



International Institute for Executive Training

Lean Six Sigma Black Belt



Program Overview

This Lean Six Sigma Black Belt training develops delegates into expert-level problem solvers—giving them the hard skills they need to lead successful improvement teams and achieve strategic objectives in any function or department of any organization.

This intensive 5-day program develops understanding and enables application of proven approaches to maximizing productivity through understanding process requirements, identifying constraints and creating flow. Delegates will be provided with the established Lean Six Sigma body of knowledge, the experience to implement it in the workplace through a group project and the credentials to be a Lean Six Sigma leader within their organization.

This interactive course will explore how Lean Six Sigma methodology can help your organization solve both technical and human challenges of sustainable projects and will improve the project management processes and mindsets alike. We will explore the lean six sigma through a series of dynamic presentations, cutting edge videos, exciting group activities, and real-world applicable case studies.



The iIET has successfully met the requirements set forth by the International Association for Six Sigma Certification (IASSC) for the designation of an Accredited Training Organization. This accreditation publically reflects that the iIET has met the standards established by IASSC such that those who participate in a training program led iIET can expect to receive an acceptable level of knowledge transfer consistent with the Lean Six Sigma belt Bodies of Knowledge as established by IASSC.

Key Takeaways



Lead teams in applying the Six Sigma DMAIC methodology to eliminate waste.



Define improvement projects to satisfy your /client and ensure that the project proceeds effectively through all the essential phases, from concept through to completion.



Learn the lean six sigma tools tools needed for efficient project completion including project charters, FMEA, Kaizen and control charts



Gain confidence in basic statistical analysis tools such as Pareto charts, histograms, inferential statistics.



Control the process to prevent backsliding and consolidate the gains.



Learn advanced data analysis techniques for finding relationships between variables with tools such as multi-variable regression analysis

***Successful completion of the course materials, and the IASSC LSS Black Belt exam makes you a Lean Six Sigma Black Belt. You can use this designation on your resume and business card. Studies have shown that those who have completed a Lean Six Sigma training and certification can increase their earning potential as well as be better able to attain their career goals.**



Why People Choose to learn with the iIET...

Our unique approach brings together...

- latest case studies from the worlds top companies
- most cutting-edge multimedia available



Our course content is designed to fit every learning style and support the non-English speaking audience.

Who Should Attend This Program

Previously trained Green Belts who want to become certified Black Belts.

Preparation

This Lean Six Sigma Black Belt Training program is highly technical and content heavy.

1. The iIET will provide the delegates with program **preparation materials including readings, exercises and sample exam questions.**
2. Delegates will submit all completed preparation materials on the first day of the in-class session.
3. The iIET training does not guarantee that the delegate will pass the examination, it is up to each delegate to prepare thoroughly for the exam.

Course Requirements, Prerequisites and Exam

1. **Prerequisites – Must currently hold an IASSC Lean Six Sigma Green Belt.**
2. **Attendance** – delegates must attend all sessions of the course. Delegates who miss more than two hours of the course sessions will not be eligible to sit for the Lean Six Sigma Examination.
3. **Successful completion of the course work and project** – Completion the course work and leading and completing one workplace project within 1 year of course completion. They will earn delegates a certificate of completion from iIET our instructional programs have been accredited by IASSC.
4. In order to achieve the professional designation of **IASSC Certified Black Belt (IASSC-CBB™)** from the International Association for Six Sigma Certification, candidates must sit for the **IASSC Certified Lean Six Sigma Black Belt Exam and achieve a minimum score of 580 points out of a total potential of 750 points.**

-Topics That Will Be Covered-

Define Phase: The Basics of Six Sigma

- Meanings of Six Sigma
- General History of Six Sigma & Continuous Improvement
- Deliverables of a Lean Six Sigma Project
- The Problem Solving Strategy $Y = f(x)$
- Voice of the Customer, Business and Employee
- Six Sigma Roles & Responsibilities

The Fundamentals of Six Sigma

- Defining a Process
- Critical to Quality Characteristics (CTQ's)
- Cost of Poor Quality (COPQ)
- Pareto Analysis (80:20 rule)
- Basic Six Sigma Metrics including DPU, DPMO, FTY, RTY Cycle Time, deriving these metrics and these metrics

Selecting Lean Six Sigma Projects

- Building a Business Case & Project Charter
- Developing Project Metrics
- Financial Evaluation & Benefits Capture

The Lean Enterprise

- Understanding Lean
- The History of Lean
- Lean & Six Sigma
- The Seven Elements of Waste: Overproduction, Correction, Inventory, Motion, Overprocessing, Conveyance, Waiting.
- 5S: Straighten, Shine, Standardize, Self Discipline, Sort

Measure Phase

- Process Definition

- Cause & Effect / Fishbone Diagrams
- Process Mapping, SIPOC, Value Stream Map
- X-Y Diagram
- Failure Modes & Effects Analysis (FMEA)

Six Sigma Statistics

- Basic Statistics
- Descriptive Statistics
- Normal Distributions & Normality
- Graphical Analysis

Measurement System Analysis

- Precision & Accuracy
- Bias, Linearity & Stability
- Gage Repeatability & Reproducibility
- Variable & Attribute MSA

Process Capability

- Capability Analysis
- Concept of Stability
- Attribute & Discrete Capability
- Monitoring Techniques

Analyze Phase

Patterns of Variation

- Multi-Vari Analysis
- Classes of Distributions

Inferential Statistics

- Understanding Inference
- Sampling Techniques & Uses
- Central Limit Theorem

Hypothesis Testing

- General Concepts & Goals of Hypothesis Testing
- Significance; Practical vs. Statistical
- Risk; Alpha & Beta
- Types of Hypothesis Test

Hypothesis Testing with Normal Data

- 1 & 2 sample t-tests
- 1 sample variance
- One Way ANOVA: Including Tests of Equal Variance, Normality Testing and Sample Size calculation, performing tests and interpreting results.

Hypothesis Testing with Non-Normal Data

- Mann-Whitney
- Kruskal-Wallis
- Mood's Median
- Friedman
- 1 Sample Sign
- 1 Sample Wilcoxon
- One and Two Sample Proportion
- Chi-Squared (Contingency Tables: Including Tests of Equal Variance, Normality Testing and Sample Size calculation, performing tests and interpreting results.

Improve Phase

- Simple Linear Regression
- Correlation
- Regression Equations
- Residuals Analysis

Multiple Regression Analysis

- Non- Linear Regression
- Multiple Linear Regression
- Confidence & Prediction Intervals
- Residuals Analysis
- Data Transformation, Box Cox

Designed Experiments

- Experiment Objectives
- Experimental Methods
- Experiment Design Considerations

Full Factorial Experiments

- 2k Full Factorial Designs
- Linear & Quadratic Mathematical Models
- Balanced & Orthogonal Designs
- Fit, Diagnose Model and Center Points

Fractional Factorial Experiments

- Designs
- Confounding Effects
- Experimental Resolution

Control Phase

- Lean Controls
- Control Methods for 5S
- Kanban
- Poka-Yoke (Mistake Proofing)
- Statistical Process Control (SPC)
- Data Collection for SPC
- I-MR Chart
- Xbar-R Chart
- U Chart
- P Chart
- NP Chart
- X-S chart
- CumSum Chart
- EWMA Chart
- Control Chart Anatomy
- Cost Benefit Analysis
- Elements of the Control Plan
- Elements of the Response Plan

-Topics That Will Be Covered-