



## BSI Training Academy

# Measurement Systems Analysis (MSA) training course

### Essential information about the course

Level **1C 2C 3**

Measurement System Analysis (MSA) is a method of determining how much the variation within the measurement process contributes to overall process variability. It can be applied to facilitate process improvement and is one of the Core Tools used in automotive industry and referred to in IATF 16949.

If you are involved in supporting the Advanced Product Quality Planning (APQP) process especially those involved in gage design, process measurement, and initial process studies to support new product and process

introduction then this course could be beneficial for you. This course will help you to identify the correct measurement systems analysis tool to use when evaluating measurement systems. It will also equip you with the skills to conduct measurement systems studies on attribute measurement systems using risk analysis methods.

Delegates should have a good understanding of the requirements of ISO 9001:2015 and IATF 16949 related to the scope of your audit.

### Our course agenda

- Measurement Systems Analysis (MSA)
  - Introduction
  - Summary of terms
  - The measurement process
  - The effects of measurement system variability
  - Effects on decisions
- Measurement issues
  - Introduction
  - Bias, stability, linearity, precision, repeatability and reproducibility
  - Gage R&R or GRR, sensitivity, consistency and uniformity
- Measurement system variation
  - Capability
  - Performance
- Preparation for a measurement system study
- Analysis of results
- Gage capability
- Determining capability, stability, bias and linearity
- Guidelines for determining repeatability and reproducibility
  - Range method
  - Average and range method
  - Average and range method numerical calculators
  - Analysis of variance (ANOVA) method example
- Attribute studies
- Hypothesis testing
- Hypothesis test analysis: Cross-tab method
- Questions and close

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[bsigroup.com/training](https://www.bsigroup.com/training)



Upon successful completion of your course, you'll receive an internationally recognized BSI certificate.

# Measurement Systems Analysis (MSA) training course

We want to make sure you have the best learning experience possible. That's why we offer a range of training courses from beginner to expert. We create a positive learning environment so you retain the knowledge and acquire skills that will continue to be of use beyond the course.

**Make sure this is the right course for you.**

## This is the course for you if:

- You are involved in supporting the Advanced Product Quality Planning (APQP) process
- You are involved in the implementation of IATF 16949
- You already have a good understanding of the requirements of ISO 9001:2015 and IATF 16949

## What is the course like?

- One day long
- Led by a BSI expert tutor
- Relaxed and comfortable learning environment
- You'll receive detailed course notes to take away

## How will I benefit?

- You will learn how to identify whether a measurement system is acceptable for its intended use
- You will gain the skills to conduct repeatability and reproducibility (G&R) studies on variable measurement systems
- Develop professionally
- Network with likeminded peers
- Receive a BSI certificate

## Why invest in training from BSI?

When you attend a BSI training course, our tutors are the best in the business. They're truly passionate about sharing their knowledge and ensuring you learn. Trusted experts with years of hands-on and business experience, they bring the subject matter to life with relevant and contemporary examples.

### Training delivered at your site



This could be a convenient and cost effective option, especially if you have multiple delegates.

**Talk to one of our experts to find out more.\***

### Next steps with the BSI Academy



Want to learn more? You may be interested in:  
IATF 16949:2016 Implementing training course  
IATF 16949:2016 Understanding core tools for Internal Auditors training course

\*According to IATF rules, in-house training is only available to organizations not currently certified by BSI

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