

An Introduction to Legal & Industrial Metrology

7 - 18 June 2010



Measurement plays a vital underpinning role in any country, ensuring a stable and prosperous society. Confidence in measurement is necessary for fair local trade, consumer protection and international commodity trading.



Course Objective

This course is designed to give delegates a comprehensive understanding of selected aspects of legal and industrial metrology theory and practice, which they can then apply in their own national metrology establishments.

The training course is specially designed for participants from developing economies.

The 10-day course will focus on the balanced transfer of basic knowledge in legal and industrial metrology in theory and practice. It will also have a general overview of standardisation and accreditation taking in to account general aspects of quality management (ISO 17025) in metrology/calibration laboratories.

Course Overview

- **Introduction to underlying concepts of legal and industrial metrology.**
- **Role of the National Measurement Institute and the National Measurement System.**
- **Basic concepts of measurement and uncertainties.**
- **Legal metrology training in the following areas - mass metrology and the calibration of weights, length, volume; flow metering and flow meter calibration; verification of a non-automatic weighing instrument and testing in support of type approval or pre-packaged goods.**
- **Industrial metrology training in the following areas - mass, length and thermal.**
- **Good laboratory practice.**
- **Quality aspects of metrology (introduction of ISO 17025).**
- **International metrology, including OIML and CIPM Mutual Recognition Arrangement.**
- **The international documentary standards process.**
- **Laboratory visits around NMO and NPL to see a range of work including pressure, electrical, force, time etc.**

Who Should Attend?

The course is designed for officers or those associated with offices of national metrology organisations that are already working in the field, but wish to deepen and expand their knowledge of legal and industrial metrology or those who are responsible for national metrology legislation.

Course Duration

This is a two-week course (10 working days) delivered jointly by the UK's National Measurement Office (NMO) and the National Physical Laboratory (NPL), with input from the British Standards Institute (BSI) and the United Kingdom Accreditation Service (UKAS), and support from PTB International Technical Cooperation. The programme will be delivered through a range of formal seminars, hands-on practical exercises and various demonstrations; delivered within the UK's National Measurement Institute by metrology experts. Sessions will aim to finish between 4.30 and 5.00 pm each day.

Location

NPL is located in Teddington, south-west London, approximately 30 minutes from Heathrow. Prepare for your visit to NPL by viewing our location information.

Accommodation

St Mary's College, Strawberry Hill, part of the University of Surrey, provides summer accommodation for international students.

The single en-suite rooms are fully serviced and breakfast is included.

St Mary's is a 20 minute walk from NPL, and within easy reach of local amenities and central London.

Other Information

The course language is English.

Sponsorship

Sponsorship for the course participation (international travel costs, accommodation, per diem rates etc.) is available through PTB International Technical Co-operation in the framework of German Development Aid, depending on special preconditions.



Proposed Agenda

Day 1

- 09.30 Introduction to NMO and NPL and UK legal and industrial metrology
- 13.45 Introduction to the basic concepts of measurement and uncertainties

Day 2

- 09.30 Legal mass metrology and the calibration of weights (theory)
- 13.45 Legal mass metrology and the calibration of weights (practical laboratory session)

Day 3

- 09.30 Introduction to volume metrology including flow metering (theory)
- 13.45 Introduction to volume metrology including flow metering (practical laboratory session)

Day 4

- 09.30 Pre-packaged goods
- 13.45 Verification of a NAWI (theory and practical)

Day 5

- 09.30 Visit to a local authority trading standards department to witness enforcement procedures
- 13.15 Laboratory accreditation (presentation by UKAS)

Day 6

- 09.30 Quality management and an introduction to ISO 17025
- 13.45 International legal metrology and OIML

Day 7

- 09.30 Introduction to Industrial Metrology and the role of the National Measurement Institute
- 14.00 Visit to Force Machine and Torque Balance
- 15.15 The CIPM MRA and a practical introduction to the BIPM Key Comparison Database

Day 8

- 09.15 Lab tour: 'Realisation of the Metre'
- 09.45 "Introduction to Dimensional Measurement"
- 14.00 Practical session: "Practical Mass Metrology"

Day 9

- 09.30 Practical session:
"Introduction to Temperature Metrology"
- 14.00 Practical session:
"Primary Electrical Standards"
- 15.30 Presentation from British Standards Institute: "Applied Electrical standards"

Day 10

- 09.30 Presentation from the British Standards Institute:
"Introduction to the Standardisation Process"
- 11.00 Tour of and Introduction to NPL's Acoustics facilities
- 12.00 Tour of and Introduction to NPL's Pressure facilities
- 12.45 Closing words and presentation of certificates
- 14.30 Finish



Legal & Industrial Metrology Training Course 7 –18 June 2010

Registration of Interest

To register your interest in attending - An Introduction to Legal & Industrial Metrology training course 2010, please send your CV and a covering letter by 31 March 2010 to:

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www.npl.co.uk/training

www.nmo.bis.gov.uk/training/introduction.aspx

