



DRIVING WORLDWIDE BUSINESS EXCELLENCE

## Capability Analysis and Advanced SPC



**Training Duration : 3 Days**

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## Seminar Content

This three-day seminar covers Capability Analysis and SPC. This three-day hands-on seminar is designed to teach participants how to implement SPC within industries that have set up variation, slow and rapid tool wear, and continuous processes where adjustments occur on a daily basis. Emphasis on analysis of data and effects on the processes using eight types of control charts expands the users' ability to address nonnormal, multivariate and unilateral variables.

## Who Should Attend

This seminar is designed for individuals who have direct responsibility for defining and developing an organization's measuring, monitoring and analytical processes using data collection, charts and statistical tools appropriate for its products, processes and business goals and objectives.

## Recommended Training and/or Experience

Fundamental knowledge of computational mathematics is necessary for understanding the topics discussed.

## Seminar Materials

Each participant will receive a seminar manual and a workbook including all team breakout exercises.

## Seminar Goals

- ❖ Present a hands-on approach to learning the principles and practices of SPC and process analysis
  - ❖ Understand the uses and benefits of control charts and be able to construct and interpret them
  - ❖ Understand the role that SPC plays in the overall control strategy for a process and/or company
- ❖ Explain optional statistical methods when traditional SPC practices have failed or are inadequate
  - ❖ Understand the uses and benefits of advanced control charts and be able to construct and interpret them

## Seminar Outline

- ❖ Review of Basic Descriptive Statistics
  - Breakout Exercise: Location
  - Breakout Exercise: Variation
  - Breakout Exercise: Histogram
- ❖ Fundamental of Process Control
  - Understanding Process Behavior
  - Common and Special Causes
  - Control vs. Capability
  - Control Limits vs. Specification Limits
- ❖ Process Control (Behavior) Charts
  - Elements of Control Charts
  - Control Chart Process
  - Control Chart Mechanics
- ❖ Charts for Variables Data
  - Breakout Exercise: Average and Range Charts
  - Breakout Exercise: Seven Additional Rules for Detecting Special Causes
  - Breakout Exercise: Average and Standard Deviation Charts
  - Breakout Exercise: Individuals Charts
- ❖ Charts for Attribute Data
  - Breakout Exercise: p Charts
  - Breakout Exercise: np Charts
  - Breakout Exercise: c Charts
  - Breakout Exercise: u Charts
- ❖ The Process Improvement Cycle and Process Control
- ❖ Capability Analysis
  - Breakout Exercise: Capability Indices: Bilateral Tolerances
  - Sampling Procedures
- ❖ Prevention vs. Detection

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- ❖ Other Types of Control Charts
  - Baseline – Random (White Noise) Processes
  - Breakout Exercise: Probability-based Charts
  - Breakout Exercise: Stoplight Control Charts
  - Pre-control (Conformance) Charts
  - Breakout Exercise: Zone Charts
  - Breakout Exercise: Short-run Control Charts
  - Breakout Exercise: Charts for Detecting Small Changes
  - Breakout Exercise: Non-normal Charts
  - Breakout Exercise: Multivariate Charts
  - Breakout Exercise: Regression Control Charts
  - Breakout Exercise: Drifting Process Center
  - Breakout Exercise: Residual Charts
  - Breakout Exercise: Autoregressive Charts
  - Breakout Exercise: Shifting Process Center
- ❖ Capability Analysis
  - Bilateral Tolerances
  - Breakout Exercise: Unilateral Tolerances
  - Breakout Exercise: Non-normal Processes
  - Multivariate Processes
- ❖ Suggested Use of Process Measures
  - Loss Functions
  - Alignment of Process to Customer Requirements
- ❖ Effective Use and Benefits of Control Charts

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## OMNEX

### GLOBAL HEAD QUARTERS

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