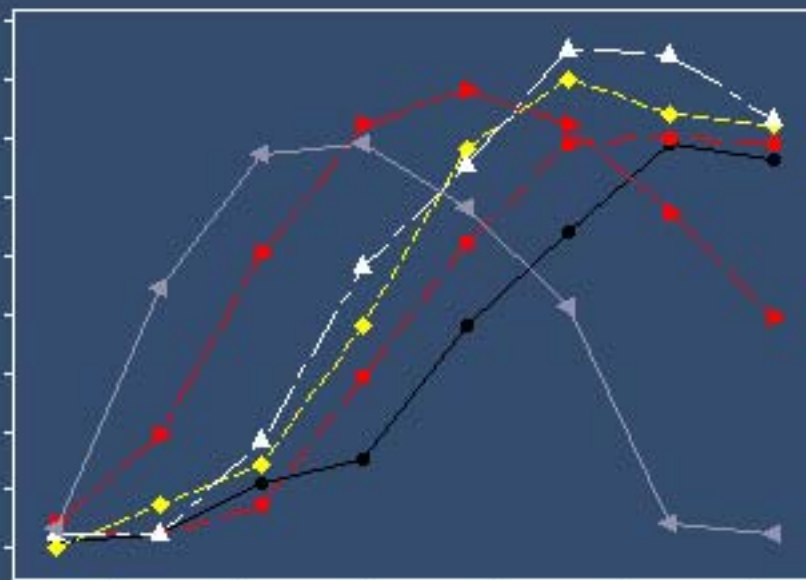




MINITAB APPLICATIONS CURRICULUM



MINITAB Applications Curriculum

VR Data Systems offers our MINITAB Applications Curriculum to any individual seeking education and training in statistical analysis using MINITAB. Courses in this curriculum will provide an understanding of data analysis, experimentation, inference and more. All courses in this curriculum will deliver knowledge, techniques and methodologies that can be applied directly to the student's Six Sigma projects. In addition, students will learn using practical applications, and are welcome and encouraged to use challenges from their own profession as learning tools during class discussions and projects.

MINITAB® Release 14 is a powerful statistical software package designed for quality professionals. Valuable features include: customizable menus, toolbars, preferences and profiles; a StatGuide(tm) that helps you interpret your output; and, visually engaging graphs that are easy to make, edit and update automatically. MINITAB's comprehensive collection of methods - including Basic and Advanced Statistics, Regression, ANOVA, SPC, DOE and more - make it the ideal choice for Six Sigma and other quality initiatives worldwide.

Courses

Code	Course Title	Length
MAC-950	Introduction to Statistics using MINITAB	1 Day
MAC-955	Statistical Process Control (SPC) using MINITAB	3 Days
MAC-960	Statistical Inference using MINITAB	3 Days
MAC-965	Design of Experiments (DOE) using MINITAB	4 Days
MAC-970	Analysis of Variance (ANOVA) using MINITAB	3 Days
MAC-975	Applying Quality Concepts using MINITAB	2 Days

Customized Courses

VR Data Systems will customize any course(s) to suit the unique business requirements of our clients. From the modification of standard curriculum to new course development, we will provide the education and training your organization needs to be more productive in today's competitive environment. Ask a VR Data Systems representative for more information.

About VR Data Systems, Inc.

VR Data Systems, Inc. (VRDS) is a training and consulting firm that specializes in Quality, Statistics, and Data Analysis. For more than 15 years, we have offered comprehensive, hands-on curricula for professionals at any experience level in numerous industries, including Pharmaceutical, Clinical, Manufacturing, Financial, and Software & Hardware Development. Our courses are taught by seasoned instructors who possess long-term expertise in their respective fields – from Sales and Marketing to Finance and R&D.

MINITAB Applications Curriculum

MAC-950: Introduction to Statistics using MINITAB

Length: 1 day

Course Goal

Upon completion of this course, the student will be able to understand fundamental statistical concepts and terminology, as well as know how to use MINITAB to perform basic data analysis.

Course Description

This course is ideal for any student who has no prior knowledge of statistics or data analysis. Using MINITAB, an integral part of this course, participants perform measures of central tendency (mean, median), dispersions (standard deviation, variance, range, quartiles), simple graphical analysis (histograms, individual value plots, boxplots), as well as determine relationships between two sets of data (correlation, simple linear regression).

Broad Topics

- Using MINITAB as a tool for data analysis
- Organizing and analyzing data using MINITAB
- Qualitative and quantitative data
- Descriptive statistics
- Measures of location and dispersion
- Using MINITAB to create and interpret basic charts
- Normal distribution and applications
- Correlation and simple linear regression
- Covariance
- Normal distribution
- Probability plot

Target Audience

Any technical or non-technical individual who has no experience in statistics or data analysis and would like to learn how to analyze data using MINITAB.

Prerequisites

None.

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MINITAB Applications Curriculum

MAC-955: Statistical Process Control (SPC) using MINITAB

Length: 3 days

Course Goal

Upon completion of this course, the student will know how to measure, control, improve and monitor the processes within his or her organization using MINITAB.

Course Description

This course helps students learn and use MINITAB to understand the objectives and benefits of SPC, including construction and interpretation of control charts, and distinguishing between common and special causes. Charts such as Xbar-R, Xbar-S, I-MR, Z-MR, P, NP, C, U, EWMA, CUSUM, T-squared, generalized variance and multivariate EWMA are covered. This course deals with real-world business scenarios and incorporates the student's own processes and data, if available.

Broad Topics

- Using MINITAB as a tool for data analysis
- Control charts for individuals, attributes and variables
- Moving ranges
- Zone tests
- Analysis of patterns
- Non-normal data transformations
- Time-weighted charts
- Multivariate charts
- Box-Cox transformation and plots
- Case studies

Target Audience

This course is for beginners and is highly recommended for individuals whose professions require evaluation, implementation and refinement of processes. The course focuses on assuring quality within an organization.

Prerequisites

MAC-950 (Introduction to Statistics using MINITAB) or equivalent knowledge, or either BDC-105 (Introduction to Statistics) or BDC-110 (Introduction to Statistics and Probability) with basic MINITAB knowledge.

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MINITAB Applications Curriculum

MAC-960: Statistical Inference using MINITAB

Length: 3 days

Course Goal

Upon completion of this course, the student will understand how to use MINITAB to generate samples and draw valid conclusions by applying rigorous statistical analysis methods to find and/or confirm research questions. These questions are then transformed into statistical hypotheses that can be tested using probability theory.

Course Description

In this course, students learn how to set up several types of statistical tests to verify a hypothesis for population parameters based on sample statistics. One and two-sample tests for means, proportions and variances based on small and large samples are covered. Participants are also taught how to use MINITAB to perform all calculations required to carry out the methods of this class. Group projects, based on the students' actual business requirements, are used as tools to allow participants to combine all of the steps they have learned in order to set up experiments and draw conclusions from their data.

Broad Topics

- Using MINITAB as a tool for data analysis
- Concepts in probability
- Discrete and continuous probability distributions
- Sampling distributions
- Confidence intervals
- Hypothesis testing
- Inferences on population mean, proportion and variance
- Power and sample size

Target Audience

Any technical individual who would like to learn how to analyze patterns and/or trends within data using MINITAB.

Prerequisites

BDC-105 (Introduction to Statistics) or equivalent knowledge.

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MINITAB Applications Curriculum

MAC-965: Design of Experiments (DOE) using MINITAB

Length: 4 days

Course Goal

Upon completion of this course, the student will be able to perform basic and advanced experimentation to understand the relationships between multiple sets of data using MINITAB.

Course Description

This course teaches the concepts and terminology used in the field of experimental design and then covers the planning and execution of multi-factor experiments. The planning step enables students to make decisions regarding objectives, responses, factors and the plan to be used in the experiment. The execution step teaches students to allocate resources, collect data and analyze their results. The group projects, based on the students' actual business requirements, are useful tools that allow students to combine all of the steps they have learned in order to achieve a successful experiment protocol. Introduction to MINITAB, as well as techniques for using MINITAB to perform calculations for DOE, are taught.

Broad Topics

- Testing of hypothesis
- Introduction to experimentation
- Introduction to MINITAB
- Statistics of planned experimentation
- Introduction to factorial experiments: 2^K
- Create, analyze and plot factorial designs
- Create, analyze and plot response surface designs
- Create, analyze and plot mixture designs
- Create, analyze and predict Taguchi designs
- Select optimal design
- Response optimizer
- Plackett-Burman designs
- Iterative experimentation

Target Audience

Any technical individual who would like to learn how multiple sets of data influence each other.

Prerequisites

BDC-110 (Introduction to Statistics and Probability) or equivalent knowledge. No prior knowledge of MINITAB is required.

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MINITAB Applications Curriculum

MAC-970: Analysis of Variance (ANOVA) using MINITAB

Length: 3 days

Course Goal

Upon completion of this course, the student will be able to test for statistical significance between more than two population means using Minitab.

Course Description

This course allows the students to fully examine the hypothesis that *the means of several populations are equal*, considering the fact that there is one dependent variable (response) and an arbitrary number of independent variables (factors), and each factor can assume an arbitrary number of values (levels). Students also learn to use MINITAB's diagnostic plots (individual value plots, boxplots, histograms and normal plots of residuals, residuals vs, fits, orders and variables plots, and four-in-one residual plots) to analyze their results.

Broad Topics

- Hypothesis testing
- Introduction to MINITAB
- One-way ANOVA
- Two-way ANOVA
- Analysis of means
- Balanced ANOVA
- Fully nested ANOVA
- Balanced MANOVA
- General MANOVA
- Interval plot
- Main effects plot
- Interactions plot

Target Audience

Any technical individual who would like to learn how to make optimum decisions within development and manufacturing environments.

Prerequisites

BDC-110 (Introduction to Statistics and Probability) or equivalent knowledge. No prior knowledge of MINITAB is required.

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MINITAB Applications Curriculum

MAC-975: Applying Quality Concepts using Minitab

Length: 2 days

Course Goal

Upon completion of this course, the student will understand several of the tools applied in Quality Management processes and use MINITAB as a tool to perform similar tasks on his or her project.

Course Description

In this course, students learn about basic quality tools (Run Chart, Pareto Chart, Cause-and-Effect Diagram, Symmetry Plot, Multi-Vari Chart), Individual Distribution Identification (graphs showing data fitted with 14 different distributions), Johnson transformation (probability plots) and best transformation. They are also taught concepts such as gage run chart, reference versus bias plot, gage linearity, bias, percent of process variation and attribute gage study.

Broad Topics

- Quality planning tools
- Individual distribution identification
- Johnson transformation
- Capability analysis
- Capability sixpack
- Gage study
- Attribute agreement analysis

Target Audience

Any technical individual who would like to learn how to use MINITAB as a tool to plan and implement quality improvement projects. This course is ideal for managers and professionals associated with quality control, as well as Six Sigma Black and Green Belts.

Prerequisites

None.

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