

## General Information

**Location** The course will be held at the National Physical Laboratory (NPL), Teddington, which is about 15 miles south-west of London. It is easily reached by road, rail (from London Waterloo) and air (Heathrow Airport). Directions to the Laboratory will be sent with confirmation of registration.

**Car Parking** Car parking is available on site.

**Further Information** For further technical information please contact:

**Karen Alston**

Engineering Measurement Division  
National Physical Laboratory  
Hampton Road  
Teddington  
Middlesex  
TW11 0LW

Tel: 020 8943 6185

E-mail: karen.alston@npl.co.uk

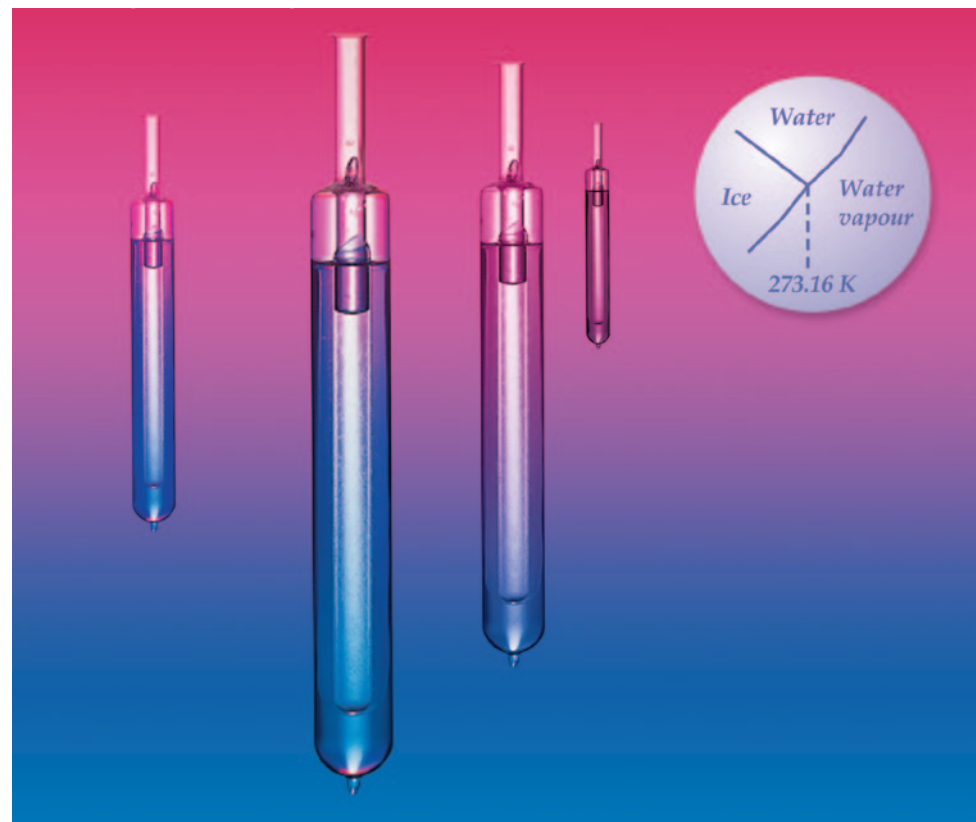
**Additional Information**

A two day Humidity Measurement and Calibration course, on 26 and 27 April 2012, runs after this Temperature Measurement and Calibration course. You may register for both courses at the same time. Please complete the registration form.

E-mail: npl\_clubs@npl.co.uk

Website: [www.npl.co.uk/temperature-measurement-and-calibration-course](http://www.npl.co.uk/temperature-measurement-and-calibration-course)

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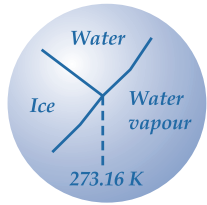


# Temperature Measurement and Calibration

A TWO/THREE DAY COURSE

(Day 3 optional)

23 to 25 April 2012



**Temperature is one of the most important of all physical quantities in industry. Its measurement plays a key part in quality and process control, in the efficient use of energy and other resources, in condition monitoring and in health and safety. There are few material properties of technological or engineering importance which do not depend on temperature to a greater or lesser extent.**

## The Course

The course will be suitable for technicians and technical managers closely concerned with temperature measurement and calibration, and will broadly follow the pattern established in previous courses. Covering the range -200 °C to 3000 °C, it will concentrate on those methods of measurement which are of greatest technological and industrial importance.

The lectures will cover the necessary background to the subject and full course notes will be provided. However, the emphasis will be on practical aspects of temperature measurement, calibration and traceability, with most of the time being spent in laboratories.

The course will open with an introductory session on temperature scales and standards, including a résumé of the International Temperature Scale of 1990, ITS-90, and the three most important measurement techniques.

The laboratory sessions will be concerned with fixed points, resistance thermometers, thermocouples, radiation thermometers and thermal imaging. These will be supplemented by lectures in calibration techniques, uncertainties, traceability and accreditation.

The optional third day will provide opportunities for more in-depth training and 'hands-on' experience of some of the calibration techniques used in the laboratory.

The course will be given by members of the NPL Thermal Metrology Team and the United Kingdom Accreditation Service (UKAS).

All participants will receive a certificate of attendance.

### Some comments from previous courses

- "Congratulations, it was a great course"
- "Enjoyable course with enthusiastic teachers"
- "Useful tips and lab exercises"

## Provisional Programme

### DAY 1 - Monday 23 April

- 09.30 *Welcome and introduction*
- 09.40 Temperature scales and standards: ITS-90 - Graham Machin  
Resistance thermometry - Radka Veltcheva
- 11.00 *Tea/Coffee*  
Radiation thermometry - Helen McEvoy  
Thermocouples - Jonathan Pearce
- 13.00 *Lunch*
- 14.00 Laboratory sessions I and II
- 16.15 *Tea/Coffee*
- 16.30 Wrap up session, Q and A
- 17.00 *Close*

### DAY 2 - Tuesday 24 April

- 09.15 Uncertainties - Richard Rusby
- 10.15 *Tea/Coffee*
- 10.30 Calibration Techniques - Jonathan Pearce and Karen Alston
- 12.00 *Equipment Manufacturers' Exhibition*  
*Buffet Lunch*
- 13.00 Laboratory session III and IV
- 15.00 Informal session to allow visits to other thermometry laboratories.
- 15.30 *Tea/Coffee*
- 16.00 Traceability and accreditation - Neil Robinson (UKAS)  
Concluding discussion
- 17.00 *Close*

### DAY 3 - Wednesday 25 April (optional)

- 09.15 *Assemble for Video: 'Triple-point Cells'.*
- 09.30 Practical training in the calibration of resistance thermometers, radiation thermometers, thermocouples and bath profiling.
- 16.00 *Close*