

Six Sigma Green Belt Training/Certification Course with Practice Exams and Project Execution Steps

Objectives

- Use Six Sigma to quantify the critical quality issues in your company.
- Integrate the principles of business, statistics, and engineering to achieve results.
- Transform process improvement opportunities into clearly defined Six Sigma projects.
- Use statistical tools to identify and determine the relationship between inputs and outputs of a process.
- Use Six Sigma methodology (DMAIC) to increase productivity and improve quality.
- Reduce the cost of poor quality and reduce waste.
- Reduce variation and improve quality and reliability.
- Implement Six Sigma methods that ensure long term improvements.

This training and certification guide provides the details on the following major topics below:

Overview, Concepts, and Business Success of Six Sigma

Overview: What is Six Sigma?

What Six Sigma can do for your company?

Six Sigma: a customer focused approach

Quality Defined: Who determines quality?

Sigma Levels/Metrics for Six Sigma

Business Success of Lean Six Sigma

Company Cases and Success Stories

Six Sigma DMAIC Process

Process Improvement

Process Mapping

Introduction to Lean Six Sigma

Introduction to Design for Six Sigma (DFSS)

Six Sigma/Lean Sigma/ Design for Six Sigma

Measuring Sigma Levels: How much improvement is attained by improving from Two-to Six sigma levels?

Introduction to Quality Function Deployment

Introduction to Failure Mode and Effects Analysis (FMEA)

Integrating Lean and Six Sigma

Six Sigma and Design for Six Sigma

Statistical Concepts and Tools for Six Sigma

Statistics and Six Sigma

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Basic Statistical Concepts: Variation and Variation Reduction

Overview of Descriptive and Inferential Statistics

Statistics and Variability

Descriptive Statistics: Graphical and Numerical Tools

Visual Representation of Data

Software Introduction (MINITAB)

Quality Tools (Computer applications)

Introduction to Probability and Probability Distributions

Review of Discrete and Continuous Probability Distributions

Computer Simulations to Understand Statistical Concepts

Review of: Sampling and Sampling Distribution

Estimation and Confidence Interval

Hypothesis Testing

Analysis of Variance (ANOVA)

Computer Applications, Cases, and Simulations Involving above topics

Six Sigma Define Phase

Six Sigma Projects

Some reasons for taking up Six Sigma projects

What can initiate a Six Sigma project?

Six Sigma Problem Definitions

Defining the Problem: Project Charter

Six Sigma Project Team: Master Black Belts

Black Belts

Green Belts

Team Members

Who owns the project? Stakeholders

Six Sigma Metrics: defining metrics

Primary and Secondary Metrics

Project and Project Management

Flow Charting/Process Mapping

Sources of Variation and Variation reduction

Project Duration and Expected Outcome

Expected Improvement and Savings

Probability of Success

Project Risk and Return Analysis

Financial Implications

Final Project Charter

Review Team: Project Review and Review Criteria for the Define Phase

Case /Project on Define Phase

Six Sigma Measurement Phase

Determine the current state of the process (How are we doing?)
Metrics to be measured
Data and Data Types
Sample Size
Access Measurement Systems
Measurement System Analysis
Measurement Systems Analysis/ Gage R&R
Data Collection Plan and Procedure
Obtain Data
Statistical Tools Required for the Measurement Phase
Process Capability Analysis
Determine the Current Process Capability
Review Criteria for the Measurement Phase
Project/case on Measurement Phase/computer implementation

Six Sigma Analysis Phases

Determine the root cause/causes of the problem (What is wrong?)
Analyze the data collected to determine the causes of the problem
Six Sigma Statistical Analysis Topics
Hypothesis Testing
Analysis of Variance
Correlation
Simple Regression
Project /case and computer implementation (MINITAB)

Six Sigma Improvement Phase

The green belt training/certification will provide only the introduction and basic concepts of the topics below. The detailed treatment of the topics below is provided in Black Belt training.

Improve the Process
Six Sigma Improvement Topics: Introduction to
Factorial Experiments- One, Two, Four-
factorial design
Blocking, Latin Square
Fractional Factorial Introduction
Blocking
EVOP Introduction
Response Surface Introduction
Introduction to Regression and Model Building
Project/computer implementation (MINITAB)

Six Sigma Control Phase

Maintain the improvement through control
Control plans
Control Charts Basics
How, why, and at what stage the control charts work
Statistical Process Control (SPC)
Computerized Applications of Control
Charts: all types
Project/case computer implementation (MINITAB)

Other topics

Quality Tools
Overview of Statistical Tools for Six Sigma
Graphical Tools using Computer
Computerized Applications of Control Charts
Design of Experiments (DOE)
House of Quality
Design of Experiments using Computer
Multi-Vari/other Graphical Techniques
Process Capability Analysis
Measurement Systems Analysis (Gage R&R)

Concepts of Lean and Lean Tools

The guide contains:

- Discussion on each topic above divided into chapters
- Numerous Examples within the Chapter
- Self-test Problems
- Solutions to Self-test Problems
- Practice Problems and Exercises
- Solutions to Practice Problems and Exercises
- True-false Questions to Test your Understanding
- Multiple Choice Questions to Test your Understanding
- Solutions to True-false and Multiple Choice Questions
- Computer Applications using MINITAB
- Data Files for Chapter Exercises
- Data Files for Computer Application Exercises
- Practice Tests for Certifications
- Solutions to Practice Tests
- Examples on Projects, and
- Project Execution Steps

Six Sigma: Green Belt Training/Certification

TO GET CERTIFIED AS A GREEN BELT, YOU WILL BE REQUIRED TO PASS A WRITTEN TEST AFTER THE COMPLETION OF THE TRAINING. THIS GUIDE PROVIDES THE PRACTICE TESTS FOR GREEN BELT CERTIFICATION THAT WILL PREPARE YOU FOR THE ACTUAL CERTIFICATION TEST. NO PROJECT IS REQUIRED FOR GREEN BELT CERTIFICATION. HOWEVER, A COMBINATION OF PROJECT AND TEST CAN ALSO BE SELECTED AS AN ALTERNATE WAY TO GET CERTIFIED AS A SIX SIGMA GREEN BELT.