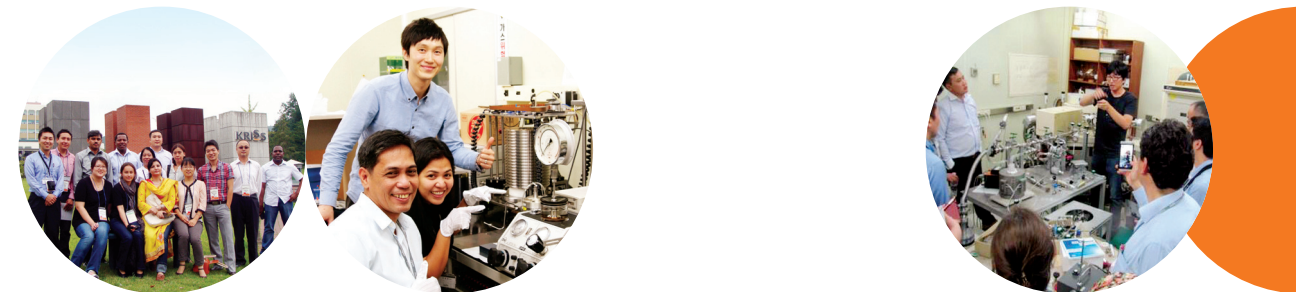
GLOBAL METROLOGY ACADEMY

Center of Excellence in Metrology HRD

Sharing knowledge and experience in metrology

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GMA: YOUR PARTNER IN METROLOGY HRD

Sharing knowledge and experience in metrology

OBJECTIVES

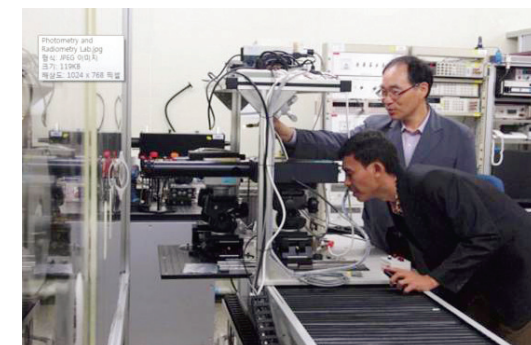
The Global Metrology Academy (GMA) is a new initiative of Korea Research Institute of Standards and Science (KRISS) that offers high quality HRD services in metrology. As a result of its extensive experiences in exchanges and collaborations with numerous valued partners, KRISS can meet the needs of the local and global metrology community with a variety of customer service programs. GMA embodies a significant portfolio that KRISS has developed in order to foster competent human resources in metrology for customers at home and abroad.



The GMA campus is located in Daejeon, 140 km south of Seoul, Korea. The campus has more than 20 buildings that house laboratories, administration, technical services, and more, on a site of 500,000 m².

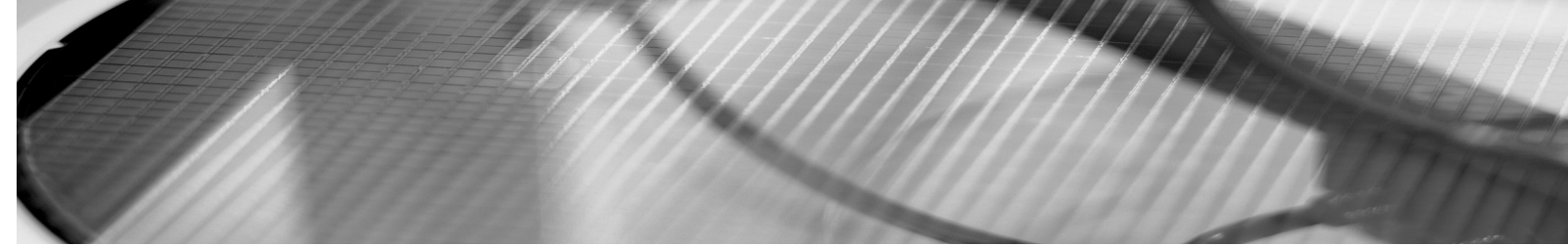
PROGRAMS

GMA provides two types of programs: technical studies that are offered on the KRISS campus and outreach services that are delivered on-site. The technical programs are presented in two different formats: group courses and individual courses. The group courses are conducted over two weeks with up to 20 participants, and the content focuses on selected themes of fundamental metrology. GMA also offers individual customer-oriented courses; these programs are tailored to meet the customer's specific needs of capacity building in metrology. Individual courses can be scheduled for periods of two weeks up to one year. These courses are developed in close consultation with the customers and their partners at KRISS in order to design the most effective programs that will lead to substantial benefits for participants. GMA also expands the scope of its services to the site of its customers. KRISS experts can visit field sites to fact-find in national measurement systems, to provide solutions, and to create action plans for customers.



KRISS metrologists who have professional careers and advanced degrees serve as lecturers and partners for the metrology HRD programs offered by GMA.

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GMA Courses 2014

Portfolio of GMA Programs

■ Courses offered at KRISS

■ Group courses

- Duration: Two-week intensive programs
- Fundamental subjects of metrology
- Lectures combined with hands-on practice

■ Individual courses

- Duration: Two weeks to one year
- Tailored programs designed to meet the specific needs of customers

■ KRISS-UST Graduate School of Metrology

- Postgraduate studies at master's and doctoral levels
- Fully funded by KRISS



■ On-site courses for customers

■ A group of KRISS experts visit customers on-site

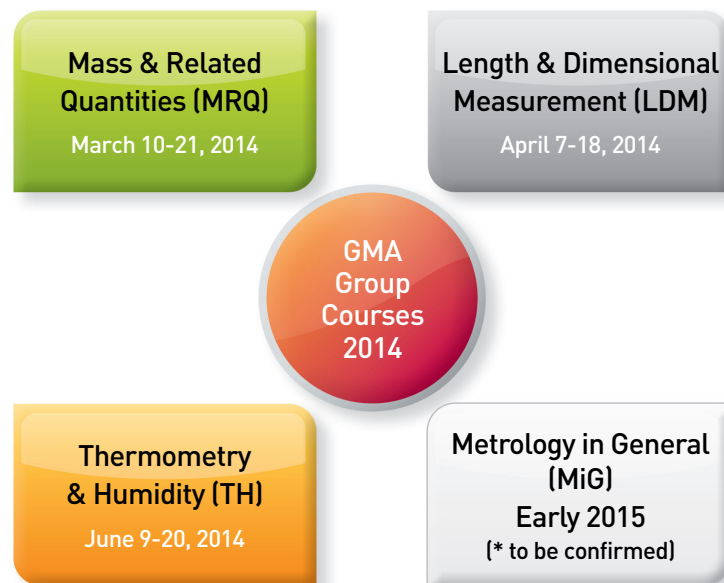
■ Tasks performed:

- Fact-finding for national measurement systems of the location
- Capability evaluation in terms of technical staff, facilities, measurement capabilities, QMS of the customers
- Locating problems and providing recommendations and action plans to resolve the problems
- On-site technical advice and training

■ Composition of experts

- 2-3 experts from senior metrologists in technical areas, QMS, uncertainty evaluation, etc.

Beginning with two courses in 2013, GMA will continue to offer group courses in 2014 including three technical courses in the fields of physical metrology: mass and related quantities (MRQ), length and dimensional measurement (LDM), and thermometry and humidity (TH). Technical courses will continue in 2015 dealing with the themes other than those covered in 2014. It is envisaged that KRISS might be ready to offer a strategic course on metrology in general (MiG) early 2015 that presents the core subjects of metrology and main issues of global metrology community.



While the technical courses are designed to help promote technical capabilities in young metrologists, the course of metrology in general (MiG) is designed for a target audience of laboratory managers, NMI directors, and high officials in governments. More details regarding the programs and applications for the GMA group courses will be announced and posted on the websites of the regional and global metrology communities, including the APMP and BIPM. For any inquiries about GMA courses, please contact Mr. Sangwook Seo at GMA/KRISS (swseo@kriss.re.kr).

Mass & Related Quantities

(MRQ) GMA-GT-2014-01

- Course dates: March 10-21, 2014
- Applications close: January 31, 2014
- Subjects covered:
 - Mass
 - Density
 - Force/Torque
 - Pressure

Daily program* (10 working days)

- Days 1-2 Metrology in general
- Days 3-4 Mass, Weights, Balances
- Day 5 Density
- Days 6-7 Force, Torque
- Day 8 Pressure
- Day 9 Wrap-up
- Day 10 Evaluation

Chief Lecturer: Dr. Yon-Kyu Park

Head, Center for Mass & Related Quantities
ykpark@kriss.re.kr



Intensive laboratory session in the gas analysis lab at KRISS

* Note: The daily programs are subject to change.

Who should attend MRQ and LDM?

Metrologists who are working on R&D and services relating to the technical areas described in each course

Length & Dimensional Measurement

(LDM) GMA-GT-2014-02

- Course dates: April 7-18, 2014
- Applications close: February 20, 2014
- Subjects covered:
 - Length
 - Dimensional measurement
 - Gauge block, optical flat, angle measurements, surface roughness, flatness, etc.

Daily program* (10 working days)

- Days 1-2 Metrology in general
- Day 3 Lab report presentation
- Day 4 Length measurement, Uncertainty in length measurement
- Day 5 Gauge block, Optical flat
- Day 6 3-D measurement
- Day 7 Surface roughness
- Day 8 Angle, Theodolite, etc.
- Day 9 Wrap-up
- Day 10 Evaluation

Chief Lecturer: Dr. Jae Wan Kim

Head, Center for Length
jaewan@kriss.re.kr

GMA

GMA Group Courses in 2013

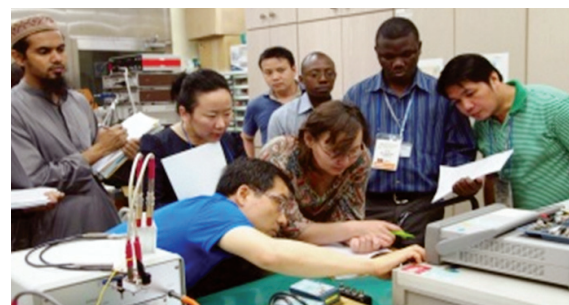
Thermometry & Humidity (TH) GMA-GT-2014-03

- Course dates: June 9-20, 2014
- Applications close: April 30, 2014
- Subjects covered:
 - Thermometry: SPRT, TPW, IPRT, fixed-points, etc.
 - Humidity: Humidity measurement and sensor, dew-point hygrometer, etc.

Daily program* (10 working days)

Days 1-2	Metrology in general
Days 3-4	SPRT, TPW, IPRT, Fixed-points
Day 5	Radiation thermometry
Day 6	Humidity standards, Moisture measurement
Day 7	Dew-point hygrometer
Day 8	Calibration of humidity meters
Day 9	Wrap-up
Day 10	Evaluation

Chief Lecturer: Dr. Yong-Gyoo Kim
Head, Center for Thermometry
dragon@kriss.re.kr



Intensive laboratory session in the electricity lab at KRISS

* Note: The daily programs are subject to change.

Who should attend TH?

Metrologists who are working on R&D and services relating to the technical areas of *thermometry* and *humidity*

Who should attend MiG?

NMI directors, quality managers, and high-level government officials

Inquiries

Please address any course program and application inquiries to Mr. Sangwook Seo of GMA at swseo@kriss.re.kr or Ms. Ji Seung Yoo at jiseung.yoo@kriss.re.kr.

Metrology in General (MiG) GMA-GT-2015

- Course dates: early 2015 (* to be confirmed)
- Subjects covered:
 - National standards system
 - Economic impact of metrology
 - Quality management and metrology

Daily program* (5 working days)

Day 1	National standards system of Korea (metrology, conformity assessment & legal metrology, standardization)
Day 2	CIPM MRA: until today and challenges for tomorrow, Economic impacts of metrology and NMI, Global metrology community: challenges and evolving needs
Day 3	QMS: why and for what - management and technical requirements with ISO/IEC 17025 and ISO guide 34, Metrology in chemistry, Metrology in materials
Day 4	General discussion, lab tour of KRISS
Day 5	Evaluation, closing, technical tour (selected Korean industries)

Chief Lecturer: Dr. JongOh Choi
Senior Principal Research Scientist, KRISS
choijongoh@kriss.re.kr

* Speakers for selected topics are invited from the metrology community in Korea and abroad.

Metrology in Electricity and Magnetism (GMA-GT-2013-01)

- Course dates: June 24 - July 5, 2013
- Subjects presented: voltage and current, DC resistance and impedance, high voltage/current and power, magnetic field, metrology in general

The first GMA group course was held at KRISS for the two weeks of June 24 to July 5, 2013. Electricity and magnetism were the themes for the first group course (GMA-GT-2013-01) since they are fundamental in physical metrology areas that are a critical need in trade capacity building of the developing world. The course was presented in four modules that covered voltage and current, DC resistance and impedance, high voltage/current and power, and magnetic fields. Each module was studied over two days with technical lectures followed by hands-on practice in laboratories. With the financial support of KRISS, in cooperation with the United Nations Industrial Development Organization (UNIDO) and PTB (the NMI of Germany), the first course accommodated 15 participants from 13 countries in Asia, Africa, and the Middle East.

Metrology in Chemistry (GMA-GT-2013-02)

- Course dates: September 2 - September 13, 2013
- Subjects presented: gas analysis, bio-analysis, inorganic analysis, organic analysis, metrology in general

Another GMA group course was presented on September 2 to September 13, 2013. With the theme of metrology in chemistry, the group course (GMA-GT-2013-02) covered key areas of metrology in chemistry, including gas analysis, bio-analysis, inorganic analysis, and organic analysis. The course was presented in four modules, each of which combined technical lectures and hands-on practice in laboratories. The 16 participants came from 11 countries in Asia, Africa, and South America: China, Chinese Taipei, Colombia, Indonesia, Japan, Kenya, Malaysia, Mongolia, Pakistan, the Philippines, and Vietnam.



Global Metrology Academy

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*GMA pursues to be
a most productive &
friendly partner
for HRD in metrology!*