



## Statistical Process Control I (SPC I)

### CEQAL 515

Statistical process control is the fundamental tool that underlies most process improvement efforts. This four-day seminar introduces the participant to the subject of variation reduction and process focus. It also provides extensive knowledge of core SPC tools including variables and attribute data control charts, process capability and rational sampling. Extensive use of examples and exercises allow participants to actually construct numerous control charts and calculate capabilities from actual process data.

**Who Should attend:** Individuals who are involved in production or service processes including management, engineering and quality and have an interest in using statistical techniques to monitor and control their processes.

**Prerequisite:** A knowledge of basic algebra is helpful, but not required

**CEU's Credits:** 3.2

**Duration:** 32 Hours – 4 day course

**Course Content:**

- Process Control vs. Product Control**
  - Quality and Productivity Relationship
  - SPC Articulation
  - Process Control/Product Control Cycles
- SPC Strategy...Initial Steps**
  - Data Acquisition and Presentation
  - Process Considerations
- Process Control Charts (The Concept)**
  - Shewhart Control Chart Model
  - Process Behavior Assessment
  - Control Charts Selection

### **Process Variation Assessment**

- Common vs. Special Causes
- Improvement Avenues Through Sources of Variability
- Completing the SPC Strategy

### **Xbar and R Chart Construction**

- Guidelines, Examples and Control Chart Construction

### **Data Characterization**

- Populations, Samples, Frequency Distributions and Curves
- Measures of Central Tendency and Variability
- Distribution of Sample Averages and Normal Distribution

### **Interpretation of Control Charts**

- Concepts of Chart Analysis
- Specific Rules for Xbar and R Charts

### **Sampling Considerations**

- The Rational Sample and Sample Size Considerations
- Frequency of Sampling and Sampling Pitfalls

### **Process Capability**

- Control vs. Conformance
- Probability Statements of Capability and Indices: Cpk and Cp; Ppk and Pp

### **Additional Variable Control Charts**

- X and Rm Charts, X and R Charts, X and s Charts

### **Attribute Control Charts**

- p, np, c and u Charts
- Variable Sample Size Considerations

### **Closing the Loop**

- Problem Solving Tools
- Verifying Improvement
- Capstone Workshop

*Each participant will receive a comprehensive manual and a Certificate of Completion at the close of the seminar.*