# Lean Six Sigma Green Belt Certification Training

**Modality: On Demand**

**Duration: Varies**

This training provides in-depth knowledge of all aspects within the phases of D-M-A-I-C, six sigma tools and standard principles of Lean Management, with real-life applications on various industry-use cases.

The Lean Six Sigma Green Belt Program ensures that you learn the Lean principles and Six Sigma methodologies. This course will enable you to measure, analyze, improve as well as control various quality-related issues across the organization. This course also validates your efficiency as a quality professional. You will be the go-to-person for controlling manufacturing and process costs, increasing profits, expanding business and satisfy customers, irrespective of the size of the business.

## Course Outline:

Lesson One: Overview of Lean Six Sigma

Six Sigma

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

Lean Principles

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

Design for Six Sigma

- Design for Six Sigma
- DFSS Tools&#175Quality Function Deployment, FMEA, RPN
- PFMEA and DFMEA

Lesson Two: Define

Project Identification

- Building A Business Case and Project Charter
- Process Elements
- Financial Evaluation and Benefits Capture
- Positive Effects of Project On Customers

## 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

## 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

## Management and Planning Tools

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

## Business Results for Projects

- Defect Per Million Opportunities
- Cost of Quality

## Lesson Three: Measure

## Process Definition

- Process Mapping

- XY Diagram

## Descriptive and Inferential Statistics

- Basic Probability Concepts
- Types of Statistics
- Central Limit Theorem

## 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

## 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

## 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

## Lesson Four: Analyze

## Patterns of Variations

- Classes of Distributions
- Discrete Probability Distribution
- Binomial Distribution
- Poisson Distribution

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- Continuous Probability Distribution
- Normal Distribution
- Z-Table Usage
- Chi-Square Distribution Basics

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 VarianceF-Test Example
- F-Test
- Hypothesis Test-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)

Hypothesis Testing with Non-Normal Data

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

Lesson Five: Improve

Design of Experiments

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

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

## Lean Tools

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

## Lesson Six: Control

## 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 X and R Chart
- Defining UCL and LCL in X and s Chart
- X and R and Subgroup Data
- X and s and Subgroup Data
- lmR 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

## Control Plan

- Control Plan Uses and 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

## Lean Tools for Process Control

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- Visual Controls
- Control Methods for 5S

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