

SLOVAK INSTITUTE OF METROLOGY

Karloveská 63, 842 55 Bratislava

OFFER OF EDUCATIONAL ACTIVITIES

**IN THE FIELD OF METROLOGY, QUALITY MANAGEMENT
SYSTEM AND ACCREDITATION OF LABORATORIES**

FOR YEAR 2008

Bratislava 2008

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Information for the participants of courses

Preparation of courses and dates of realization

The Slovak Institute of Metrology is performing the courses for persons concerned from the field of metrology, quality management system and accreditation of laboratories accredited by SNAS or just aimed at that accreditation. As an educational establishment, it provides 10 accredited courses. The accreditation was assigned by the Ministry of Education of the Slovak Republic upon the assessment of contents of selected educational activities.

The Slovak Institute of Metrology training centre prepares the courses and seminars according to the registration of preliminary interest in appropriate educational activity. The person concerned the course sends a brief application for inclusion in the selected course by post, e-mail or fax. **The application has to involve** a name of organization, course number, supposed number of participants and name of contact worker with his telephone or fax number or e-mail. **Concerning the courses in the field of measuring instruments calibration**, it is also required a specification of concrete measuring instrument identification, which the person concerned the course works with (type, measuring accuracy range, class of accuracy and uncertainty).

A training centre records the delivered application and **after the enrolment of at least 10 persons, it begins the particular course preparation**. In case of great interest in particular course, it is repeated by the seating capacity reasons of the training centre classroom.

In the event of special customers' requirements, the Slovak Institute of Metrology training centre is prepared to perform also the educational activity, the content of which could be modified according to the several courses provided.

In an effort to meet the customers' requirements at the explanation of peculiar issues, concerning their activity in the field of metrology (e. g. methodology of working procedures at measurement, suggestions of measuring instrument traceability solution in the workplaces, problem solution of uncertainties at measurement etc.), the training centre will also assure **the course for a few persons concerned**.

The requirements for inclusion in courses could be sent at:

address:

**Slovenský metrologický ústav
vzdelávacie stredisko
Karloveská 63
842 55 Bratislava 4**

e-mail:

dostal@smu.gov.sk

fax number:

+ 421/2/60 29 42 33

Information is provided at the telephone number:

+421/2/60 29 45 27

Venue of courses

The Slovak Institute of Metrology performs the courses in its lecture premises.

Organizational assurance of courses

In case of interest of foreign participants, an invitation for course will be processed ad hoc (for the occasion).

Catering

For the participants of course, there are provided the lunches in a canteen of the Slovak Institute of Metrology. The food price is the part of participation fee. For the foreign participants numbering at least 8 persons, it is possible to arrange the all-day catering.

Accommodation – individual

Participation fee

The participation fee for foreign participants will be defined ad hoc according to the duration of course and number of persons concerned.

Special courses accredited by the Accreditation Committee of Ministry of Education of the Slovak Republic for further education

A. Field of metrology

Course No.: A. 1.

METROLOGY IN THE STRUCTURE OF PROFIT MAKING ORGANIZATION

Course is intended for the metrologists of organizations, employees of metrological laboratories, quality management units and so on.

The supposed date of realization – depending on number of requirements

Duration of course: 24 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: A. 2.

VERIFICATION AND CALIBRATION OF MEASURING INSTRUMENTS OF DELIVERED VOLUME OF WATER

Course is intended mainly for the employees, performing a verification and calibration of defined measuring instrument.

The supposed date of realization – depending on number of requirements

Duration of course: 24 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: A. 3.

METROLOGY OF ELECTRIC VOLTAGE, CURRENT AND RESISTANCE

Course is intended mainly for the employees of metrological laboratories and operations, in which the measuring instruments of electric voltage, current and resistance are operating.

The supposed date of realization – depending on number of requirements

Duration of course: 26 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: A. 4.

METROLOGY OF TEMPERATURE AND CALIBRATION PROCEDURES

It includes a modular structure aimed at: **resistance thermometers, thermoelectric thermometers, glass thermometers, or pyrometers.**

Because of time reasons, the person concerned can arbitrarily select only two modules on one date.

Course is intended primarily for the employees, performing the calibration of temperature measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 20 - 26 hours (depending on modules).

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: A. 5.

MEASUREMENT OF MASS IN PRACTICE, CALIBRATION OF BALANCES AND WEIGHTS

It includes the modular structure aimed at: **measurement of mass in practice, calibration and verification of balances and weights**

Because of time reasons, the person concerned can arbitrarily select only two modules on one date.

Course is intended especially for the metrologists – specialists for the mass measurement (indirect measurement of derived physical quantities associated with mass), employees of metrological laboratories, management metrologists and quality managers of metrological laboratories.

The supposed date of realization – depending on number of requirements

Duration of course – each module: 20 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: A. 6.

METROLOGY OF PRESSURE AND PROCEDURES OF PRESSURE MEASURING INSTRUMENT CALIBRATION

It includes the modular structure aimed at: **deformation manometers, electronic manometers, pressure transducers, blood manometers, piston manometers, liquid manometers, or manometers for measuring of pressure in the tyres of automobiles**

Because of time reasons, the person concerned can arbitrarily select only from 2 to 3 modules on one date.

Course is intended especially for the metrologists – specialists for the pressure measurement, for the employees of metrological laboratories, management metrologists and quality managers of metrological laboratories.

The supposed date of realization – depending on number of requirements
Duration of course: 16 - 21 hours (depending on modules)
The basic course contents will be given in the invitation.

Document – **Certificate of participation**

B. Field of quality management system

Course No.: B. 1.

INTERNAL AUDITOR IN THE QUALITY MANAGEMENT SYSTEM (certification standards with emphasis on ISO 9001:2000)

Course is intended mainly for the employees of organizations, which implement the quality management system, or apply it on the basis of granted certificate and discharge a function of internal auditor, or prepare for the working position itself.

The supposed date of realization – depending on number of requirements
Duration of course: 32 hours
The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: B. 2.

ACTIVITY OF QUALITY MANAGER IN ORGANIZATION (certification standards with emphasis on ISO 9001:2000)

Course is intended especially for the employees of organizations, which implement the quality management system, or apply it on the basis of granted certificate and discharge a function of quality manager, or prepare for the working position itself.

The supposed date of realization – depending on number of requirements
Duration of course: 18 hours
The basic course contents will be given in the invitation.

Document – **Certificate of participation**

C. Field of accreditation

Course No.: C. 1.

ACTIVITY OF INTERNAL AUDITORS IN ACCREDITED TESTING AND CALIBRATION LABORATORIES (with emphasis on STN EN ISO/IEC 17025:2005 standard)

Course is intended for the internal auditors and management personnel of accredited subjects (laboratories, certification and inspection bodies) that assure the system of internal control or prepare its implementation.

The supposed date of realization – depending on number of requirements
Duration of course: 24 hours

The basic course contents will be given in the invitation.
Document – **Certificate of participation**

Course No.: C. 2.

ACTIVITY OF QUALITY MANAGER IN ACCREDITED SUBJECTS
(with emphasis on STN EN ISO/IEC 17025:2005 standard)

Course is intended for the personnel of laboratories, certification and inspection bodies that share the quality management.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

SPECIAL COURSES FROM THE FIELD OF METROLOGY

D. Metrology of quantities

The Centre for Length and Time

Course No.: D. 1.

CALIBRATION OF SLIDE GAUGES AND MICROMETERS

Course is intended particularly for the employees, performing the working measuring instruments calibration.

The supposed date of realization – depending on number of requirements

Duration of course: 12 hours (in case of 5 participants – 8 hours)

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 2.

METROLOGY OF TACHOGRAPHS VERIFICATION

Course is intended mainly for the personnel, performing the verification of defined measuring instrument.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 3.

CALIBRATION OF TIME AND FREQUENCY MEASURING INSTRUMENTS

Course is intended mainly for the personnel, performing the calibration of particular measuring instruments (electronic stopwatches, electronic tachometers, generators, synthesizers, electronic counters, crystal oscillators).

The supposed date of realization – depending on number of requirements

Duration of course: 8 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 4.

CALIBRATION OF ANGLE MEASURING INSTRUMENTS AND MEASURING INSTRUMENTS OF SURFACE ROUGHNESS OF TYPES A, C, D

Course is primarily intended for the personnel, performing the calibration of particular measuring instruments (squares, theodolites, levels, declinators, measuring instruments of surface roughness).

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

The Centre for Mass and Pressure

Accredited courses (see page 6)

Course No.: D. 5.

METROLOGY OF DENSITY AND DIVIDED GLASS VOLUME

Course is intended especially for the personnel of calibration laboratories, testing rooms and quality management units, performing the calibration of specific measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 6.

METROLOGY OF VISCOSITY

Course is intended especially for the personnel of calibration laboratories, testing rooms and quality management units, performing the calibration of specific measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

The Centre for Flow-rate

Accredited course (see page 5)

Course No.: D. 7.

ASSEMBLY OF DELIVERED VOLUME OF WATER METERS AND HEAT METERS

Course is intended mainly for the personnel that repair or assemble the legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 22 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 8.

ASSEMBLY OF METERS OF WATER DELIVERED VOLUMES

Course is intended particularly for the personnel that repair or assemble the legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 9.

VERIFICATION OF GASMETERS

Course is intended mainly for the personnel, performing the verification of legal measuring instrument.

The supposed date of realization – depending on number of requirements

Duration of course: 24 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 10.

ASSEMBLY OF GASMETERS

Course is primarily intended for the personnel that produce, repair and assemble the legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 11.

CALIBRATION OF GAS FLOW-METERS

Course is intended for the personnel that calibrate the gas flow-meters.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 12.

BASIS OF METROLOGY OF FLOW-RATE AND DELIVERED VOLUME OF COMMERCIAL LIQUID

Course is intended mainly for the personnel of organizations, applying the volume flow meters as legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

The Centre for Electricity

Accredited course (see page 5)

Course No.: D. 13.

VERIFICATION OF ELECTROMETERS AND VOLTAGE AND CURRENT MEASURING TRANSFORMERS

Course is intended especially for the personnel, performing the verification of legal measuring instrument.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 14.

ASSEMBLY OF ELECTROMETERS AND VOLTAGE AND CURRENT MEASURING TRANSFORMERS

Course is intended for the personnel, performing the assembly of legal measuring instrument.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 15.

CALIBRATION OF MEASURING INSTRUMENTS OF AC CURRENT ELECTRIC POWER AND ENERGY

Course is intended for the personnel that perform the measurement of electric power of AC current, test the measuring instruments and measures of electric power of AC current or calibrate them.

The supposed date of realization – depending on number of requirements

Duration of course: 8 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

The Centre for Ionising Radiation

Course No.: D. 16.

BASIS OF IONISING RADIATION METROLOGY

Course is intended especially for the legal measurers within the field of ionising radiation (dosimetry and radionuclides activity).

The supposed date of realization – depending on organization requirements

Duration of course: 24 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 17.

LEGAL MEASUREMENT OF RADON

Course is intended mainly for the legal measurers of radon.

The supposed date of realization – depending on organization requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 18.

MEDICAL RADIATION DOSIMETRY – APPLICATION OF MAAE TRS 398

Course is intended for the physicists of radiotherapeutic workplaces and the personnel of nuclear medicine.

The supposed date of realization – depending on number of requirements

Duration of course - 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

The Centre for Chemistry

Course No.: D. 19.

CALIBRATION OF CONDUCTOMETERS

Course is primarily intended for the personnel, performing the calibration of non legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 8 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 20.

CALIBRATION OF pH-metry MEASURING INSTRUMENTS

Course is intended particularly for the personnel, performing the calibration of non legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 8 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 21.

CALIBRATION OF AIR HYGROMETERS

Course is intended chiefly for the personnel, performing the calibration of non legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 20 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 22.

CALIBRATION OF SPECTRAL TRANSMITTANCE MEASURING INSTRUMENTS (UV-VIS spectrometers)

Course is intended especially for the personnel, performing the calibration of non legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 8 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

The Centre for Thermometry, Photometry and Radiometry

Accredited course (see page 6)

Course No.: D. 23.

METROLOGY OF TEMPERATURE AND VERIFICATION OF LEGAL MEASURING INSTRUMENTS

Course is intended mainly for the personnel, performing the verification of legal measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 24 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: D. 24.

THERMOMETERS AND THEIR ELEMENTS

Course is intended primarily for the personnel of laboratories authorised for the verification of heat meters as well as for organizations, producing and supplying the heat.

The supposed date of realization – depending on number of requirements

Duration of course: 24 hours

The basic course contents will be given in the invitation.

Document – **Certificate of training completing**

Course No.: D. 25.

METROLOGICAL ASSURANCE IN PHOTOMETRY AND OPTICAL RADIOMETRY

Course is intended especially for the personnel, performing the measurement of luminous intensity, luminous flux, optical radiation energy and calibration of luxmeters and optical detectors. (Choice of field is possible.)

The supposed date of realization – depending on number of requirements

Duration of course: 8 hours (for each field)

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

SPECIAL METROLOGICAL COURSES AIMED AT THE ACCREDITATION SUPPORT

Course No.: E. 1.

USE OF CERTIFIED REFERENCE MATERIALS IN LABORATORY PRACTICE

Course is intended for the personnel of laboratories, particularly having a chemical scope and working with reference materials.

The supposed date of realization – depending on number of requirements

Duration of seminary: 8 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: E. 2.

METROLOGICAL ASSURANCE IN LABORATORY

Course is intended for the metrologists of calibration and testing laboratories and other personnel, working with measuring instruments.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: E. 3.

UNCERTAINTIES IN LABORATORY PRACTICE

Course is intended for the personnel of calibration and testing laboratories.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

Course No.: E. 4.

UNCERTAINTIES IN LABORATORIES HAVING A CHEMICAL SCOPE

Course is intended for the personnel of laboratories, working with chemical agents.

The supposed date of realization – depending on number of requirements

Duration of course: 16 hours

The basic course contents will be given in the invitation.

Document – **Certificate of participation**

SPECIAL SEMINARS FROM THE FIELD OF ACCREDITATION

F. Accreditation of laboratories, certification and inspection bodies

Seminary No.: F. 1.

ACCREDITATION OF TESTING AND CALIBRATION LABORATORIES

Seminary is intended for the personnel of laboratories, preparing for accreditation.

The supposed date of realization – depending on number of requirements

Duration of seminary: 16 hours

Basic contents of seminary

- ² accreditation criteria for laboratories – briefly summary and explanation of provisions of ISO/IEC 17025:2005
- ² summary and brief explanation of application documents of EA, ILAC, SNAS
- ² laboratory quality system and its documentation
- ² procedure principles at the laboratory accreditation

Document – **Certificate of participation**

Seminary No.: F. 2.

ACCREDITATION OF MEDICAL AND MICROBIOLOGICAL LABORATORIES

Seminary is intended for the personnel of laboratories, which work in the field of health and aim at the accreditation.

The supposed date of realization – depending on number of requirements

Duration of seminary: 8 hours

Basic contents of seminary

- ² brief explanation of provisions of STN EN ISO 15189:2007
- ² summary of application documents of EA, ILAC and SNAS
- ² preparation and procedure of clinical laboratory for accreditation

Document – **Certificate of participation**

Seminary No.: F. 3.

ACTIVITY OF INTERNAL AUDITORS AND MANAGERS OF QUALITY IN CLINICAL LABORATORIES

Seminary is intended for the personnel of laboratories, who assure the system of internal control or prepare its implementation in the field of health and aim at the accreditation

The supposed date of realization – depending on number of requirements
Duration of course: 16 hours

Basic contents of seminary:

- ² standards and regulations for internal audits
- ² ethic principals of audits
- ² preparation and management of internal audits
- ² procedures and activities within the performance of internal audits
- ² case-study – solution and presentation

Document – **Certificate of participation**

Seminary No.: F. 4.

ACCREDITATION OF CERTIFICATION BODIES

Seminary is intended for the personnel of certification subjects, which prepare for the accreditation, or try to expand their sphere of activity.

The supposed date of realization – depending on number of requirements
Duration of course: 8 hours

Basic contents of seminary:

- ² New accreditation fields of certification bodies:
 - health and security management systems according to OHSAS 18001
 - information safety management systems (ISMS) according to ISO/IEC 27001
 - systems for the quality assurance following the NATO requirements according to AQAP 2110
 - other systems – HACCP, PEFC
- ² review and commentary of requirements for accreditation of certification bodies according to the STN EN ISO/IEC 17021, STN EN 45011 (ISO/IEC Guide 65), ISO/IEC 17024
- ² Summary of application documents of EA, IAF and SNAS
- ² Procedure principles at the accreditation of certification bodies

Document – **Certificate of participation**

Seminary No.: F. 5.

ACCREDITATION OF INSPECTION BODIES

Seminary is intended for the personnel of subjects, which are accredited or are preparing for the accreditation of inspection body.

The supposed date of realization – depending on number of requirements

Duration of seminary: 8 hours

Basic contents of seminary

- 2 criteria for accreditation in ISO/IEC 17020**
- 2 summary of application documents of ILAC, EA and SNAS**
- 2 procedure and requirements in the accreditation process**

Document – **Certificate of participation**