Training Course 110: Dimensional Metrology & Small Tools

This two day course presents the science of dimensional metrology and effective usage of handheld instruments with the objective to develop awareness, knowledge and skills required for reliable measurements.

Day 1

- Concepts & fundamental laws of metrology, theory for handheld measuring tools explained via presentations, videos, practical demonstrations and interactive discussions.

Day 2

- Review; Handheld measuring tools- effective usage, applications, practical demonstrations & hands-on learning.

Contents

Day 1	1. Introduction to Metrology a. Introduction to SI units b. General & legal metrology terms a. Importance & scope of metrology b. Main elements of metrology c. NABL/NPL & International standards d. Traceability 2. Concepts & fundamental laws a. Metrology principles & techniques i. Abbe's principle ii. Mechanical & thermal stability iii. Scales: high resolution, linearity, traceability iv. Alignment v. Probe/surface interaction vi. Error mapping & error separation techniques b. Measurement & Uncertainty c. Types and sources of errors d. Hertz Law 3. Handheld Measurement Tools : a. Micrometer b. Caliper c. Dial Indicator d. Dial Test Indicator *Topics Include:* Detailed Nomenclatures; Measuring Techniques; Common Reading Errors; Measurement Precautions; Precautions in Storage; Additional Technical Details. 4. Q & A Session
Day 2	1. Handheld Measurement Tools : a. Bore Gages b. Height Gages c. Introduction to Input Tools *Topics Include:* Detailed Nomenclatures; Measuring Techniques; Common Reading Errors; Measurement Precautions; Precautions in Storage; Additional Technical Details. 2. Practical demonstrations of Handheld measurement tools 3. Q & A Session