LEAN SIX SIGMA BLACK BELT CERTIFICATION TRAINING

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COURSE LENGTH: 10.0 DAYS

The Lean Six Sigma Black Belt certification recognizes that you have achieved the highest level available in the Lean Six Sigma Methodology. The Lean Six Sigma Black Belt Certification Training course provides the comprehensive training and exam preparation to achieve Black Belt Certification with the International Association of Six Sigma Certification (IASSC).

This course covers: the Six sigma concept and implementation, how to recognize and prevent elements of waste, collection of relevant data, process mapping, process capability, root causes, cause and effect relationships, hypothesis testing, how to control processes, productivity and waste, various process improvement models and much more based on IASSC-authorized training materials.

This comprehensive training course is available across the U.S., including Atlanta, Austin, Baltimore, Birmingham, Boston, Charlotte, Chicago, Dallas, Houston, Jackson, Los Angeles, Manhattan, Miami, New York, Orlando, Philadelphia, San Antonio and Seattle.

LEAN SIX SIGMA BLACK BELT CERTIFICATION TRAINING COURSE OUTLINE

FOREWORD

Becoming certified as a Lean Six Sigma Black Belt prepares you to take a leadership role in adding value to your organization, and opens endless senior job opportunities in your career.

This course is the perfect blend between theory and practical application. In the class, you will enjoy learning by doing and walk out with a series of practical skills and methodologies. However, you will also have the perfect theoretical platform to prepare for the stringent IASSC Black Belt Certification exam.

These IASSC authorized training materials are the industry standard used by thousands of industry trainers, coaches and mentors to train Lean Six Sigma Black Belts around the world.

We look forward to welcoming you to the course and empowering you to the drive measurable improvements in your organization and your career.

OUTCOMES

During this course, you will develop:

▶ Understanding and implementation of the concepts of Six Sigma
▶ Ability to plan projects to achieve maximum process efficiency
▶ Capability to recognize elements of waste and countering them
▶ Skills to measure key aspects of a process to collect relevant data
▶ Ability to create a process map
▶ Ability to identify and measure process capability
▶ Ability to analyse data in order to find cause-and-effect relationships
▶ Identify the root cause of errors
▶ Hypothesis testing knowledge
▶ Ability to improve processes based on analysis
▶ Understanding of how to use various industry models for process improvement
▶ Ability to control processes
▶ Ability to ensure errors are removed before they can damage a process
▶ Understanding of capability analysis
▶ Understanding and use of lean
▶ Skills to control processes, productivity and waste

This Lean Six Sigma Black Belt Certification training course has been designed to build your knowledge and capability to improve the performance of processes, and subsequently, the performance of the business of which you are a part. The focus of the course is process-centric. Your role in process performance improvement will be enhanced through the use of the methodologies of Six Sigma, Lean and process management.
By taking this course, you will acquire a well-rounded and firm grasp of many of the tools of these methodologies. We firmly believe this is one of the most valuable classes that you will ever take, and we commit to provide you that value.

MODULES

Lesson 1: Understanding Six Sigma (Define Phase Module 1)

LSS Black Belt Define Phase - The Define Phase of the DMAIC methodology is constructed to introduce the core fundamentals of Six Sigma.

- ▶ Describe the objectives of Six Sigma
- ▶ Describe the relationship between variation and sigma
- ▶ Recognise some Six Sigma concepts
- ▶ Recognise the Six Sigma implementation model
- ▶ Describe your role and responsibilities in Six Sigma

Lesson 2: Six Sigma Fundamentals (Define Phase Module 2)

- ▶ Describe what is meant by "Process Focus"
- ▶ Describe the importance of VOC, VOB, and VOE, and CTQ's
- ▶ Explain COPQ
- ▶ Generate a Process Map
- ▶ Describe the Basic Six Sigma metrics
- ▶ Explain the difference between FTY and RTY
- ▶ Explain the difference between DPU and DPMO

Lesson 3: Selecting Projects (Define Phase Module 3)

- ▶ Utilise a structured approach to select projects
- ▶ Refine and Define the problem into a Project Charter
- ▶ Make an initial estimate of your project's benefits

Lesson 4: Elements of Waste (Define Phase Module 4)

- ▶ Have a clear understanding of the specific deliverables
- ▶ Have started to develop a Project Plan to meet the deliverables
- ▶ Have identified ways to deal with potential roadblocks
- ▶ Be ready to apply the Six Sigma method through your project

Lesson 5: Wrap Up & Action Items (Define Phase)

Lesson 6: Process Discovery (Measure Phase Module 1)

LSS Black Belt Measure Phase - The Measure Phase of the DMAIC methodology is constructed to introduce important Six Sigma tools for characterising your business issues.

- ▶ Create a high level Process Map
- ▶ Create a Fishbone Diagram
- ▶ Create an X-Y Diagram
- ▶ Describe the elements of a FMEA
- ▶ Explain the importance of a FMEA
- ▶ Describe why each tool is important

Lesson 7: Six Sigma Statistics (Measure Phase Module 2)

- ▶ Explain the various statistics used to express location and spread of data
- ▶ Describe the characteristics of a Normal Distribution
- ▶ Test for Normality
- ▶ Describe the difference between Special Cause and Common Cause Variation
- ▶ Generate a variety of graphs for data

Lesson 8: Measurement System Analysis (Measure Phase Module 3)

- ▶ Perform the step by step methodology in Variable and Attribute MSA's
- ▶ Identify the various components of variation so corrections can be made and the gage error reduced
- ▶ Recognise the differences between Repeatability, Reproducibility, Accuracy and Calibration

Lesson 9: Process Capability (Measure Phase Module 4)

- ▶ Estimate Capability for Continuous Data
- ▶ Describe the impact of Non-normal Data on the analysis presented in this module for Continuous Capability
- ▶ Estimate Capability for Attribute Data

Lesson 10: Wrap Up & Action Items (Measure Phase)

Lesson 11: "X" Sifting (Analyse Phase Module 1)

LSS Black Belt Analyse Phase - The Analyse Phase of the DMAIC methodology is constructed to introduce important Six Sigma tools for isolating critical factors.

- Perform a Multi-Vari Analysis
- Interpret and a Multi-Vari Graph
- Identify when a Multi-Vari Analysis is applicable
- Interpret what Skewed data looks like
- Explain how data distributions become Non-normal when they are really Normal

Lesson 12: Inferential Statistics (Analyse Phase Module 2)

- Explain the meaning of the term "Inferential Statistics".
- Describe the basic tenets of the Central Limit Theorem.
- Describe the impact of sample size on your estimates of population parameters.
- Explain Standard Error

Lesson 13: Intro to Hypothesis Testing (Analyse Phase Module 3)

- Articulate the purpose of Hypothesis Testing
- Explain the concepts of the Central Tendency
- Be familiar with the types of Hypothesis Tests

Lesson 14: Hypothesis Testing Normal Data Part 1 (Analyse Phase Module 4)

- Determine appropriate sample sizes for testing Means
- Conduct various Hypothesis Tests for Means
- Properly Analyse Results

Lesson 15: Hypothesis Testing Normal Data Part 2 (Analyse Phase Module 5)

- Be able to conduct Hypothesis Testing of Variances
- Understand how to Analyse Hypothesis Testing Results

Lesson 16: Hypothesis Testing Non-Normal Data Part 1 (Analyse Phase Module 6)

- Conduct Hypothesis Testing for equal variance
- Conduct Hypothesis Testing for Medians
- Analyse and interpret the results

Lesson 17: Hypothesis Testing Non-Normal Data Part 2 (Analyse Phase Module 7)

- Calculate and explain test for proportions
- Calculate and explain contingency tests

Lesson 18: Wrap Up & Action Items (Analyse Phase)

Lesson 19: Process Modeling Regression (Improve Phase Module 1)

LSS Black Belt Improve Phase - The Improve Phase of the DMAIC methodology is constructed to introduce important Lean Six Sigma tools for properly controlling solutions.

- Perform the steps in a Correlation and a Regression Analysis
- Explain when Correlation and Regression is appropriate

Lesson 20: Advanced Process Modeling (Improve Phase Module 2)

- Perform Non-Linear Regression Analysis
- Perform Multiple Linear Regression Analysis
- Determine the reason for experimenting
- Describe the difference between a physical model and a DOE model
- Explain an OFAT experiment and its primary weakness
- Shown Main Effects Plots and interactions, determine which effects and interactions may be significant
- Create a Full Factorial Design

Lesson 21: Experimental Methods (Improve Phase Module 3)

- Be able to Design, Conduct and Analyse an Experiment

Lesson 22: Full Factorial Experiments (Improve Phase Module 4)

- Understand how to Create Balanced & Orthogonal Designs
- Explain how Fit & Diagnose & Center Points factors into an experiment

Lesson 23: Fractional Factorial Experiments (Improve Phase Module 5)

▶ Explain why & how to use a Fractional Factorial Design
▶ Create a proper Fractional Factorial Design
▶ Analyse a proper model with aliased interactions

Lesson 24: Wrap Up & Action Items (Improve Phase)

Lesson 25: Advanced Experiments (Control Phase Module 1)

LSS Black Belt Control Phase - The Control Phase of the DMAIC methodology is constructed to introduce important Lean Six Sigma tools for properly controlling solutions.

▶ Use the results of a DOE to determine how to further optimise a process using the steepest ascent/descent method

Lesson 26: Capability Analysis (Control Phase Module 2)

▶ Understand the importance of Capability Analysis as it is applied in the Control Phase
▶ Select the appropriate method for Capability Analysis based on the type of data distribution of your process
▶ Interpret the output of MINITABTM's Capability functions
▶ Understand how the use for Capability Analysis may alter through the DMAIC phases

Lesson 27: Lean Controls (Control Phase Module 3)

▶ Describe Lean tools
▶ Understand how these tools can help with project sustainability
▶ Understand how the Lean tools depends on each other
▶ Understand how tools must document the defect prevention created in the Control Phase

Lesson 28: Defect Controls (Control Phase Module 4)

▶ Describe some methods of defect prevention
▶ Understand how these techniques can help with project sustainability
▶ Including reducing those outliers as seen in the Advanced Process Capability section
▶ If the vital X was identified, prevent the cause of defective Y
▶ Understand what tools must document the defect prevention created in the Control Phase

Lesson 29: Statistical Process Control - SPC (Control Phase Module 5)

▶ Describe the elements of an SPC Chart and the purposes of SPC
▶ Understand how SPC ranks in defect prevention
▶ Describe the 9 Step route or methodology of implementing a chart
▶ Design subgroups if needed for SPC usage
▶ Determine the frequency of sampling
▶ Understand the Control Chart selection methodology
▶ Be familiar with Control Chart parameter calculations such as UCL, LCL and the Center Line

Lesson 30: Six Sigma Control Plans (Control Phase Module 6)

▶ Understand the 5 phases of the Control Plan
▶ Training
▶ Documentation
▶ Monitoring
▶ Response
▶ Aligning Systems and Structures

Lesson 31: Wrap Up & Action Items (Control Phase)

WEB LINKS

▶ View this course online
▶ In-house Training Instant Quote