Measurement System Analysis (MSA)

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The THORS *Measurement System Analysis (MSA)* course is designed to provide learners with a basic understanding of Measurement System Analysis (MSA) and its key terminology. The course also delves into various studies for assessing measurement systems. Additionally, the course presents case studies that demonstrate the application of the different studies involved in MSA.

Credit Hours **2.5**

Learning Objectives

- Develop an understanding of the basic terminology associated with a measurement system and the measurement.
- Identify the different types of variations present in a measurement system.
- Understand various studies used to evaluate measurement systems.
- Recall the applications for each of the different studies used to assess measurement systems.

Table of Contents

I. MSA Concepts

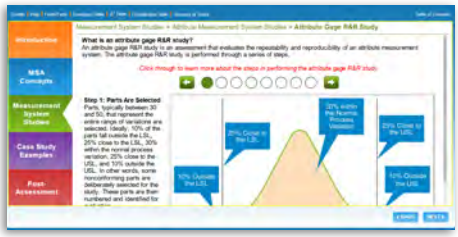
- **Measurement System**
  - Statistical Properties
  - Calibration
- **Measurement Process**
  - Measurement Values
  - Measurement Errors
  - Measurement Uncertainty
  - Measurement Reliability
- **Variations**
  - Bias
  - Repeatability
  - Reproducibility
  - Gage Repeatability and Reproducibility

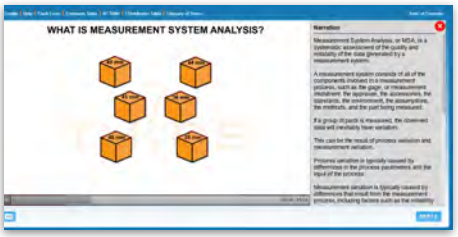
II. Measurement System Studies

- **Variable Measurement System Studies**
  - Stability Study
  - Bias Study
  - Linearity Study
  - Gage R&R Study
- **Attribute Measurement System Studies**
  - Attribute Gage R&R Study
  - Kappa Analysis

III. Case Study Examples

- **Case Study 1: Stability Study**
- **Case Study 2: Bias - Numerical Method**
- **Case Study 3: Bias - Control Chart Method**
- **Case Study 4: Linearity Study**
- **Case Study 5: Gage R&R Study - Range Method**
- **Case Study 6: Gage R&R Study - Average and Range Method**
- **Case Study 7: Attribute Gage R&R Study**
- **Case Study 8: Kappa Analysis**





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