

LEAN SIX SIGMA GREEN BELT CERTIFICATION TRAINING

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COURSE LENGTH: 5.0 DAYS

Following the methodical DMAIC (Define-Measure-Analyze-Improve-Control) roadmap, you will learn to determine problems and inadequacies, to collect and analyze performance information, identify the underlying cause of the problems and introduce new procedures to improve the processes.

More importantly, this training course has an applied and practical focus based on real world case studies and group interactions. Lean Six Sigma Green Belt participants will obtain formal certification from PD Training/IASSC when they pass the final exam.

Comprehensive training and exam preparation to achieve Lean Six Sigma Green Belt Certification with the International Association of Six Sigma Certification (IASSC) – the most highly regarded independent global Green Belt Certification.

This course is very comprehensive and doesn't require any pre-requisite training. You will learn the foundation skills and develop up to the Green Belt level as part of this intensive 5-day course. However, this training does move quickly and covers a lot of in-depth information in great detail.

For participants focused on Certification preparation, it is important to know that the IASSC Global Certification is exam based. Which means you can sit the exam and become certified as soon as you have successfully passed the exam which is based on global benchmarks.

The Hong Kong's best Lean Six Sigma Green Belt Training courses run by LSS experts are available Hong Kong wide.

This Lean Six Sigma Green Belt Certification Training course can be delivered at your premises by one of our expert local or international trainers or live online using our HIVE technology.

Contact us today for a quote.

LEAN SIX SIGMA GREEN BELT CERTIFICATION TRAINING COURSE OUTLINE

FOREWORD

The PD Training materials are much more than simple 'tools training'. This curriculum is formatted in such a way that the problem-solving strategy is demonstrated throughout the course. By utilizing various Statistical and Business Improvement tools, participants can clearly see and communicate the flow and process of the methodology in order to instill both the tactical and strategic aspects of the LSS Green Belt skill set.

The implementation roadmaps within each phase provide a clear line-of-sight for putting into practice the problem solving technology.

Various group exercises utilizing training aids, pre-formatted data sets and templates facilitate interactive group learning within a class.

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

OUTCOMES

During this course, you will develop:

- ▶ Understanding of the concepts, implementation & objectives of Six Sigma
- ▶ Ability to use a structured approach to process improvement
- ▶ Ability to use DMAIC (Define, Measure, Analyze, Implement and Control) methodology
- ▶ Skill to predict, prevent and control defects in a process
- ▶ Understanding of the elements of waste
- ▶ Skill to achieve sustainable quality improvement through process improvement
- ▶ Understanding of the tools of process discovery
- ▶ Understanding of variation in processes
- ▶ Skill to reduce variation in processes and achieve predicted outcomes
- ▶ Ability to identify, measure and analyze process potential
- ▶ Usage of inferential statistics
- ▶ Usage of hypothesis testing
- ▶ Understanding when to use which Six Sigma methodology
- ▶ Ability to use Capability Analysis to control processes
- ▶ Knowledge of the interdependence of Lean tools
- ▶ Skill to prevent, identify and control defects
- ▶ Understanding and use of statistical process control
- ▶ Skill to train, document, monitor, respond, and align systems
- ▶ Skill to provide sustainable and cost-effective improvement in processes

MODULES

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

LSS Green Belt Define Phase - The Define Phase of the DMAIC methodology is constructed to introduce the fundamentals of Lean 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 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 5: Wrap Up & Action Items (Define Phase)

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 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 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 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 6: Process Discovery (Measure Phase Module 1)

LSS Green Belt Measure Phase - The Measure Phase of the DMAIC methodology is constructed to introduce important Lean 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 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 10: Wrap Up & Action Items (Measure Phase)

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

LSS Green Belt Analyse Phase - The Analyse Phase of the DMAIC methodology is constructed to introduce important Lean 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 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 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 17: Hypothesis Testing Non-Normal Data Part 2 (Analyse Phase Module 7)

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

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

LSS Green 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 21: Designing Experiments (Improve Phase Module 3)

- ▶ 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 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 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 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 18: Wrap Up & Action Items (Analyse Phase)

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

- ▶ Perform Non-Linear Regression Analysis
- ▶ Perform Multiple Linear Regression Analysis (MLR)
- ▶ Examine Residuals Analysis and understand its effects

Lesson 22: Wrap Up & Action Items (Improve Phase)

Lesson 23: Advanced Experiments (Control Phase Module 1)

LSS Green 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 25: 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 27: 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 29: Wrap Up & Action Items (Control Phase)

Lesson 24: 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 MINITAB's Capability functions
- ▶ Understand how the use for Capability Analysis may alter through the DMAIC phases

Lesson 26: 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 28: Six Sigma Control Plans (Control Phase Module 6)

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

WEB LINKS

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- ▶ [View this course online](#)
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