NSAI

National Metrology Laboratory

2026 Programme of Training Courses in Measurement & Calibration

NSAI National Metrology Laboratory offers public courses to help individuals gain the skills that they require in the field of Measurement and Calibration. The courses detailed in this brochure are shown below.

Courses are to be held on-line, in NML or in-company on request. Additional courses may also be arranged on demand. All the tutors are experts in their field, and have extensive experience in training.

Understanding the principles of Measurement and Calibration can lead to better decisions on product purchasing, reduced need for expensive technical support and reduced operational mistakes with expensive consequences.

Please book online at
www.nsai.ie or return the booking form to:

NSAI NATIONAL METROLOGY LABORATORY

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NSAI
National Metrology Laboratory

Name:

Title:

Company:

Address:

Telephone:

Email:

Course title(s):

Date of Course(s):

Names of attendee(s):

P.O.

Cheque / VISA / LASER (please circle)

Card No:

Expiry Date: Security No:

Amount:

Signature: Date:

CANCELLATIONS: Cancellations should be made 2 weeks in advance. Cancellations made within 2 weeks of course date will incur a charge of 50% of the course fee. Substitutions may be made at any time.

EV

COURSE DETAILS PAGE

DATES:
25 Feb, In-Person
22 April, Online
16 Sept, In-Person
11 Nov, Online

DURATION OF COURSE:
9.30am - 4.30pm
In-Person & Online

VENUE:
NML

IN-PERSON FEE:
€480 (including documentation, lunch and refreshments)

ONLINE FEE:
€300

CT001
FOUNDATION COURSE IN MEASUREMENT & CALIBRATION
(Accredited by Engineers Ireland)

This training course is intended for professionals who are new to the field of calibration or who are responsible for the management and administration of an in-house calibration system.

COURSE CONTENT

- Measurement Standards and Traceability
- Measurement Uncertainty
- Test Uncertainty Ratio
- Instrument Accuracy Specification
- Calibration Certificates
- Recalibration Intervals
- Laboratory Accreditation
- Tour of NML facilities

Tuition will consist of classroom work, exercises and practical demonstrations.

Cancellations within 2 weeks of course date will incur a charge of 50% of the course fee.

CT002
EVALUATING MEASUREMENT UNCERTAINTY
(Accredited by Engineers Ireland)

This training course is intended for professionals who perform or manage critical measurement/calibration tasks and who need to evaluate the measurement uncertainties associated with their measurement results. The course is based on the internationally accepted method given in the Guide to the Expression of Uncertainty in Measurement.

COURSE CONTENT

- The importance of measurement uncertainty
- Understanding and modelling the measurement process
- Statistical tools for uncertainty evaluation
- Identifying and assessing measurement input quantities
- Using Excel© to formulate an uncertainty budget
- Combining standard uncertainties
- Reporting the measurement uncertainty
- Worked examples and exercises on uncertainty evaluation

Tuition will consist of classroom work, exercises and practical sessions.

Note: Extra half day option available to discuss user specific uncertainty evaluations. (price on request)

Cancellations within 2 weeks of course date will incur a charge of 50% of the course fee.

DATE:
15 April
11 November
In-Person

DURATION OF COURSE:
9.30am-2.30pm
Online (on request)
(2 x 1/2 days)
9.30am - 4.30pm
In person

VENUE:
In NML or
Online on request

ONLINE FEE:
€480

IN HOUSE FEE:
€480 (including documentation, lunch and refreshments)

DATES:
6 May
9 September

9.30am - 4.30pm
In person

VENUE:
NML or in-company by arrangement

FEE: **€480 (including documentation, lunch and refreshments)**

CT003
PRACTICAL DIMENSIONAL CALIBRATION

This training course is intended for professionals who make dimensional measurements on components and for people who are responsible for the calibration of dimensional measuring instruments. The emphasis of this training course is on the practical aspects of dimensional measurement and calibration.

This course provides the knowledge and expertise for people who use measurement tools or require an appreciation of the importance of measurement, calibration and the use of dimensional measurement techniques to complete their daily tasks.

COURSE CONTENT

- Principles of Measurement and Calibration
- Dimensional units, traceability, and standards
- Uncertainty of Measurement
- Specifications and tolerances - interpretation of BS/ISO Specifications
- Usage, storage and handling of dimensional standards and artefacts
- Calibration of calipers, micrometers and dial gauges
- Use of gauge blocks in dimensional calibration
- Recording calibration results and reviewing calibration certificates
- Error avoidance tactics for dimensional measurements

Tuition will consist of classroom work, exercises and practical demonstrations.

Cancellations within 2 weeks of course date will incur a charge of 50% of the course fee.

CT004
PRACTICAL TEMPERATURE MEASUREMENT & CALIBRATION
(Accredited by Engineers Ireland)

The training course is intended for professionals who are responsible for the calibration of temperature measuring instruments and standards. The emphasis is on the practical aspects of temperature measurement and calibration.

The course provides the knowledge and expertise for those who use temperature measuring devices or require an appreciation of the importance of measurement, calibration and the use of temperature instruments and standards in the performance of their daily tasks.

COURSE CONTENT

- Principles of Temperature Measurement and Calibration
- Temperature Units, terminology, traceability and standards
- Thermometer Types: Thermocouples, Liquid in Glass thermometers, Platinum Resistance Thermometers and Thermistors
- Accuracy of Thermometers
- Temperature Mediums: Liquid Baths, Dry Blocks, Ovens
- Thermometer usage, selection and application - Sources of errors
- In-house calibration methods i.e. profiles in ovens

Tuition will consist of classroom work, exercises and practical sessions.

Cancellations within 2 weeks of course date will incur a charge of 50% of the course fee.

DATES:
18 February
25 November
In-Person

DURATION OF COURSE:

9.30am - 4.30pm
In-Person

VENUE:
In NML or in-company by arrangement

FEE: **€480 (including documentation, lunch and refreshments)**

DATES:
9 April
26 August
In-Person

9.30am - 4.30pm

VENUE:
NML or in-company by arrangement

FEE: **€480 (including documentation, lunch and refreshments)**

CT005
WEIGHTS & BALANCE CALIBRATION

This training course is intended for those professionals who are responsible for the calibration of weighing machines and the maintenance of associated mass standards. The emphasis of this one day training course is on the practical aspects of mass measurement.

The course is designed to provide participants with an understanding of weighing machines and mass standards and covers topics such as mass classification, mass standards, calibration procedures and environmental influences.

COURSE CONTENT

- Review of general calibration principles
- Mass units, traceability, and standards
- Mass classification - construction, material, tolerances
- Mass standards - usage, storage and handling
- Selection of mass standards for in-house balance calibration
- Calibration of weighing machines and balances
- Minimum weight requirements
- Brief introduction to uncertainty of measurement
- Error avoidance tactics for mass measurements

Tuition will consist of classroom work, exercises and practical demonstrations.

Cancellations within 2 weeks of course date will incur a charge of 50% of the course fee.

CT006
ELECTRICAL MEASUREMENT & CALIBRATION

The training course is intended for calibration professionals who are responsible for the calibration of electrical measuring instruments (DC and low frequency). The emphasis is on the practical aspects of electrical calibration.

COURSE CONTENT

- Review of general calibration principles
- Electrical units, traceability, and standards
- Calibration of hand-held digital multimeters
- Calibration of current and voltage sources
- Calibration of decade resistance boxes
- Error avoidance tactics for electrical measurements
- Further topics *

*As far as is possible, the course content is tailored to meet the specific needs of participants. This is done by means of a questionnaire which is sent to intending participants prior to the course.

Tuition will consist of classroom work, exercises and practical sessions.

Cancellations within 2 weeks of course date will incur a charge of 50% of the course fee.

DATES:
28 October
In-Person

9.30am - 4.30pm

VENUE:
In NML or in-company by arrangement

FEE: **€480 (including documentation, lunch and refreshments)**

DATES:
4 February
21 October

DURATION OF COURSE:

9.30am - 1.30pm
In person

VENUE:
In NML or in-company by arrangement

FEE: **€300 (including documentation, lunch and refreshments)**

CT009
TEMPERATURE / HUMIDITY MAPPING OF ENCLOSURES

The training course is intended for professionals involved in using, maintaining and calibrating temperature/ humidity chambers and enclosures and for those with responsibility for managing the enclosure calibration programme.

The emphasis of this course is on the best practice and review of relevant internationally accepted methods for enclosure mapping.

COURSE CONTENT

- Overview & introduction
- Temperature Mapping of Enclosures including latest Guidelines and Standards
- A comparison of Enclosure Validation Techniques as described in IEC 60068
- Calibration & mapping Techniques for temperature/ humidity enclosures

Tuition will consist of classroom work, exercises and practical demonstrations.

Cancellations within 2 weeks of course date will incur a charge of 50% of the course fee.

DATES:
On demand

DURATION:
1 day

VENUE:
In NML or in-company by arrangement

FEE:
€480 (including documentation, lunch and refreshments)

CT011
PRACTICAL HUMIDITY MEASUREMENT & CALIBRATION
(Accredited by Engineers Ireland)

The training course is intended for those who are responsible for the calibration of humidity measuring instruments and standards. The emphasis is on the practical aspects of humidity measurement and calibration.

The course provides the knowledge and expertise for professionals who use humidity measuring devices or require an appreciation of the importance of measurement, calibration and the use of humidity instruments and standards in the performance of their daily tasks.

COURSE CONTENT

- Principles of Humidity measurement
- Hygrometric definitions, units, terminology, traceability
- How hygrometers work
- Types of hygrometers used in industry: Dew point instruments, Psychrometer, RH Instruments and Salt solutions
- Measurement uncertainty with particular reference to Climatic chambers, rooms
- Practical advice on applications

Tuition will consist of classroom work, exercises and practical demonstrations.

Cancellations within 2 weeks of course date will incur a charge of 50% of The course fee.

CT015
ISO17025 - A METROLOGY PERSPECTIVE

The training course is intended for those professionals involved in meeting the requirements of ISO17025 in a calibration laboratory.

The emphasis of this training course is on the specific elements if the ISO17925:2017 standard relating to traceability, decision rules and reporting of measurement uncertainty.

COURSE CONTENT

- Meeting metrological traceability requirements
- Calculating and reporting measurement uncertainty
- Reporting statements of conformity
- Application of Decision Rule

DATES:

On demand

DURATION:
1/2 day

VENUE:
Online

FEE:
€250

CT016
An Introduction to Measurement Uncertainty

The training course is intended for all those who need to have a basic understanding of measurement uncertainty. It is suited to calibration technicians and quality assurance personnel. The course deals with the origin and importance of measurement uncertainty, an overview of how it is evaluated, and its impact on compliance statements. While it does not cover the mechanics of uncertainty evaluation, it provides the groundwork for course CT002 "Evaluating Measurement Uncertainty" which deals with the topic in more detail.

COURSE CONTENT

- Measurement errors and their sources
- Error distributions
- Measurement Uncertainty as a summary of error distributions
- Overview of measurement uncertainty evaluation
- Measurement Uncertainty for analytical measurements
- Impact of uncertainty on compliance statements

DATES:
On demand

DURATION:
1/2 day

VENUE:
Online

FEE:
€250