

## Educational Seminar #216 - Dimensional Metrology Quality

This 1-day course focuses on measurement quality – including how to understand and assess the errors in dimensional measuring systems. The primary topic of this course is Gage Repeatability and Reproducibility (Gage R&R), a common tool to study variation in measuring systems. This course will then go beyond Gage R&R and study common measurement errors that are typically not well addressed in Gage R&R studies, including the impact of temperature and the selection of measurement methods. This course will also introduce the concept of Measurement Uncertainty, which formally represents all the likely measurement errors into a single estimated value. The use of uncertainty versus Gage R&R will be discussed. Lastly, this course will introduce the importance of calibration in managing measurement quality, including the selection of proper in-house methods, how to select external calibration services, and the role of ISO/IEC 17025 accreditation of calibration services. This course combines theory with practice and is taught in a hands on, experiential, manner.



**Prerequisites:** To be successful in this course, students should have prior experience using dimensional measuring equipment. This course does involve some math, and students should be comfortable with basic algebraic and statistical calculations.

### Pricing:

Course	No. of Days	Advanced Price	Standard Price
Seminar 216: Dimensional Metrology Quality	1	\$ 530	\$ 585

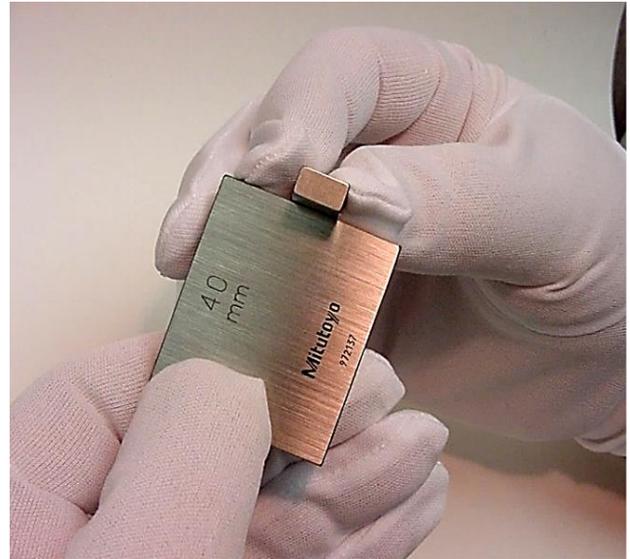
- Advanced pricing applies when registration is completed more than 2 weeks prior to the class starting.
- A discount of 10% is available when registering more than two students for the same course.
- For cancellation information, please visit our website at [www.mitutoyo.com/education](http://www.mitutoyo.com/education).

**Registration:** For questions or registration, please call the Mitutoyo America Education Department at 888-MITUTOYO (option 6) or direct at 630-723-3620. Office hours are 8:30 am to 5:00 pm Central Time. We can also be reached via email at [mim@mitutoyo.com](mailto:mim@mitutoyo.com). Purchase orders can be faxed to 630-978-6471.

# Dimensional Metrology Curriculum

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Dimensional metrology – the science and practice of dimensional measurement – is one of the fundamental educational series of the Mitutoyo Institute of Metrology. The full curriculum consists of free online educational material and videos plus a series of independent classroom courses that cover all aspects of dimensional measurement and inspection, from calipers to gage blocks to coordinate measuring machines. Students can choose which courses are most relevant and create their own unique educational experience. Our modern dimensional metrology curriculum is for anyone wanting to learn about dimensional measuring equipment and strategies for implementation, including selection, application, calibration, and care of dimensional measuring systems. Principles and practice are taught with a hands-on experiential learning approach to engage the students and promote retention of the concepts.



Four independent classroom courses are currently available in our Dimensional Metrology series:

- **Seminar 101: Dimensional Measurement with Precision Measuring Equipment**
- **Seminar 111: Introduction to Dimensional Gage Calibration**
- **Seminar 215: Dimensional Measurement with CMMs, Vision, and Form Instruments**
- **Seminar 216: Dimensional Metrology Quality**

Many students may wish to take all four courses in sequence and therefore we try to provide a schedule that makes that possible. Seminars 101 and 111 are frequently offered together in a 3-day sequence. Similarly, seminars 215 ‘Dimensional Measurement with CMMs, Vision and Form Instruments’ and 216 Dimensional Metrology for the Quality Professional’ are frequently offered together.

Students looking for a more in-depth dimensional calibration course are encouraged to explore our 3-day [Seminar #114 Dimensional Gage Calibration](#), which is only available at the Metrology Training Lab at the headquarters of Mitutoyo America in Aurora, Illinois.



**Comprehensive Curriculum:** The Mitutoyo Institute of Metrology offers a number of courses to meet the educational needs of manufacturing, quality, and measurement professionals. Our course are scheduled regularly throughout the year.



Mitutoyo and the Mitutoyo Institute of Metrology is a worldwide organization. We are proud to state that more than 200,000 engineers, technicians and managers have attended our measurement seminars over the years. If you wish to register or if you have additional questions, please contact us at 630-723-3620, 888-MITUTOYO, or email [mim@mitutoyo.com](mailto:mim@mitutoyo.com). Please visit our website for cancellation information at [www.mitutoyo.com/education](http://www.mitutoyo.com/education)