



WWW.KQEINC.COM

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Six Sigma Green Belt

Course Overview/Description

Six Sigma is a Quality Improvement methodology structured to reduce product or service failure rates to a negligible level (roughly 3.4 failures per million opportunities). To achieve six sigma levels, the Six Sigma process encompasses all aspects of a business, including management, service delivery, design, production and customer satisfaction. Six Sigma companies typically spend less than 5 percent of their revenues addressing and repairing quality problems. As a philosophy Six Sigma drives business culture and requires a nearly flawless execution of key processes making Six Sigma a high standard for companies and individuals to achieve.

Customers place a high value on predictably consistent business processes and Six Sigma is a proven methodology for delivering consistent incremental improvement. By reducing process variation Six Sigma frees the organization to focus on improving process capability and as sigma levels increase, the cost of poor quality decreases and profitability increases. This is why Six Sigma is highly associated with the delivery of consistent world-class quality.

Course Objectives

By completing this course, students will be able to:

- Recognize key attributes of a successful Six Sigma program.
- Appreciate project selection criteria.
- Realize the role of a Green Belt in the Six Sigma organization.
- Understand fundamentals of the DMAIC problem solving methodology.
- Use basic Six Sigma tools for Six Sigma project definition and process baseline.
- Understand the need for advanced problem solving and improvement methodologies used by Project Teams.
- Actively participate in a Six Sigma team



Course Outline

I. Why Six Sigma?

- a. Definition and Graphical View of Six Sigma
- b. Comparisons Between typical TQM and Six Sigma Programs
- c. Origins and Success Stories

II. How to Deploy Six Sigma

- d. Leadership Responsibilities
- e. Description of the Roles and Responsibilities
- f. Resource Allocation
- g. Data Driven Decision Making
- h. Organizational Metrics and Dashboards

III. DEFINE: Project Definition

- i. Tasks
- j. Work Breakdown Structure
- k. Pareto Diagrams
- l. Process Maps
- m. Matrix Diagrams
- n. Project Charters
- o. Reporting

IV. DEFINE: Project Scheduling

- p. Activity Network Diagram
- q. PERT Analysis
- r. GANNT Chart

V. DEFINE: Change Management/Teams

- s. Problems with Change
- t. Achieving Buy-In
- u. Team Formation, Rules, and Responsibility
 - i. Stages of Team Development
 - ii. Overcoming Problems



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- v. Consensus Building Tools
 - i. Affinity Diagram
 - ii. Nominal Group Technique
 - iii. Prioritization Matrix

VI. MEASURE: Tools and Objectives

- w. Measure Stage Objectives
- x. Flowcharts
- y. Process Maps
- z. SIPOC
- aa. Box-Whisker Plots
- bb. Cause and Effect Diagrams
- cc. Check Sheets
- dd. Interrelationship Diagram
- ee. Stem and Leaf Plots

VII. MEASURE: Establishing Process Baseline

- ff. Enumerative v. Analytic Statistics
- gg. Process Variation
- hh. Benefits of Control Charts
- ii. Requirements v. Control
- jj. Control Chart Interpretation

VIII. MEASURE: X-Bar Charts

- kk. Uses
- ll. Construction and Calculations
- mm. Assumptions
- nn. Rational Subgroups
- oo. Sampling Considerations
- pp. Interpretation

IX. MEASURE: Individuals Data

- qq. Uses
- rr. Construction and Calculations



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- ss. Assumptions
- tt. Sampling Considerations
- uu. Interpretation
- vv. Overview of Other Individuals Charts
 - i. Run Charts
 - ii. Moving Average Charts
 - iii. EWMA Charts

X. MEASURE: Process Capability

- ww. Histograms
- xx. Probability Plots
- yy. Goodness of Fit Tests
- zz. Capability and Performance Indices
- aaa. Relative to Process Control
 - i. Interpretation
 - ii. Estimating Error

XI. MEASURE: Attribute Charts

- bbb. Uses
- ccc. Selection
- ddd. Construction and Calculations
- eee. Sampling and Considerations

XII. ANALYZE: Introduction to Regression Analysis

- fff. Scatter Diagrams
- ggg. Linear Model
- hhh. Interpreting the ANOVA Table
- iii. Confidence and Prediction Limits
- jjj. Residuals Analysis
- kkk. Overview of Multiple Regression Tools

XIII. ANALYZE: Lean Thinking

- lll. Definition of Waste
- mmm. Analyzing Processes for NVA



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- i. Cycle Effencies
- ii. Lead Time and Velocity
- nnn. Methods to Increase Velocity
 - i. Standardization
 - ii. Optimization
 - iii. Spaghetti Diagrams
 - iv. 5S
 - v. Level Loading
 - vi. Flow
 - vii. Setup Reductions

XIV. IMPROVE: Tools and Objectives

- ooo. Improve Stage Objectives
- ppp. Tools to Prioritize Improvement Opportunities
- qqq. Tools to Define New Process Flow
- rrr. Tools to Define and Mitigate Failure Modes
 - i. PDPC
 - ii. FMECA
 - iii. Preventing Failures
- sss. Reference to Tools for Defining New Process Levels

XV. CONTROL: Tools and Objectives

- ttt. Control Stage Objectives
- uuu. Control Plans
- vvv. Training
- www. Measuring Improvement