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Lean Six Sigma Green Belt Training
4 – Days Course Agenda

Day 01: Morning Session

Session I: Lesson 00—Course Overview

- About LSSGB Certification
- About Simplilearn's LSSGB course

Lesson 1—Overview of Lean Six Sigma

Topic 1—Six Sigma

- The Basics of Six Sigma
- Process of Six Sigma
- How does Six Sigma Work
- Six Sigma and Quality
- Six Sigma Team

Topic 2—Lean principles

- The History of Lean
- Lean & Six Sigma
- Lean Concepts
- Types of Waste
- Theory of Constraints

Session II: Lesson 1—Overview of Lean Six Sigma (contd.)

Topic 3—Design for Six Sigma

- Design for Six Sigma
- DFSS Tools—Quality Function Deployment, FMEA, RPN
- PFMEA and DFMEA

Lesson 2—Define

Topic 1—Project identification

- Building a Business Case & Project Charter
- Process Elements
- Financial Evaluation & Benefits Capture
- Positive Effects of Project on Customers

Day 01: Afternoon Session

Session I: Lesson 2—Define (contd.)

Topic 2—Voice of the customer (VOC)

- Collect Customer Data
- Questionnaire
- Telephone Survey vs. Web Survey
- Focus Group
- Interview
- Customer Complaints
- Key Elements of Data Collection Tools
- Critical to Quality
- Quality Function Deployment
- Structure of QFD

Topic 3—Project Management Basics

- Project Charter
- Deliverables of a Lean Six Sigma Project
- Pareto Chart
- Risk
- Risk Analysis and Management
- Project Closure
- Affinity Diagram
- Interrelationship Diagram
- Tree Diagram

Session II: Lesson 2—Define (contd.)

Topic 4—Management and Planning Tools

- Matrix Diagram
- Defect per Unit
- Throughput Yield
- Rolled Throughput Yield

Day 02: Morning Session

Session I: Lesson 2—Define (contd.)

Topic 5—Business Results for Projects

- Defect per Million Opportunities
- Cost of Quality

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Session II: Lesson 3—Measure

Topic 1—Process Definition

- Process Mapping
- X-Y Diagram

Day 02: Afternoon Session

Session I: Lesson 3—Measure (contd.)

Topic 2—Descriptive and Inferential StatisticsBasic probability concepts

- Types of Statistics
- Central Limit Theorem

Session II: Lesson 3—Measure (contd.)

Topic 3—Collecting and Summarizing Data

- Types of Data
- Simple Random Sampling vs. Stratified Sampling
- Measures of Central Tendency
- Measures of Dispersion
- Frequency Distribution
- Graphical Methods—Stem and Leaf Plots
- Graphical Methods—Box and Whisker Plots
- Scatter Diagrams

Day 03: Morning Session

Session I: Lesson 3—Measure (contd.)

Topic 4—Measurement System Analysis

- Measurement System Analysis
- Precision and Accuracy
- Bias, Linearity, and Stability
- Gage Repeatability and Reproducibility
- Measurement Resolution
- ANOVA Method of Analyzing GRR Studies
- Gage RR Template

Topic 5—Process Capability

- Process Capability Analysis
- Natural Process Limits vs. Specification Limits
- Process Capability Indices
- Process Capability Studies
- Process Stability Studies

- Verifying Process Stability and Normality
- Monitoring Techniques

Session II: Lesson 4—Analyze

Topic 1—Patterns of Variations

- Classes of Distributions
- Discrete Probability Distribution
- Binomial Distribution
- Poisson Distribution
- Continuous Probability Distribution
- Normal Distribution
- Z-Table Usage
- Chi-Square Distribution (Basics)

Topic 2—Exploratory Data Analysis

- Multi-Vari Studies
- Create Multi-Vari Chart
- Simple Linear Correlation
- Simple Linear Regression (SLR)
- Multiple Linear Regression
- Difference between Correlation and Causation

Day 03: Afternoon Session

Session I: Lesson 4—Analyze (contd.)

Topic 3—Hypothesis Testing with Normal Data

- Statistical and Practical Significance of Hypothesis Test
- Null Hypothesis vs. Alternate Hypothesis
- Type I and Type II Error
- Power of Test
- Hypothesis Testing Roadmap
- Comparison of Means of Two Processes
- Paired Comparison Hypothesis Test for Means (Theoretical)
- Paired Comparison Hypothesis Test for Variance—F-Test Example
- F-Test
- Hypothesis Tests—t-Test for Independent Groups
- 2-Sample t-Test
- Paired t-Test
- sample variance

- ANOVA—Comparison of More Than Two Means
- Chi-Square Distribution (Detailed)

Topic 4—Hypothesis Testing with Non-Normal Data

- Mann-Whitney
- Kruskal-Wallis
- Mood's Median
- Friedman
- 1 Sample Sign Test
- 1 Sample Wilcoxon

Session II: Lesson 5—Improve

Topic 1—Design of Experiments

- Design of Experiments—Example
- Analysis of the Mean Effect
- Main Effect
- Interaction Effect
- Design of Experiments—Runs

Topic 2—Root Cause Analysis

- Residuals Analysis
- Data Transformation using Box Cox
- Process Input and Output Variables
- Cause and Effect Matrix Template
- Cause and Effect Diagram
- The 5 Why Technique
- The 5 Why Process

Topic 3—Lean Tools

- Lean Techniques
- Cycle Time Reduction
- Kaizen and Kaizen Blitz

Day 04: Morning Session

Session I: Lesson 6—Control

Topic 1—Statistical Process Control

- Common Cause Variation
- Special Cause Variation
- Rational Subgrouping
- Data Collection for SPC

- Control Charts
- Setting the Control Limits
- Chart Principles
- Defining UCL and LCL in $\bar{X}$ and R Chart
- Defining UCL and LCL in $\bar{X}$ and s Chart

Session II: Lesson 6—Control (contd.)

Topic 1—Statistical Process Control (contd.)

- $\bar{X}$ and R and Subgroup Data
- $\bar{X}$ and s and Subgroup Data
- ImR Chart Principles
- Control Charts for Attribute Data
- np Chart Principles
- np Charts and Uniform Subgroup Size—Example
- np Charts and Uniform Subgroup Size
- p Chart
- c Chart

Day 04: Afternoon Session

Session I: Lesson 6—Control (contd.)

Topic 2—Control Plan

- Control Plan—Uses & Strategies
- Elements of the Control Plan
- Elements of the Response Plan
- Cost Benefit Analysis
- Control Plan Tools
- Developing a Control Plan
- Transactional Control Plan
- CuSum Chart
- EWMA Chart

Session II: Lesson 6—Control (contd.)

Topic 3—Lean Tools for Process Control

- Visual Controls
- Control Methods for 5S