

STATISTICAL PROCESS CONTROL (SPC) BASICS

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Credit Hours **2**

Variations are inherent to a process. An organization should effectively employ statistical process control measures to reduce variations and eliminate nonconformance. This course offers a comprehensive overview of the basic statistical concepts, such as a process control system, process measures, control chart structure, and process capability. This course, presented in a visually engaging and highly interactive format, gauges your mind for a broader understanding of SPC.

Learning Objectives

- 💡 Recall the basic elements of a process control system.
- 💡 Define the process measures for variable data and attribute data.
- 💡 Interpret the graphical representation of data points in statistical distribution.
- 💡 Identify the elements of a control chart.
- 💡 Interpret the relationship between specification limits and control limits for process capability.
- 💡 Analyze process capability through process capability indices and process performance indices.

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I. Basic Statistical Concepts

- **Process Control System**
 - ▣ Process
 - ▣ Variations
 - Sources
 - Principles
 - Types
 - ▣ Actions
 - Local Actions
 - Actions on the System
- **Process Measures**
 - ▣ Process Measures for Variable Data
 - Measures of Central Tendency

I. Basic Statistical Concepts (continued)

- Measures of Dispersion
- ▣ Process Measures for Attribute Data
 - Percentage Defective (P)
 - Defects Per Unit (DPU)
- **Statistical Distribution**
- **Control Chart Structure**
 - ▣ Chart Elements
 - ▣ Subgroup
 - ▣ Patterns Evaluation

II. Process Capability

- **Process Capability Prerequisites**
- **Initial Process Studies**

II. Process Capability (continued)

- **Process Capability Analysis**
 - ▣ Specification Limits and Control Limits
 - ▣ Specification Limits-Control Limits Relationship
 - Control Limits Less than Specification Limits
 - Control Limits Equal to Specification Limits
 - Control Limits Greater than Specification Limits
- **Process Capability Characteristics**
 - ▣ Process Capability Indices
 - C_p Index
 - C_{pk} Index
 - ▣ Parts Per Million (PPM)
- **Process Performance**
 - ▣ P_p Index
 - ▣ P_{pk} Index

