

# PRESSURE METROLOGY PART 1



## Aim of Course

An introduction to the fundamentals of pressure metrology, which is the science of accurate measurement, in the following fields:

Metrology fundamentals, pressure fundamentals, manometers, barometers, vacuum measurements, pressure balances, Bourdon tube pressure gauges, other mechanical devices. Aspects of general pressure metrology and measurement systems. Contributors to Uncertainty of Measurement.

This course introduces the various sensors used in the industry, as well as their calibration against traceable standards.

Those planning to attend the NLA-SA courses are recommended to bring their own calculators.

## Pre-Requisites for attending this course

- Introduction to Measurement (strongly recommended)
- Method Validation (Calibration) (strongly recommended)
- Uncertainty of Measurement – GUM (Physical)
- Experience in the use of a scientific calculator
- Mathematics (area calculation, scientific notation)

## Course Overview

- Fundamental theory: Definitions, fluid pressure, terminology, units and conversions, the gas laws
- General principles of measuring instruments: Manometers, barometers, the pressure balance, the Bourdon tube  
Pressure gauge, diaphragms, capsules and bellows, electro-mechanical devices, seals, purging and protective devices
- Types of construction, deviation of pressure, practical considerations, calibration and contributors of uncertainty of measurement for the following instruments:
  - Pressure balances
  - Pressure gauges
  - Electro-mechanical devices
  - Manometers and barometers

## Who should attend

Metrologists and quality practitioners wishing to learn the fundamentals of pressure measuring principles and how to perform calibrations of various instruments and devices. Attendees of this course should preferably have experience of metrology work, pressure equipment, mathematics & calculations, use of a scientific calculator.

## Course Duration

5 Days

## Evaluation

Attendance of the course, daily tests and the passing of a final examination are required (counting typically 30% for Daily tests and 70% for the Final Exam) in order to successfully complete this course.

The examination will be written approximately two weeks after the completion of the course.

National Laboratory Association  
South Africa

PO Box 298 • Persequor Park • 0020  
1 De Havilland Crescent • Persequor  
Technopark • Pretoria • South Africa

Tel: +27(0)12 349 1500 • Fax: +27(0)12 349 1501  
[www.nla.org.za](http://www.nla.org.za)