



TIME & FREQUENCY METROLOGY

Aim of Course

To provide an introduction to time & frequency measurements in general as well as the specific requirements needed to ensure traceability in accredited calibration laboratories.

The course covers a thorough overview, both theoretical as well as practical, and ensures that attendees are given the skills needed to calibrate equipment that requires time and frequency measurement and/or traceability.

Attendees must provide their own scientific calculators and be able to use it.

Pre-Requisites for attending this course

- Uncertainty of Measurement – GUM (Physical)

Course Overview

- Introduction to the Science of Timekeeping
 - Clocks and Timekeeping
 - The Definition of the Second and its General Importance
 - Historical Perspective
 - An Illustrative Timekeeping Example
 - UTC, Official Time for the World
 - GPS Time and UTC
 - Accuracy and Stability of UTC
 - Einstein's Relativity and Precise Timekeeping
- Time and Frequency Standards
 - The fundamentals of oscillators
- Frequency conversion techniques
- Measurement techniques
 - Frequency and Period Measurements
 - Time Interval and Phase Angle Measurements
 - Phase tracking as a means to measure frequency
- Time and Frequency Transfer
 - Using GPS for Time and Frequency Transfer
 - Traceability to the South African National Standard

Who should attend?

T&F Technicians and Metrologists

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 completion of the course.

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