

Online SPC Training

Course Objectives

By completing this course, students will be able to:

- Understand the benefits and application of Statistical Process Control methodology.
- Differentiate between common and special causes of variation.
- Select, apply and interpret basic SPC tools for process analysis.

Prerequisites

Students should have a general understanding of basic mathematical functions, the reading comprehension level of a high school graduate, and general proficiency in using Windows-based computer software.

Intended Audience

This training is suitable for anyone wanting to learn the fundamental skills necessary to construct and apply SPC charts using software.

PC Requirements

To access this course and Study Guide, users need:

- An Internet connection
- A suitable browser, such as Internet Explorer 5.0 or higher, with cookies enabled.

To run the SPC IV XL software, users need one of the following Microsoft Excel versions running in MS Windows: Excel 97, Excel 2000, Excel 2002, Excel XP, or Excel 2007.

Materials Provided

In addition to the online access, each course includes the following materials for a complete learning experience (a \$400 value):

- [Pyzdek's Guide to SPC: Volume 1](#) by Thomas Pyzdek
- [Pyzdek's Guide to SPC: Volume 2](#) by Thomas Pyzdek
- [SPC IV Excel](#) software

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Topic Overview

1. Establishing Process Baseline (33 slides)
 - a) Enumerative vs. Analytic Statistics.
 - b) Process Variation.
 - (i) Deming's Red Bead.
 - c) Benefits of Control Charts.
 - d) Requirements vs. Control.
 - (i) Tampering.
 - e) Control Chart Interpretation.
 - (i) Relative to Process Baseline Estimates.
2. X-Bar Charts (34 slides)
 - a) Uses.
 - b) Construction & Calculations.
 - c) Assumptions.
 - d) Rational Subgroups.
 - e) Sampling Considerations.
 - f) Interpretation.
 - (i) Run Test Rules.
3. Individuals Data (32 slides)
 - a) Uses.
 - b) Construction & Calculations.
 - c) Assumptions.
 - d) Sampling Considerations.
 - e) Interpretation.
 - f) Overview of Other Individuals Charts.

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- (i) Run Charts.
- (ii) Moving Average Charts.
- (iii) EWMA Charts.

4. Process Capability (27 slides)

- a) Histograms.
- b) Probability Plots.
- c) Goodness of Fit Tests.
- d) Capability & Performance Indices.
 - (i) Relative to Process Control.
 - (ii) Interpretation.
 - (iii) Estimating Error.

5. Attribute Charts (25 slides)

- a) Uses.
- b) Selection.
- c) Construction & Calculations.
- d) Sampling Considerations.

6. Introduction To Regression Analysis (32 slides)

- a) Scatter Diagrams.
- b) Linear Model.
- c) Interpreting the ANOVA Table.
- d) Confidence & Prediction Limits.
- e) Residuals Analysis.
- f) Overview of Multiple Regression Tools.
 - (i) DOE vs. Traditional Experiments & Data Mining.