

OTHER COURSES

Uncertainty of Measurement

- Basic & Advanced Courses
- ISO GUM Based
- Analytical Version
- Calculations
- Uncertainty Budgets
- Practical Examples
- Temperature Metrology

Introduction to Measurement

- Measurement Infrastructure
- Metre Convention
- Traceability & Calibration
- Metrological Units
- SI System

other



In January 2000, the National Laboratory Association (NLA) announced that all technical training courses in the area of calibration, measurement and testing would be co-ordinated by the NLA's Centre for Skills Co-ordination – CMeTSA. Prior to this, the SRCME (SADC Resource Centre for Metrology Education) had been performing this function.

As a major stakeholder, the NLA offered to help financially support the progress that the local SRCME had made. The CSIR's National Metrology Laboratory (NML), who had been providing interim management of the training component of the local SRCME, was of the opinion that this field was not part of its focus and was therefore unable to continue with this management function.

In late 1999 the NLA was approached by the NML and it was agreed that NLA/CMeTSA would take over this function; one that it had performed up until the advent of the local SRCME, with the SRCME continuing to perform a SADC regional role.

As part of the NLA's ongoing commitment towards the upliftment of technical skills in the Calibration, Measurement and Test Laboratory environments, it is essential that the NLA, as an association, provides this vital link between on-going education and training and the communities that it serves. In addition, various other engineering related bodies (e.g. SAIMC etc.) have shown interest in the NLA providing a similar role for their requirements, and this avenue will be explored on an on-going basis.

As a prospective attendee, we look forward to welcoming you on one of our courses and trust that the value of this education will be of long term benefit to everyone involved in the laboratory and measurement world.

To register for any of these courses, you may:

- i) Call the NLA offices on (012) 349 1500; or
- ii) Visit our website at www.nla.org.za and register on-line.



THE CENTRE FOR SKILLS CO-ORDINATION

*Technical Training for Testing,
Calibration & Measurement*



Calibration, Measurement & Testing South Africa

PROCESS RELATED COURSES

Humidity Metrology

- Lab Quality Systems
- Hydrometry Traceability
- Calibration Sensors
- Saturated Salt STDs
- Dew-Pt Transfer STDs
- Uncertainty Budgets
- Absolute Humidity
- Temperature Metrology

Sterilizer & Autoclave

- Sterilization History
- Autoclaving & Types of Sterilizers
- Sterilization Process
- Instrumentation
- Instrument Accuracy
- Gauges
- Instrument Calibration
- Methods
- Monitoring & Validation
- Validation of an Autoclave

Temperature Metrology

- Temperature Scales
- Uncertainties
- Thermometry:
 - Liquid in Glass
 - Thermocouples
 - Resistance
 - Radiation
- Calibration Equipment
- Electrical Calibration

Flow Metrology

- Fluid Flow Fundamentals
- Introduction to Flowmeters
- Flowmeters
 - Differential Pressure
 - Magnetic
 - Mass
 - Positive Displacement Turbine
- Flowmeter Calibration

process

MECHANICAL & RELATED COURSES

Dimensional Metrology

- The metre & standards
- Slip Gauges
- Interferometry
- Screw Threads
- Gauge Blocks
- Optical Instruments
- Angle Measurements
- Laser Interferometry

Mass Metrology

- Fundamentals of Mass
- Weighing Instruments
- Balances:
 - Mechanical
 - Electro-Mechanical
 - Digital Electronic
- Calibration of:
 - Balances
 - Mass Pieces
- Uncertainties

Pressure Metrology

- Pressure Fundamentals
- Manometers
- Barometers
- Vacuum Measurements
- Pressure Balances
- Bourdon Tube Gauges
- Calibration Procedures
- Uncertainty Budgets
- General Pressure Metrology
- Measurement Systems

Force Metrology

- Force
- Torque
- Hardness
- Standards
- Measuring Devices
- Calibration

mechanical

ELECTRICAL & RELATED COURSES

Electrical Metrology

- DC Voltage
- Resistance
- DC Current
- AC Voltage
- AC Current
- Capacitance
- Inductance
- Uncertainties
- General Metrology
- Fundamentals

RF Metrology

- Fundamentals of RF Metrology
- RF Impedance
- RF Power
- RF Attenuation
- Sensors
- Measurement Techniques
- Calibration against Traceable Standards

GPS Metrology

- Satellite
- Constellation
- Application in T&F
- Labs
- Timing Capabilities
- Update for T&F
- Metrologists

Time & Frequency

- Time Scales
- Uncertainties
- Measurement Techniques
- Counters
- Scopes
- Spectrum Analyser
- Phase Comparator
- Time Transfer
- TTS
- Internet Time
- TTCU
- Satellite Frequency STDs

electrical