



# Jayasree Reva Phoenix Metrology Pvt. Ltd.

Calibration | Inspection | Testing | Training | Services

ISO 9001:2015 Certified | ISO/IEC 17025:2017 Accredited



## Dimension - Basic Metrology | Training Brochure

### INTRODUCTION

Dimensional metrology is the science of measuring physical dimensions, such as length, width, and height, of an object. Basic dimensional metrology involves the use of simple and commonly used measuring instruments to measure dimensions with a moderate degree of accuracy. The accurate measurement of dimensions is essential in many industries, including manufacturing, engineering, construction, and science.

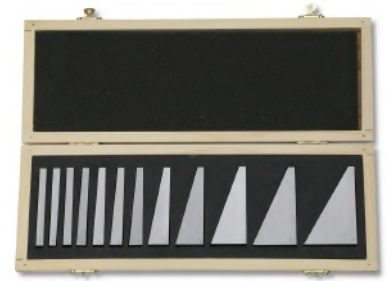
## COURSE FEATURES

Training course covers the following contents:

- Practical & Theoretical Training of Dimension - Basic Calibration
- Specific Criteria & Guidelines Dimension - Basic Calibration
- Estimation and Expression of Uncertainty in Measurement as per NABL 141
- Calibration and Measurement Capability (CMC) and Measurement Uncertainty in Calibration as per NABL 143
- Participation in Proficiency Testing Activities as per NABL 163



Long Gauge Blocks



Angle Gauge Block



Cross Hatch Cutter



Bridge Cam Gauge



Sine Bar



## TRAINING MATERIAL

Material in soft for Dimension - basic metrology as per ISO/IEC 17025: 2017, NABL oriented best-in-class training material traceable to National and International Standard requirements.

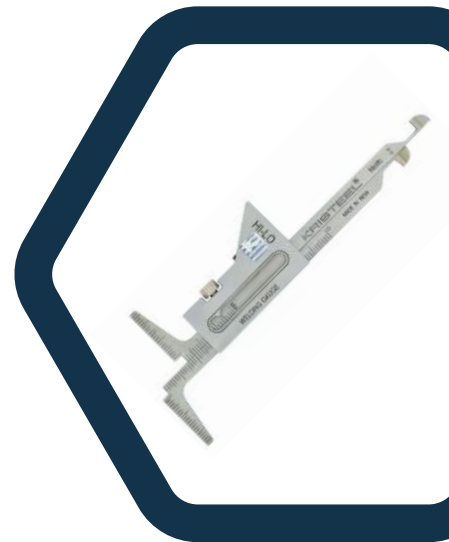


## PRINCIPLE | THEORY

The theory of basic dimension calibration involves ensuring that the measuring instrument provides accurate and reliable measurements, with minimal measurement uncertainty. Calibration ensures that the measuring instrument is traceable to recognized national or international standards, and that the instrument is capable of providing accurate and precise measurements over its entire range of use.

## CALIBRATION RANGE

- Test Sieves (0 to 125 mm)
- Vernier Caliper (0 to 2000 mm)
- Stage Micrometer (0 to 10 mm)
- Angular Graticule (0 to 360°)
- External Micrometer (0 to 1800 mm)
- Optical Flat (0 to 60 mm)
- Grade K Gauge Blocks (0 to 100 mm)
- Cross Hatch Cutter (0 to 3 mm)
- Clinometer (0 to 90°)
- Hi-Lo Gauge (0 to 100 mm)
- Wet Film Thickness Gauge (25 to 3000  $\mu\text{m}$ )
- Angle Gauge Block (0 to 90°)
- Hegmann Gauge (0 to 100  $\mu\text{m}$ )
- Elongation Gauge (14.7 to 81 mm)
- Gear Tooth Vernier (0 to 50 mm)
- V-Notch Template (0 to 100 mm, Angle 360°)
- Extensometer (0 to 5 mm)
- Penetrometer (0 to 40 mm)
- Sine Bar (0 to 500 mm, Angle 90°)
- Pistol Caliper (0 to 250 mm)



- Dial Bore Gauge (0 to 2 mm)
- Long Gauge Blocks (100 to 1000 mm)
- Parallel Blocks (0 to 300 mm)
- Straight Edge (0 to 1000 mm)
- Granite L-Sphere (0 to 600 mm)
- PCD Gauge (0 to 100 mm)
- Limit Gauge (0 to 300 mm, Angle 360°)
- Bridge Cam Gauge (0 to 10 mm, Angle 60°)
- Check Master (0 to 1000 mm)
- Rockwell | Vickers Diamond Cone Indenter (Angle 120°, Radius = 0.2 mm)
- LVDT Probe (0 to 100 mm)
- Bench Center (0 to 1000 mm)



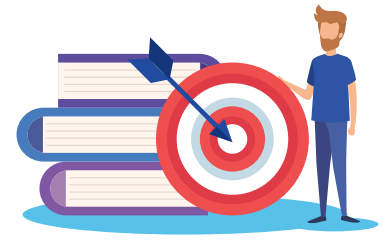
## EXPECTED PARTICIPANTS

- Laboratory Managers
- Calibration and Testing Engineers
- Laboratory Engineers
- Quality Managers
- Metrology Professionals
- NABL Lab Engineers





# OBJECTIVES OF DIMENSION - BASIC WORKSHOP



- Basic knowledge of calibration such as requirements of calibration, why do we need calibration, equipment selection, types of equipments, metrological traceability, selection of calibration agency etc.
- Understand requirement of ISO/IEC 17025:2017 requirements for measurement uncertainty.
- Understand theory of uncertainty of measurement, selection of uncertainty measurement factors, and calculation of measurement uncertainty.
- Understand the relevance of instrument measurement, including the use of instrument.
- Understand technical requirements and calibration method for relevant instruments.
- Preparation of calibration certificates and work sheet.

## COURSE CONTENT

Course content covers the following topics:

- Comprehensive Trainer's Guide
- Power Point Presentation: Dimension - Basic Metrology
- Introduction to Measurements, Fundamental & Derived Units
- Standards Organizations and Document Standards
- Calibration Procedures | Methods | Processes
- Practical example from the trainer selecting the best solution
- Documentation Training as per ISO/IEC 17025: 2017
- Measurement Uncertainty
- Questions & Answers
- Practical examples from your business ( In-house courses only)
- Summary & Review



# WORKSHOP METHODOLOGY



## TRAINING SESSION

Theoretical training on the basics of the subject.

- Dimension - Basic Laboratory



## WORKSHOP & TEAM EXERCISES

Case studies from relevant industry samples taken up in line with the guidelines and formats.

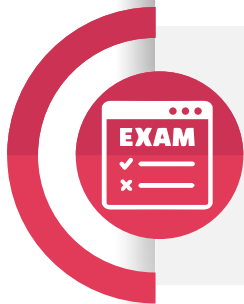
- Dimension - Basic Laboratory



## GRADED EXERCISE

Graded exercises to evaluate individual participant's progress during the course.

- Dimension - Basic Laboratory



## FINAL EXAMS

Business as usual, we have a final examination to evaluate and certify the participants.



## CONTINUING SUPPORT

We provide continuing support to new projects and provide project assistance based on client requirements.

## CERTIFICATION

- Certificate of course completion to successful participants.
- Attendance for the entire duration of the course is compulsory.



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Dimensional | Pressure | Torque | Force | Hardness | Impact | Mass | Volume |  
Electro-Technical | Thermal | Acoustics | Acceleration & Speed | Fluid Flow | Optical |  
UTM | TTM | Tachometer | Anemometer | Durometer | Lux Meter | Push Pull Gauge |  
Rockwell | Brinell | Vickers | Micro Vickers | Mechanical Testing | Impact Testing :  
Mechanical Properties of Metals and Non-Metals



## CONTACT US

### Head Office / Laboratory

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