Course Catalog

Table Of Contents

a. Locations

Our trainings take place at various locations in the German-speaking countries.

Public trainings:

You can enroll for public trainings at our training centers across Germany like in Berlin, Dresden, Hamburg, München / Munich, Düsseldorf, Frankfurt, and Stuttgart. Not all public trainings will be organized in all cities but you can still book a particular training for your team in one of our training and conference centers.

In Austria you can attend seminars and trainings in Wien / Vienna while we offer training dates in Switzerland in Zürich / Zurich.

On-site trainings:

We have mobile and flexible trainers / lecturers who like to visit you and your team for an on-site training or a training in a conference center or hotel near you.

USA

Chicago	Tel: Fax:
Miami	Tel:+1.305.395.7962 Fax:+1.305.395.7964
New York	Tel:+1.212.380.1181 Fax:+1.305.395.7964

1. Minitab

A. Minitab

(i) Design and Analysis of Experiments using Minitab

Overview

Course ID	2024705
Language	en
Duration	2 D ys
Delivery mode	Classroom
Course Type	
Target Group	Engineers, Quality Assurance
Prerequisites	General knowledge of math
Method	Lecture with examples and exercises.
Course level	Beginning

Course Dates

Chicago	Miami	New York
1,600.00 USD	1,550.00 USD	1,600.00 USD
30-31 Jul 24-25 Sep 19-20 Nov	10-11 Sep 05-06 Nov 31 Dec - 01 Jan	17-18 Sep 12-13 Nov

Prices plus local taxes.

Course Description

This training shows engineers and other members of the quality-assurance department to design and analyze experiments for improving the quality, efficiency and performance of working systems. It covers basic statistical methods which are useful for the analysis of experimental data, presents the Analysis of Variance (ANOVA), and teaches how to use factorial experiments, two-level factorial designs, blocking and confounding systems for two-level factorials, two-level fractional factorial designs, regression modeling, and and overview of the Response Surface Methodology.

Course Outline

A. Basic Statistical Methods

(0.25 Days) Basic Statistical Concepts - Sampling and Sampling Distributions - Inferences About the Differences in Means, Randomized Designs: Hypothesis Testing, Confidence Intervals, Choice of Sample Size, Comparing a Single Mean to a Specified Value - Inferences About the Differences in Means, Paired Comparison Designs - Inferences About the Variances of Normal Distributions

B. Analysis of Variance (ANOVA)

(0.25 Days) The Analysis of Variance - Analysis of the Fixed Effects Model: Decomposition of the Total Sum of Squares, Statistical Analysis, Estimation of the Model Parameters - Model Adequacy Checking - Determining Sample Size - The Random Effects Model - The Regression Approach to the Analysis of Variance

C. Experiments with Blocking Factors

(0.25 Days) The Randomized Complete Block Design: Statistical Analysis of the RCBD, Model Adequacy Checking, Estimating Model Parameters and the General Regression Significance Test - The Latin Square Design - The Graeco-Latin Square Design - Balanced Incomplete Block Designs

D. Factorial Experiments

(0.5 Days) The Two-Factor Factorial Design: Statistical Analysis of the Fixed Effects Model, Model Adequacy Checking, Estimating the Model Parameters, Choice of Sample Size - The General Factorial Design - Fitting Response Curves and Surfaces - Blocking in a Factorial Design

E. Two-Level Factorial Designs

(0.25 Days) The 2^2 Design - The 2^3 Design - The General 2k Design - A Single Replicate of the 2k Design - 2k Designs are Optimal Designs - The Addition of Center Points to the 2k Design - Blocking and Confounding Systems for Two-Level Factorials

F. Two-Level Fractional Factorial Designs

(0.125 Days) Process Capability Analysis Using a Histogram or a Probability Plot - Process Capability Ratios - Process Capability Analysis Using a Control Chart - Process Capability Analysis with Attribute Data - Gauge and Measurement System Capability Studies

G. The 3k Factorial Design

(0.125 Days) Notation and Motivation for the 3k Design - Confounding in the 3k Factorial Design - Fractional Replication of the 3k Factorial Design

H. Response Surface Methodology

(0.25 Days) Introduction to Response Surface Methodology - The Method of Steepest Ascent - Analysis of a Second-Order Response Surface - Experimental Designs for Fitting Response Surfaces

(ii) Engineering Statistics using Minitab

Overview

Course ID	2024701
Language	en
Duration	5 D ys
Delivery mode	Classroom
Course Type	
Target Group	Data Analysts
Prerequisites	General knowledge of math
Method	Lecture with examples and exercises.
Course level	Beginning

Course Dates

Chicago	Miami	New York
3,400.00 USD	3,200.00 USD	3,400.00 USD
24-28 Aug 19-23 Oct 14-18 Dec	07-11 Sep 02-06 Nov 28 Dec - 01 Jan	31 Aug - 04 Sep 26-30 Oct 21-25 Dec

Prices plus local taxes.

Course Description

This training presents a modern coverage of engineering statistics, focusing on how statistical tools are integrated into the engineering problem-solving process. All major aspects of engineering statistics are covered, including descriptive statistics, probability and probability distributions, statistical test and confidence intervals for one and two samples, building regression models, designing and analyzing engineering experiments, and statistical process control.

Course Outline

A. The Role of Statistics in Engineering

(0.25 Days) The Engineering Method and Statistical Thinking - Collecting Engineering Data - Retrospective Study - Observational Study - Designed Experiments - Random Samples - Mechanistic and Empirical Models - Observing Processes Over Time

B. Data Summary and Presentation

(0.25 Days) Data Summary and Display - Stem-and-Leaf Diagram - Histograms - Box Plot - Time Series Plots - Multivariate Data

C. Random Variables and Probability Distributions

(1 Day) Introduction - Random Variables - Probability - Continuous Random Variables: Probability Density Function, Cumulative Distribution Function, Mean and Variance - Important Continuous Distributions: Normal Distribution, Lognormal Distribution, Gamma Distribution, Weibull Distribution, Beta Distribution - Probability Plots: Normal Probability Plots, Other Probability Plots - Discrete Random Variables: Probability Mass Function, Cumulative Distribution Function, Mean and Variance - Binomial Distribution - Poisson Process: Poisson Distribution, Exponential Distribution - Normal Approximation to the Binomial and Poisson Distributions - More than One Random Variable and Independence: Joint Distributions, Independence - Functions of Random Variables: Linear Functions of Independent Random Variables, Linear Functions of Random Variables That Are Not Independent, Nonlinear Functions of Independent Random Variables - Random Samples, Statistics, and the Central Limit Theorem

D. Decision Making for a Single Sample

(0.5 Days) Statistical Inference - Point Estimation - Hypothesis Testing: Statistical Hypotheses, Testing Statistical Hypotheses, P-Values in Hypothesis Testing, One-Sided and Two-Sided Hypotheses, General Procedure for Hypothesis Testing - Inference on the Mean of a Population, Variance Known - Inference on the Mean of a Population, Variance Unknown - Inference on the Variance of a Normal Population - Inference on a Population Proportion - Other Interval Estimates for a Single Sample - Testing for Goodness of Fit

E. Decision Making for Two Samples

(0.5 Days) Introduction - Inference on the Means of Two Populations, Variances Known - Inference on the Means of Two Populations, Variances Unknown - The Paired t-Test - Inference on the Ratio of Variances of Two Normal Populations - Inference on Two Population Proportions - Completely Randomized Experiment and Analysis of Variance (ANOVA) - Randomized Complete Block Experiment

F. Building Empirical Models

(0.5 Days) Introduction to Empirical Models - Simple Linear Regression: Least Squares Estimation, Testing Hypotheses in Simple Linear Regression, Confidence Intervals in Simple Linear Regression, Prediction of a Future Observation, Checking Model Adequacy, Correlation and Regression - Multiple Regression: Estimation of Parameters in Multiple Regression, Inferences in Multiple Regression, Checking Model Adequacy - Polynomial Models - Categorical Regressors - Variable Selection Techniques

G. Design of Engineering Experiments

(1 Day) The Strategy of Experimentation - Factorial Experiments - 2k Factorial Design: 22 Design, Statistical Analysis, Residual Analysis and Model Checking, 2k Design for k 3 Factors, Single Replicate of a 2k Design - Center Points and Blocking in 2k Designs: Addition of Center Points, Blocking and Confounding - Fractional Replication of a 2k Design: One-Half Fraction of a 2k Design, Smaller Fractions (2kp Fractional Factorial Designs) - Response Surface Methods and Designs: Method of Steepest Ascent, Analysis of a Second-Order Response Surface - Factorial Experiments With More Than Two Levels

H. Statistical Process Control

(1 Day) Quality Improvement and Statistical Process Control - Introduction to Control Charts: Basic Principles, Design of a Control Chart, Rational Subgroups, Analysis of Patterns on Control Charts - R Control Charts - Control Charts For Individual Measurements - Process Capability - Attribute Control Charts: P Chart (Control Chart for Proportions) and nP Chart, U Chart (Control Chart for Average Number of Defects per Unit) and C Chart - Control Chart Performance - Measurement Systems Capability

(iii) Statistical Quality Control using Minitab

Overview

Course ID	2024703
Language	en
Duration	2 D ys
Delivery mode	Classroom
Course Type	
Target Group	Engineers, Quality Assurance
Prerequisites	General knowledge of math
Method	Lecture with examples and exercises.
Course level	Beginning

Course Dates

Chicago	Miami	New York
1,600.00 USD	1,550.00 USD	1,600.00 USD
17-18 Sep 12-13 Nov	27-28 Aug 22-23 Oct 17-18 Dec	03-04 Sep 29-30 Oct 24-25 Dec

Prices plus local taxes.

Course Description

This training provides a comprehensive treatment of the major aspects of using statistical methodology for quality control and improvement. Both traditional and modern methods are presented, including state-of-the-art techniques for statistical process monitoring and control and statistically designed experiments for process characterization and optimization. The training focuses on DMAIC (define, measure, analyze, improve, and control--the problem-solving strategy of six sigma).

Course Outline

A. Modern Quality Management And Improvement

(0.125 Days) The Meaning of Quality and Quality Improvement - Statistical Methods for Quality Control and Improvement - Management Aspects of Quality Improvement - The DMAIC Problem Solving Process

B. Data Summary and Presentation

(0.125 Days) Describing Variation: The Stem-and-Leaf Plot, The Histogram, Numerical Summary of Data, The Box Plot, Probability Distributions - Important Discrete Distributions - Important Continuous Distributions - Probability Plots

C. Statistical Inference In Quality Control and Improvement

(0.25 Days) Statistics and Sampling Distributions - Point Estimation of Process Parameters - Statistical Inference for a Single Sample - Statistical Inference for Two Samples - The Analysis of Variance (ANOVA)

D. Variables Control Charts

(0.5 Days) Control Charts for –x and R: Statistical Basis of the Charts, Development and Use of –x and R Charts, Charts Based on Standard Values, Interpretation of –x and R Charts, The Operating-Characteristic Function, The Average Run Length for the –x Chart - Control Charts for –x and s: Construction and Operation of –x and s Charts, The –x and s Control Charts with Variable Sample Size, The s^2 Control Chart - The Shewhart Control Chart for Individual Measurements

E. Attribute Control Charts

(0.5 Days) The Control Chart for Fraction Nonconforming: Development and Operation of the Control Chart, Variable Sample Size, Applications in Transactional and Service Businesses, The Operating-Characteristic Function and Average Run Length Calculations - Control Charts for Nonconformities (Defects): Procedures with Constant Sample Size, Procedures with Variable Sample Size, Demerit Systems, The Operating-Characteristic Function, Dealing with Low Defect Levels - Choice Between Attributes and Variables Control Charts

F. Determining Process And Measurement Systems Capability

(0.125 Days) Process Capability Analysis Using a Histogram or a Probability Plot - Process Capability Ratios - Process Capability Analysis Using a Control Chart - Process Capability Analysis with Attribute Data - Gauge and Measurement System Capability Studies

G. Designed Experiments In Process and Product Improvement

(0.25 Days) Factorial Experiments: Statistical Analysis, Residual Analysis - The 2k Factorial Design: The 2^2 Design, The 2k Design for 3 and more Factors, Blocking and Confounding in the 2k Design - Fractional Replication of the 2k Design - Fractional Replication of the 2k: The One-Half Fraction of the 2k Design, The 2k–p Fractional Factorial Design

H. Sampling Procedures

(0.125 Days) The Acceptance-Sampling Problem - Single-Sampling Plans for Attributes - Double, Multiple, and Sequential Sampling - Acceptance Sampling by Variables - Chain Sampling - Continuous Sampling

A. R

(i) Design and Analysis of Experiments using R

Overview

Course ID	1000022
Language	en
Duration	2 D ys
Delivery mode	Classroom
Course Type	
Target Group	Engineers, Quality Assurance
Prerequisites	General knowledge of math
Method	Lecture with examples and exercises.
Course level	Beginning

Course Dates

Chicago	Miami	New York
1,600.00 USD	1,550.00 USD	1,600.00 USD
10-11 Sep 05-06 Nov 24-25 Dec	27-28 Aug 22-23 Oct 10-11 Dec	03-04 Sep 29-30 Oct 17-18 Dec

Prices plus local taxes.

Course Description

This training shows engineers and other members of the quality-assurance department to design and analyze experiments for improving the quality, efficiency and performance of working systems. It covers basic statistical methods which are useful for the analysis of experimental data, presents the Analysis of Variance (ANOVA), and teaches how to use factorial experiments, two-level factorial designs, blocking and confounding systems for two-level factorials, two-level fractional factorial designs, regression modeling, and and overview of the Response Surface Methodology.

Course Outline

A. Basic Statistical Methods

(0.25 Days) Basic Statistical Concepts - Sampling and Sampling Distributions - Inferences About the Differences in Means, Randomized Designs: Hypothesis Testing, Confidence Intervals, Choice of Sample Size, Comparing a Single Mean to a Specified Value - Inferences About the Differences in Means, Paired Comparison Designs - Inferences About the Variances of Normal Distributions

B. Analysis of Variance (ANOVA)

(0.25 Days) The Analysis of Variance - Analysis of the Fixed Effects Model: Decomposition of the Total Sum of Squares, Statistical Analysis, Estimation of the Model Parameters - Model Adequacy Checking - Determining Sample Size - The Random Effects Model - The Regression Approach to the Analysis of Variance

C. Experiments with Blocking Factors

(0.25 Days) The Randomized Complete Block Design: Statistical Analysis of the RCBD, Model Adequacy Checking, Estimating Model Parameters and the General Regression Significance Test - The Latin Square Design - The Graeco-Latin Square Design - Balanced Incomplete Block Designs

D. Factorial Experiments

(0.5 Days) The Two-Factor Factorial Design: Statistical Analysis of the Fixed Effects Model, Model Adequacy Checking, Estimating the Model Parameters, Choice of Sample Size - The General Factorial Design - Fitting Response Curves and Surfaces - Blocking in a Factorial Design

E. Two-Level Factorial Designs

(0.25 Days) The 2^2 Design - The 2^3 Design - The General 2k Design - A Single Replicate of the 2k Design - 2k Designs are Optimal Designs - The Addition of Center Points to the 2k Design - Blocking and Confounding Systems for Two-Level Factorials

F. Two-Level Fractional Factorial Designs

(0.125 Days) Process Capability Analysis Using a Histogram or a Probability Plot - Process Capability Ratios - Process Capability Analysis Using a Control Chart - Process Capability Analysis with Attribute Data - Gauge and Measurement System Capability Studies

G. The 3k Factorial Design

(0.125 Days) Notation and Motivation for the 3k Design - Confounding in the 3k Factorial Design - Fractional Replication of the 3k Factorial Design

H. Response Surface Methodology

(0.25 Days) Introduction to Response Surface Methodology - The Method of Steepest Ascent - Analysis of a Second-Order Response Surface - Experimental Designs for Fitting Response Surfaces

(ii) Statistical Quality Control using R

Overview

Course ID	1000021
Language	en
Duration	2 D ys
Delivery mode	Classroom
Course Type	
Target Group	Engineers, Quality Assurance
Prerequisites	General knowledge of math
Method	Lecture with examples and exercises.
Course level	Beginning

Course Dates

Chicago	Miami	New York
1,600.00 USD	1,550.00 USD	1,600.00 USD
13-14 Aug 01-02 Oct 19-20 Nov	30-31 Jul 17-18 Sep 05-06 Nov 24-25 Dec	06-07 Aug 24-25 Sep 12-13 Nov 31 Dec - 01 Jan

Prices plus local taxes.

Course Description

This training provides a comprehensive treatment of the major aspects of using statistical methodology for quality control and improvement. Both traditional and modern methods are presented, including state-of-the-art techniques for statistical process monitoring and control and statistically designed experiments for process characterization and optimization. The training focuses on DMAIC (define, measure, analyze, improve, and control--the problem-solving strategy of six sigma).

Course Outline

A. Modern Quality Management And Improvement

(0.125 Days) The Meaning of Quality and Quality Improvement - Statistical Methods for Quality Control and Improvement - Management Aspects of Quality Improvement - The DMAIC Problem Solving Process

B. Data Summary and Presentation

(0.125 Days) Describing Variation: The Stem-and-Leaf Plot, The Histogram, Numerical Summary of Data, The Box Plot, Probability Distributions - Important Discrete Distributions - Important Continuous Distributions - Probability Plots

C. Statistical Inference In Quality Control and Improvement

(0.25 Days) Statistics and Sampling Distributions - Point Estimation of Process Parameters - Statistical Inference for a Single Sample - Statistical Inference for Two Samples - The Analysis of Variance (ANOVA)

D. Variables Control Charts

(0.5 Days) Control Charts for –x and R: Statistical Basis of the Charts, Development and Use of –x and R Charts, Charts Based on Standard Values, Interpretation of –x and R Charts, The Operating-Characteristic Function, The Average Run Length for the –x Chart - Control Charts for –x and s: Construction and Operation of –x and s Charts, The –x and s Control Charts with Variable Sample Size, The s^2 Control Chart - The Shewhart Control Chart for Individual Measurements

E. Attribute Control Charts

(0.5 Days) The Control Chart for Fraction Nonconforming: Development and Operation of the Control Chart, Variable Sample Size, Applications in Transactional and Service Businesses, The Operating-Characteristic Function and Average Run Length Calculations - Control Charts for Nonconformities (Defects): Procedures with Constant Sample Size, Procedures with Variable Sample Size, Demerit Systems, The Operating-Characteristic Function, Dealing with Low Defect Levels - Choice Between Attributes and Variables Control Charts

F. Determining Process And Measurement Systems Capability

(0.125 Days) Process Capability Analysis Using a Histogram or a Probability Plot - Process Capability Ratios - Process Capability Analysis Using a Control Chart - Process Capability Analysis with Attribute Data - Gauge and Measurement System Capability Studies

G. Designed Experiments In Process and Product Improvement

(0.25 Days) Factorial Experiments: Statistical Analysis, Residual Analysis - The 2k Factorial Design: The 2^2 Design, The 2k Design for 3 and more Factors, Blocking and Confounding in the 2k Design - Fractional Replication of the 2k Design - Fractional Replication of the 2k: The One-Half Fraction of the 2k Design, The 2k–p Fractional Factorial Design

H. Sampling Procedures

(0.125 Days) The Acceptance-Sampling Problem - Single-Sampling Plans for Attributes - Double, Multiple, and Sequential Sampling - Acceptance Sampling by Variables - Chain Sampling - Continuous Sampling

A. Statistics

(i) Design and Analysis of Experiments (DOE)

Overview

Course ID	2024704
Language	en
Duration	2 D ys
Delivery mode	Classroom
Course Type	
Target Group	Engineers, Quality Assurance
Prerequisites	General knowledge of math
Method	Lecture with examples and exercises.
Course level	Beginning

Course Dates

Chicago	Miami	New York
1,600.00 USD	1,550.00 USD	1,600.00 USD
30-31 Jul 24-25 Sep 19-20 Nov	03-04 Sep 29-30 Oct 24-25 Dec	27-28 Aug 15-16 Oct 17-18 Dec

Prices plus local taxes.

Course Description

This training shows engineers and other members of the quality-assurance department to design and analyze experiments for improving the quality, efficiency and performance of working systems. It covers basic statistical methods which are useful for the analysis of experimental data, presents the Analysis of Variance (ANOVA), and teaches how to use factorial experiments, two-level factorial designs, blocking and confounding systems for two-level factorials, two-level fractional factorial designs, regression modeling, and and overview of the Response Surface Methodology.

Course Outline

A. Basic Statistical Methods

(0.25 Days) Basic Statistical Concepts - Sampling and Sampling Distributions - Inferences About the Differences in Means, Randomized Designs: Hypothesis Testing, Confidence Intervals, Choice of Sample Size, Comparing a Single Mean to a Specified Value - Inferences About the Differences in Means, Paired Comparison Designs - Inferences About the Variances of Normal Distributions

B. Analysis of Variance (ANOVA)

(0.25 Days) The Analysis of Variance - Analysis of the Fixed Effects Model: Decomposition of the Total Sum of Squares, Statistical Analysis, Estimation of the Model Parameters - Model Adequacy Checking - Determining Sample Size - The Random Effects Model - The Regression Approach to the Analysis of Variance

C. Experiments with Blocking Factors

(0.25 Days) The Randomized Complete Block Design: Statistical Analysis of the RCBD, Model Adequacy Checking, Estimating Model Parameters and the General Regression Significance Test - The Latin Square Design - The Graeco-Latin Square Design - Balanced Incomplete Block Designs

D. Factorial Experiments

(0.5 Days) The Two-Factor Factorial Design: Statistical Analysis of the Fixed Effects Model, Model Adequacy Checking, Estimating the Model Parameters, Choice of Sample Size - The General Factorial Design - Fitting Response Curves and Surfaces - Blocking in a Factorial Design

E. Two-Level Factorial Designs

(0.25 Days) The 2^2 Design - The 2^3 Design - The General 2k Design - A Single Replicate of the 2k Design - 2k Designs are Optimal Designs - The Addition of Center Points to the 2k Design - Blocking and Confounding Systems for Two-Level Factorials

F. Two-Level Fractional Factorial Designs

(0.125 Days) Process Capability Analysis Using a Histogram or a Probability Plot - Process Capability Ratios - Process Capability Analysis Using a Control Chart - Process Capability Analysis with Attribute Data - Gauge and Measurement System Capability Studies

G. The 3k Factorial Design

(0.125 Days) Notation and Motivation for the 3k Design - Confounding in the 3k Factorial Design - Fractional Replication of the 3k Factorial Design

H. Response Surface Methodology

(0.25 Days) Introduction to Response Surface Methodology - The Method of Steepest Ascent - Analysis of a Second-Order Response Surface - Experimental Designs for Fitting Response Surfaces

(ii) Engineering Statistics

Overview

Course ID	2024700
Language	en
Duration	5 D ys
Delivery mode	Classroom
Course Type	
Target Group	Data Analysts
Prerequisites	General knowledge of math
Method	Lecture with examples and exercises.
Course level	Beginning

Course Dates

Chicago	Miami	New York
3,400.00 USD	3,200.00 USD	3,400.00 USD
24-28 Aug 19-23 Oct 14-18 Dec	31 Aug - 04 Sep 26-30 Oct 21-25 Dec	07-11 Sep 02-06 Nov 28 Dec - 01 Jan

Prices plus local taxes.

Course Description

This training presents a modern coverage of engineering statistics, focusing on how statistical tools are integrated into the engineering problem-solving process. All major aspects of engineering statistics are covered, including descriptive statistics, probability and probability distributions, statistical test and confidence intervals for one and two samples, building regression models, designing and analyzing engineering experiments, and statistical process control.

Course Outline

A. The Role of Statistics in Engineering

(0.25 Days) The Engineering Method and Statistical Thinking - Collecting Engineering Data - Retrospective Study - Observational Study - Designed Experiments - Random Samples - Mechanistic and Empirical Models - Observing Processes Over Time

B. Data Summary and Presentation

(0.25 Days) Data Summary and Display - Stem-and-Leaf Diagram - Histograms - Box Plot - Time Series Plots - Multivariate Data

C. Random Variables and Probability Distributions

(1 Day) Introduction - Random Variables - Probability - Continuous Random Variables: Probability Density Function, Cumulative Distribution Function, Mean and Variance - Important Continuous Distributions: Normal Distribution, Lognormal Distribution, Gamma Distribution, Weibull Distribution, Beta Distribution - Probability Plots: Normal Probability Plots, Other Probability Plots - Discrete Random Variables: Probability Mass Function, Cumulative Distribution Function, Mean and Variance - Binomial Distribution - Poisson Process: Poisson Distribution, Exponential Distribution - Normal Approximation to the Binomial and Poisson Distributions - More than One Random Variable and Independence: Joint Distributions, Independence - Functions of Random Variables: Linear Functions of Independent Random Variables, Linear Functions of Random Variables That Are Not Independent, Nonlinear Functions of Independent Random Variables - Random Samples, Statistics, and the Central Limit Theorem

D. Decision Making for a Single Sample

(0.5 Days) Statistical Inference - Point Estimation - Hypothesis Testing: Statistical Hypotheses, Testing Statistical Hypotheses, P-Values in Hypothesis Testing, One-Sided and Two-Sided Hypotheses, General Procedure for Hypothesis Testing - Inference on the Mean of a Population, Variance Known - Inference on the Mean of a Population, Variance Unknown - Inference on the Variance of a Normal Population - Inference on a Population Proportion - Other Interval Estimates for a Single Sample - Testing for Goodness of Fit

E. Decision Making for Two Samples

(0.5 Days) Introduction - Inference on the Means of Two Populations, Variances Known - Inference on the Means of Two Populations, Variances Unknown - The Paired t-Test - Inference on the Ratio of Variances of Two Normal Populations - Inference on Two Population Proportions - Completely Randomized Experiment and Analysis of Variance (ANOVA) - Randomized Complete Block Experiment

F. Building Empirical Models

(0.5 Days) Introduction to Empirical Models - Simple Linear Regression: Least Squares Estimation, Testing Hypotheses in Simple Linear Regression, Confidence Intervals in Simple Linear Regression, Prediction of a Future Observation, Checking Model Adequacy, Correlation and Regression - Multiple Regression: Estimation of Parameters in Multiple Regression, Inferences in Multiple Regression, Checking Model Adequacy - Polynomial Models - Categorical Regressors - Variable Selection Techniques

G. Design of Engineering Experiments

(1 Day) The Strategy of Experimentation - Factorial Experiments - 2k Factorial Design: 22 Design, Statistical Analysis, Residual Analysis and Model Checking, 2k Design for k 3 Factors, Single Replicate of a 2k Design - Center Points and Blocking in 2k Designs: Addition of Center Points, Blocking and Confounding - Fractional Replication of a 2k Design: One-Half Fraction of a 2k Design, Smaller Fractions (2kp Fractional Factorial Designs) - Response Surface Methods and Designs: Method of Steepest Ascent, Analysis of a Second-Order Response Surface - Factorial Experiments With More Than Two Levels

H. Statistical Process Control

(1 Day) Quality Improvement and Statistical Process Control - Introduction to Control Charts: Basic Principles, Design of a Control Chart, Rational Subgroups, Analysis of Patterns on Control Charts - R Control Charts - Control Charts For Individual Measurements - Process Capability - Attribute Control Charts: P Chart (Control Chart for Proportions) and nP Chart, U Chart (Control Chart for Average Number of Defects per Unit) and C Chart - Control Chart Performance - Measurement Systems Capability

(iii) Statistical Quality Control

Overview

Course ID	2024702
Language	en
Duration	2 D ys
Delivery mode	Classroom
Course Type	
Target Group	Engineers, Quality Assurance
Prerequisites	General knowledge of math
Method	Lecture with examples and exercises.
Course level	Beginning

Course Dates

Chicago	Miami	New York
1,600.00 USD	1,550.00 USD	1,600.00 USD
06-07 Aug 24-25 Sep 19-20 Nov	10-11 Sep 05-06 Nov 31 Dec - 01 Jan	30-31 Jul 17-18 Sep 12-13 Nov

Prices plus local taxes.

Course Description

This training provides a comprehensive treatment of the major aspects of using statistical methodology for quality control and improvement. Both traditional and modern methods are presented, including state-of-the-art techniques for statistical process monitoring and control and statistically designed experiments for process characterization and optimization. The training focuses on DMAIC (define, measure, analyze, improve, and control--the problem-solving strategy of six sigma).

Course Outline

A. Modern Quality Management And Improvement

(0.125 Days) The Meaning of Quality and Quality Improvement - Statistical Methods for Quality Control and Improvement - Management Aspects of Quality Improvement - The DMAIC Problem Solving Process

B. Data Summary and Presentation

(0.125 Days) Describing Variation: The Stem-and-Leaf Plot, The Histogram, Numerical Summary of Data, The Box Plot, Probability Distributions - Important Discrete Distributions - Important Continuous Distributions - Probability Plots

C. Statistical Inference In Quality Control and Improvement

(0.25 Days) Statistics and Sampling Distributions - Point Estimation of Process Parameters - Statistical Inference for a Single Sample - Statistical Inference for Two Samples - The Analysis of Variance (ANOVA)

D. Variables Control Charts

(0.5 Days) Control Charts for –x and R: Statistical Basis of the Charts, Development and Use of –x and R Charts, Charts Based on Standard Values, Interpretation of –x and R Charts, The Operating-Characteristic Function, The Average Run Length for the –x Chart - Control Charts for –x and s: Construction and Operation of –x and s Charts, The –x and s Control Charts with Variable Sample Size, The s^2 Control Chart - The Shewhart Control Chart for Individual Measurements

E. Attribute Control Charts

(0.5 Days) The Control Chart for Fraction Nonconforming: Development and Operation of the Control Chart, Variable Sample Size, Applications in Transactional and Service Businesses, The Operating-Characteristic Function and Average Run Length Calculations - Control Charts for Nonconformities (Defects): Procedures with Constant Sample Size, Procedures with Variable Sample Size, Demerit Systems, The Operating-Characteristic Function, Dealing with Low Defect Levels - Choice Between Attributes and Variables Control Charts

F. Determining Process And Measurement Systems Capability

(0.125 Days) Process Capability Analysis Using a Histogram or a Probability Plot - Process Capability Ratios - Process Capability Analysis Using a Control Chart - Process Capability Analysis with Attribute Data - Gauge and Measurement System Capability Studies

G. Designed Experiments In Process and Product Improvement

(0.25 Days) Factorial Experiments: Statistical Analysis, Residual Analysis - The 2k Factorial Design: The 2^2 Design, The 2k Design for 3 and more Factors, Blocking and Confounding in the 2k Design - Fractional Replication of the 2k Design - Fractional Replication of the 2k: The One-Half Fraction of the 2k Design, The 2k–p Fractional Factorial Design

H. Sampling Procedures

(0.125 Days) The Acceptance-Sampling Problem - Single-Sampling Plans for Attributes - Double, Multiple, and Sequential Sampling - Acceptance Sampling by Variables - Chain Sampling - Continuous Sampling

b. Disclaimer

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- https://www.facebook.com/comeliogroup
- https://twitter.com/Comelio