



Quality-One International

Gage Repeatability and Reproducibility (Gage R&R) Course Outline

- Introduction Gage Repeatability and Reproducibility
- Calibration to Standards
 - Hierarchy of Standards and Calibration
 - Frequency of Calibration
 - Gage Use Environments and their effect on Calibration
- Calibration terms and what they represent
 - Bias / Stability / Linearity / Sensitivity / Uniformity
 - Resolution of the Gage for Use (10 Times Rule)
- Relationship to MSA to SPC
- Gage Studies and Evaluation Techniques
- Variables Gage Techniques
 - Gage Repeatability
 - Gage Reproducibility
 - Long Method
 - Short Method
 - Control Chart Method
- Acceptance Criteria for Variables Gage Methods
 - % of Tolerance
 - 10% or less is desired
 - 10% to 20% acceptable in certain circumstances
 - 20% to 30% extreme caution used when making quality decisions
 - Greater than 30% unacceptable
 - % of Variation
 - 10% or less is desired
 - 10% to 20% acceptable in certain circumstances
 - 20% to 30% caution used when making decisions
 - Greater than 30% stop measurements if Cpk is 1.33 or greater
- Attribute Gage Evaluation Technique