



Course Content

Course Description:

This Lean Six Sigma Green Belt course develops and certifies the knowledge and skills of a Six Sigma Green Belt candidate. The course includes the methods, the descriptive statistics, and the project management skills necessary to use DMAIC to improve processes.

Prerequisites:

None

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Topics:

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Six Sigma Overview / Define Stage:

- Project Selection
- Project Scoping (Refining your focus)
- Pareto Charts
- Using Control Charts
- Understanding Process Entitlement
- Developing the Project Charter

- Measures of the Center of the Data
- Mean
- Median
- Measures of the Spread of Data
- Range and Variance (σ^2)
- Standard Deviation (σ)
- Properties of a Normal Distribution

Process Mapping

- Developing the SIPOC (30,000' View of the Process)
- Developing the Variables Map (Defining the Inputs or X's)
- Process Mapping Exercise

Basic Quality Tools using Minitab

- Dotplots / Histograms / Normal Plots
- Time Series Plots / Individuals Control Charts
- Pareto Diagrams
- Stratification (2nd Level Pareto)
- Boxplots
- Scatter Plots
- Practice Using the Basic Quality Tools with Minitab and a Multi-Vari Exercise

Cause and Effects Matrix (C&E Matrix)

- Developing the C&E Matrix from the Process Map (Prioritizing the Inputs)
- C&E Matrix Exercise

Statistical Process Control (SPC)

- Link Control chart methods to the DMAIC roadmap
- Discuss different types of variation
- Common Cause
- Special Cause
- Introduce various Control Chart types
- Continuous Data Charts
- Attribute Data Charts
- Discuss the interpretation of Control Charts
- Practice SPC with Minitab and a Paper Helicopter Exercise

Failure Modes and Effects Analysis (FMEA)

- Understanding the different types of FMEA's
- FMEA Overview
- Developing the Process FMEA
- FMEA Exercise

Basic Stats

- Ways of describing data
- Graphical
- Numerical
- Types of Data



Lean Six Sigma Green Belt

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35 Hrs

Measurement Systems Analysis

- Introduce Measurement Systems Analysis (MSA)
- Define basic measurement terms
- Outline procedure for performing a Measurement Systems Analysis
- Practice MSA with a live simulation

Process Capability

- Explain a variety of options for establishing a quantifiable initial baseline capability with Attribute or
- Variable data
- Teach the most common Process Capability Indices in use for Variables data
- Learn how to complete Variables Capability Studies with Minitab
- Explore the difference between Short Term and Long Term Process Capability
- Practice Process Capability with Minitab and a Paper Helicopter Exercise

Hypothesis Testing

- Fundamentals of Hypothesis Testing
- Understand Hypothesis and Decision Risk

Learn Decision Errors

- Type 1 and Type 2 Errors
- Introduce Hypothesis Testing – Common Tests
- Making Decisions with Hypothesis Tests
- Hypothesis Testing Roadmap

Tests

- Introduce the Statistical Analysis Roadmap to be used when comparing two processes
- Explain the t-Test for the comparison of means
- Introduce the Test for Equal Variances
- Review Stability and Normality tests
- Practice t-Tests with Minitab and a Paper Helicopter Exercise

Correlation and Regression

- Explain the concept of correlation
- Define correlation coefficients

- Show how to use simple linear regression to model and predict the behavior of a process
- Introduce residual diagnostics
- Practice Correlation and Regression with Minitab and a Paper Helicopter Exercise

Analysis of Variance (ANOVA)

- Introduce the One-way ANOVA (ANalysis Of VAriance)
- Learn different techniques to compare more than two groups and display the results with Minitab
- Introduce the F-test and compare it to the t-Test
- Practice ANOVA with Minitab and a Paper Helicopter Exercise

Multi-Vari Analysis

- Simulation: Statistically analyzing data using the statistical Tools to understand how Inputs affect the Outputs and determine Key Inputs.

Chi Squared

- Review the categorical input and categorical output situation
- Explain the role of proportions in describing categorical outputs
- Learn the hypothesis tests that apply in the categorical case
- Show where Chi square test fits in the DMAIC Roadmap
- Perform an exercise to show understanding of Chi Squared

Control Plan

- Developing the Control Plan
- Using SPC in Control
- How the FMEA feeds the Control Plan