

Global Metrology Academy Courses 2015



KRIS Korea Research
Institute of
Standards and Science

GROUP COURSES OF GMA 2015

GMA is going to offer three (3) group courses in 2015. Different from the past years, where all courses were dealing with technical subjects of metrology such as MRQ, Length, Thermometry and Humidity, Electricity and Magnetism, GMA will organize in 2015 one strategic course in addition to the two technical courses. Themes for the two technical courses have been picked up out of fundamental and applied fields of metrology. For the sake of better performance in learning at the hands-on sessions among others, the number of participants in each of the two technical courses will be up to 10 people. When it comes to the course of MiG, around 20 people will be accepted.

Three (3) group courses 2015

Two(2) technical courses plus one (1) strategic course

GMA Courses 2015	Subjects/Modules	Dates	Participants
GMA-GT-2015-01 MiG	Metrology in General National standards system (metrology, standardization, legal metrology, conformity assessment), QMS for ISO/IEC 17025, KC-CMC-Traceability, Measurement Uncertainty	March 23-27, 2015 (1 week)	20
GMA-GT-2015-02 FMC	Flow Measurement and Calibration Air speed, Low/High pressure gas flow, Liquid flow, Flow meters	June 1-12, 2015 (2 weeks)	10
GMA-GT-2015-03 IR	Ionizing Radiation Dosimetry, Radioactivity, Neutron measurement and calibration	Aug 31-Sept 11, 2015 (2 weeks)	10

For an effective performance, each laboratory session delivers technical lectures combined with hands-on practices at laboratories.

GROUP COURSES 2015: PROGRAM OVERVIEW

The MiG course has been created for the target audience of QMS managers, heads of metrology laboratories, and directors of NMIs. The course programs were strategically designed for sharing Korea's experiences in advancing its capabilities of scientific metrology, conformity assessment and legal metrology, and standardization.

For this purpose, speakers are invited not only from

within KRISS but also from the local metrology community of Korea. In this sense, it is strongly recommended that the high-level government officials will also come and join the MiG course. *It might be perfect that at least a couple of participants from one country could be coming along, with one people from the NMI and the other from the government in charge of national measurement system.*

GMA_GT_2015-01-MiG	Subjects/Modules	Time slots allocated
MiG Metrology in General MiG course welcomes QS Managers, Chief of Laboratories, Directors of NMIs, and High-level Officials of government in charge of national measurement system!	Korea's Strategy for STI Development and Role of Standards, National Standards System in Korea (* comprising three lectures on Metrology, Conformity Assessment and Legal Metrology, Standardization)	1 day
	Quality Management System (ISO/IEC 17025 Management Requirements, Technical Requirements), CIPM MRA-Prerequisite for Sustainable Economic Advancement	1 day
	KC-CMC-Traceability, Uncertainty in Measurement	1 day (including exercises for uncertainty evaluation)
	Country Report Presentation Lab Tour (Selected key laboratories of KRISS)	1 day
	Evaluation of the Course, Technical Visit to Industry	1 day
	Cultural Experience in Seoul	1 day (weekend)



* NOTE: Orientation & tour in and vicinity of Daejeon offered on Saturday before opening of the course.

GROUP COURSES 2015: PROGRAM OVERVIEW

MiG	Metrology in General	
Presenting strategic issues fundamental to metrology		
MiG-01	STI & NSS of Korea Today (Module -1)	
March 23 (Mon)	(1-L-1) Korea's Strategy for STI Development and Roles of Standards (1-L-2) National Standards System of Korea - Metrology (1-L-3) Conformity Assessment & Legal Metrology in Korea (1-L-4) Standardization for Korea's Industrial Competitiveness	Lectures (L) Hands-on Exercises (H)
MiG-02	QMS and CIPM MRA (Module -2)	
March 24 (Tue)	(2-L-1) QMS, Why & for What(1) - Management Requirements by ISO/IEC 17025 (2-L-2) QMS, Why & for What(2) - Technical Requirements by ISO/IEC 17025 (2-L-3) CIPM MRA, Prerequisite for Sustainable Economic Advancement	
MiG-03	KC-CMC-Traceability-Uncertainty (Module -3)	
March 25 (Wed)	(3-L-1) KC-CMC-Traceability (3-L-2) Uncertainty in Measurement (3-H-2) Estimation of Uncertainty in Measurement	
MiG-04	Presentation of Country Reports (Module -4)	
March 26 (Thu)	Presentation by each country followed by Q&A Presentation of UST (University of Science and Technology) Visiting Laboratories of KRISS	
MiG-05	Closing & Technical Visit (Module -5)	
March 27 (Fri)	Evaluation and Closing Technical Visit to Industry (SAMSUNG Electronics * to be confirmed)	Staying overnight in Seoul
March 28 (Sat)	Cultural Experience in Seoul	
March 29 (Sun)	Departure from Korea (depending on the flight itinerary)	

For lectures of the MiG programs, speakers are invited from within and outside KRISS, who are most properly qualified with professional experiences on the subjects.

* NOTE: Orientation & tour in and vicinity of Daejeon offered on Saturday before opening of the course.



GROUP COURSES 2015: PROGRAM OVERVIEW



GMA_GT_2015-02-FMC	Subjects/Modules	Time slots allocated
FMC Flow Measurement and Calibration	Metrology in General	2 days
Intensive Laboratory Session (ILS): lectures and hands-on exercises effectively combined		
Module-1	Air Speed Measurement	1 day
Module-2	Low Pressure Gas Flow Measurement	1 day
Module-3	High Pressure Gas Flow Measurement	1 day
Module-4	Liquid Flow Measurement	1 day
Module-5	Flow Meters	1 day
Wrap-up	Evaluation Test, Individual lab visits, Action plan development	1 day
Technical visit	K-water, and ...	1 day
Cultural experience	Historic sites and attractions in Seoul	1 day (weekend)

* NOTE: Orientation & tour in and vicinity of Daejeon offered on Saturday before opening of the course.



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GROUP COURSES 2015: PROGRAM OVERVIEW



FMC	Flow Measurement and Calibration	
Intensive Laboratory Sessions (ILS) with lectures and practices combined		
FMC-01	Air Speed Measurement and Calibration (Module -1)	
June 3 (Wed)	(1-L-1) Introduction of KRISS and Fluid Flow (1-L-2) Air Speed System and Uncertainty (1-L-3) Air Speed Anemometers (1-H-2/3) Hands-on Exercises: Air Speed Measurement and Calibration	Lectures (L) Hands-on Exercises (H)
FMC-02	Low Pressure Gas Flow Measurement and Calibration (Module -2)	
June 4 (Thu)	(2-L-1) Low Pressure Gas Flow System (2-L-2) Uncertainty of Low Pressure Gas Flow System (2-H-1/2) Hands-on Exercises: Low Pressure Gas Flow Measurement	
June 5 (Fri)	Technical visit to industry: K-water, SAMSUNG Electronics (*TBC)	Staying overnight in Seoul
FMC-03	High Pressure Gas Flow Measurement and Calibration (Module -3)	
June 8 (Mon)	(3-L-1) High Pressure Gas Flow System (3-L-2) Uncertainty of High Pressure Gas Flow System (3-H-1/2) Hands-on Exercises: High Pressure Gas Flow Measurement	
FMC-04	Liquid Flow Measurement and Calibration (Module -4)	
June 9 (Tue)	(4-L-1) Liquid Flow System of Water and Oil (4-L-2) Uncertainty of Liquid Flow System (4-H-1/2) Hands-on Exercises : Liquid Flow Measurement and Calibration	
FMC-05	Flow Meters (Module -5)	
June 10 (Wed)	(5-L-1) Differential Pressure Flow Meters (5-L-2) Linear Flow Meters (5-L-3) Mass Flow Meters (5-L-4) Installation of Flow Meters	
FMC	WRAP-UP session	
June 11 (Thu)	AM: Evaluation Test, Individual visits to laboratories of further interest, PM: Presentation of Action plans	
June 12 (Fri)	Evaluation and Closing	
June 13 (Sat)	Departure from Korea (depending on the flight itinerary)	

Prior to the ILS of FMC course, there will be a two-day session of metrology in general.

On June 1-2, participants will be given lectures concerning the fundamental issues of metrology. It will comprise matters of QMS requirements by ISO/IEC 17025, measurement uncertainty (MU), and KC-CMC activities. The MU session include exercises.



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GROUP COURSES 2015: PROGRAM OVERVIEW



GMA_GT_2015-03-IR	Subjects/Modules	Time slots allocated
IR Ionizing Radiation	Fundamentals of Metrology: NSS, QMS, KC-CMC-Traceability, Measurement Uncertainty	2 days
Intensive Laboratory Session (ILS): lectures and hands-on exercises effectively combined		
Module-1	Ionizing Radiation Dosimetry Standards and Calibration	2 days
Module-2	Radioactivity Standards and Calibration	2 days
Module-3	Neutron Measurement and Calibration	1 day
Wrap-up	Evaluation test, Individual lab visits, Action plan development	1 day
Technical visits	KINS (Korea Institute of Nuclear Safety) and...	1 day
Cultural experience	Historic sites and attractions in Seoul	1 day (weekend)

* NOTE: Orientation & tour in and vicinity of Daejeon offered on Saturday before opening of the course.



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GROUP COURSES 2015: PROGRAM OVERVIEW



IR	Ionizing Radiation Standards and Calibration	
Intensive Laboratory Sessions (ILS) with lectures and practices combined		
IR-01	Ionizing Radiation Dosimetry (Module -1)	
Sept 2 (Wed)	(1-L-1) Dosimetry Standards and Traceability (1-L-2) Ionizing Current Measurement Techniques (1-L-3) Primary Standards of Medium- and Low-Energy X-ray Air Kerma (1-H-1) Hands-on Session for Lecture 1-2-3	Lectures (L) Hands-on Exercises (H)
Sept 3 (Thu)	(1-L-4) Primary Standards of Gamma-ray Air Kerma and Beta-ray Absorbed Dose to ICRU Tissue (1-L-5) Primary Standard of LINAC High Energy X-ray Absorbed Dose (1-H-2) Hands-on Session for Lecture 4-5	
Sept 4 (Fri)	Technical visit to KINS (* Korea Institute of Nuclear Safety), SAMSUNG Electronics (* TBC)	Staying overnight in Seoul
IR-02	Radioactivity (Module -2)	
Sept 7 (Mon)	(2-L-1) Activity Standards and Traceability (2-L-2) Liquid Scintillation Counting System (2-L-3) Gamma-ray Spectrometry (2-H-1) Hands-on Session for Lecture 1-2-3 (2-L-4) Gamma-ray Ionization Chamber	
Sept 8 (Tue)	(2-L-5) Activity Measurement of Matrix Samples (2-H-2) Hands-on Session for Lecture 3-4-5	
IR-03	Neutron Measurement and Calibration (Module -3)	
Sept 9 (Wed)	(3-L-1) Neutron Standards and Traceability (3-L-2) Radiation Protection for Neutron (3-L-3) Calibration for Neutron Dose-Equivalent Meters (3-H-1) Hands-on Session for Lecture 1-2-3	
IR	WRAP-UP session	
Sept 10 (Thu)	AM: Evaluation Test, Individual visits to laboratories of further interest, PM: Presentation of Action plans	
Sept 11 (Fri)	Evaluation and Closing	
Sept 12 (Sat)	Departure from Korea (depending on the flight itinerary)	

Prior to the ILS of IR course, there will be a two-day session of metrology in general.

On the two days of Aug 30 (Mon) and Sept 1 (Tue), participants will be given lectures concerning the fundamental issues of metrology. It will comprise matters of QMS requirements by ISO/IEC 17025, measurement uncertainty (MU), and KC-CMC activities. The MU session include exercises.

* NOTE: Orientation & tour in and vicinity of Daejeon offered on Saturday before opening of the course.

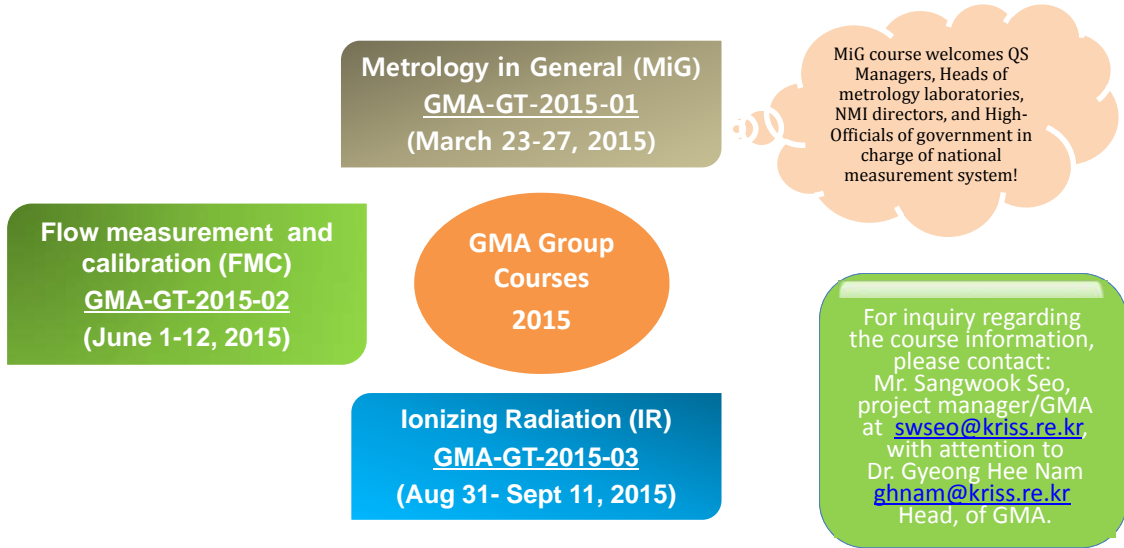


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Announcement of call for application is being sent out on the websites of the global and regional metrology communities such as the BIPM, APMP, COOMET, SIM, AFRIMETS, and GULFMET. The NMIs and the participants in the previous GMA courses are also on the list of recipients of the announcement.

Applications are due by:

- **January 31, 2015** for the course of Metrology in General (MiG):
- **March 31, 2015** for FMC; and
- **June 30, 2015** for IR, respectively.



* Orientation & tour in and vicinity of Daejeon offered on Saturday before opening each course.

OUTREACH SERVICES TO BE PROMOTED

For the first two years of its operation, GMA has been offering HRD programs of metrology all at the laboratories of KRISS in Korea. As an effort to further widen the horizon of its services and for the sake of better benefits of our customers, GMA has added a new item to its service portfolio. It is the outreach service that is to be offered on site of our customers. Upon request of customers, GMA is ready to offer services on site of customers

abroad. The competitive advantages that customers could enjoy with the outreach services include, among others, its wide coverage of services. The GMA programs offered at KRISS are primarily focused on addressing technical capability of the customers. The outreach services could take a more comprehensive approach, ranging from diagnosis to prescriptions, dealing with not only technical but also strategic issues to which the customers expect to find

solutions. Activities of the outreach services therefore consist of fact-finding survey, lectures, training and technical advice. Beneficiaries of the outreach service will not merely stay with a few but spread widely over the national metrology community of the customers. For any inquiry of this new service of GMA, please communicate with Mr. Sangwook Seo of GMA at swseo@kriss.re.kr.



*With all the best wishes for
a Merry Christmas and a Happy
New Year 2015 full of blessings
that life can bring to you, your lovely
family members, colleagues and all
the neighbors staying around!*



KRISS

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