Statistics
for BLACK BELTS

UNIVERSITY OF GEORGIA — Center for Continuing Education & Hotel

LEARN HOW to make data-driven decisions

This 50-hour course provides comprehensive statistical training for Black Belts. You'll learn to perform a wide range of statistical analyses to apply in the measure, analyze, improve and control phases of a Six Sigma project.

To successfully lead a project, you need to learn how to use the best statistical software available. In addition, to use the software effectively, you need a thorough understanding of the underlying statistical concepts and assumptions. This course focuses on preparing you well for both skills.

The course consists of 12 modules covering topics such as descriptive statistics, discrete and continuous probability distributions, hypothesis testing, analysis of variance, linear regression, design of experiments and statistical process control. Students will learn through instructional videos, assignments and quizzes. Access to Minitab statistical software is required. Instruction on how to use the software is also provided through computer lab exercises.

Your instructor has a doctorate in statistics, and she's readily available to explain concepts during the weekly office hours.

Material covered in the course spans the American Society for Quality's Black Belt body of knowledge.

Course Information

Course format: The course is online, self-paced with live-online weekly office hours and instructor feedback on assignments. Students will submit assignments via the online assignment tool.

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Course Outline:

In addition to the Minitab Trainer curriculum, the course covers these areas:

- Types of Data
- Using Graphs to Analyze Data
- Using Statistics to Analyze Data
- Fundamentals of Statistical Inference
- Sampling Distributions
- Normal Distribution
- Tests and Confidence Intervals
- 1-Sample t-Test
- 2 Variances Test
- 2-Sample t-Test
- Paired t-Test
- 1 Proportion Test
- 2 Proportions Test
- Chi-square Test
- Statistical Process Control
- Control Charts for Variables Data in Subgroups
- Control Charts for Individual Observations
- Control Charts for Attributes Data
- Process Capability for Normal Data

- Capability Indices
- Process Capability for Nonnormal Data
- Fundamentals of ANOVA
- One-way ANOVA
- Two-way ANOVA
- Relationship between Two Quantitative Variables
- Simple Regression
- Fundamentals of Measurement Systems Analysis
- Repeatability and Reproducibility
- Graphical Analysis of a Gage R&R Study
- Variation
- ANOVA with a Gage R&R Study
- Gage Linearity and Bias Study
- Attribute Agreement Analysis
- Factorial Designs
- Blocking and Incorporating Center Points
- Fractional Factorial Designs

Textbook Requirements: The primary textbook for this course is Applied Statistics Manual (ASM) by Barsalou and Smith ($99).

There is also a Statistics for Black Belts companion slide book ($35.99) that contains the study planner, the video screen shots and the Minitab lab exercises.

There are two additional textbooks that are suggested, McShane-Vaughn, M., The Probability Handbook ($99 non-ASQ member price) and Anderson and Whitcomb, DOE Simplified ($58.04 new).