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LEAN SIX SIGMA BLACK BELT CERTIFICATION TRAINING - SIGNATURE SERIES

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COURSE LENGTH: 10.0 DAYS

Comprehensive training and exam preparation course to achieve your Black Belt Certification with the International Association of Six Sigma Certification (IASSC) – the most highly regarded independent global benchmark for Six Sigma Certification.

The PD Training Lean Six Sigma Black Belt Certification Training Course provides you with an in-depth understanding of Six Sigma fundamentals and advanced phases. This course is designed to prepare you to implement and manage Six Sigma Projects in the workplace and pass the IASSC Certification exam.

Australia's best Lean Six Sigma Black Belt Training courses, run by Black Belts and Master Black Belts, is now available in Brisbane, Sydney, Parramatta, Melbourne, Canberra, Adelaide and Perth.

PD Training supports global companies in adopting Six Sigma and Lean best practices across the world.

Please click on the Public Class tab below to view our Lean Six Sigma Black Belt Training course schedule by city or click the In-House Training tab to receive a free quote for courses delivered at your preferred location.

LEAN SIX SIGMA BLACK BELT CERTIFICATION TRAINING - SIGNATURE SERIES COURSE OUTLINE

FOREWORD

This Lean Six Sigma Black Belt Training is 10-days of comprehensive theory and practical application using advanced statistical analysis and modeling. Whilst there is no formal pre-requisite (you don't have to be Yellow or Green Belt to enrol in this course), people with prior experience and advanced mathematical competencies will also find the course appropriate to their level of knowledge.

We recommend attending the course in two 5 day blocks (80 hours) with a minimum of six weeks between them. In the intervening time you will be required to set up and run experiments and collect data to use in the Analyse phase of the course. You will need to devote an additional 11-12 hours/week (70 hours over the six weeks) to completing these tasks. We also recommend setting aside 3 hours per night (24 hours in total) for self directed learning when attending the course to ensure you stay up to date with understanding the concepts discussed in the course. Total duration of time to complete the course will be up to 174 hours over the six weeks.

Upon completion of this course you will have covered all the materials and concepts required to drive significant change within any organisation, and have practiced the skills required to successfully pass the stringent IASSC Certification exam.

You'll learn from the best in the business; Black Belts and Master Black Belts who will share their decades of experience with you. Attend this comprehensive, 10-day course and you'll be ready to take your career to the next level!

OUTCOMES

After completing this course you will have learned:

- Understanding and implementation of the concepts of Six Sigma
- Ability to plan projects to achieve maximum process efficiency
- Capability to recognise 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 analysis data accurately to find cause-and-effect relationship and 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

MODULES

Lesson 1: What is Quality (Introduction)

- Understand the history of quality
- Gathering the voice of the customer
- Garvin's five definitions of quality
- Definitions of quality from quality gurus
- Differences in quality between products and services

Lesson 2: Enterprise-wide View (Introduction)

- Understand the history of continuous improvement
- Six Sigma as a Value
- Six Sigma as a Measure
- Six Sigma as a Metric
- Six Sigma Approach
- Six Sigma Process
- Six Sigma System
- Benefits of Six Sigma

Lesson 3: Lean (Introduction)

- Understand the history of Lean and the value it brings to an organisation
- The philosophy and goals of Lean Manufacturing
- Understand how Lean integrates with Six Sigma
- Business processes and systems

Lesson 4: Leadership (Introduction)

- Leadership responsibilities
- Organisational roadblocks and how to overcome them
- Change management
- Six sigma projects and Kaizen events

Lesson 5: Roles and Responsibilities (Introduction)

- Key six sigma players
- Player responsibilities
- Team stages
- Team communication

Lesson 6: Six Sigma Important Stakeholders (Define Phase)

- Describe the stakeholders in Six Sigma projects
- Understand how the changeover to Six Sigma implementation affects stakeholders
- Undertake stakeholder analysis

Lesson 7: Critical X Requirements (Define Phase)

- Understand the Critical to "X" concept
- Describe categories of performance metrics
- Aligning projects with CTX requirements

Lesson 8: Benchmarking (Define Phase)

- Understand the the framework for competitor analysis
- Types of benchmarking
- Steps in benchmarking

Lesson 9: Business Performance Measures (Define Phase)

- Balanced scorecard
- Key performance indicators
- Customer loyalty

Lesson 10: Financial Measures (Define Phase)

- Understand different financial measures
- Apply net present value calculation (NPV)
- Cost benefit analysis
- Hard and soft financial benefits

Lesson 11: Voice of Customer and satisfaction levels (Define Phase)

- Understand the Voice of Customer concept
- Apply procedure to comprehend the VOC
- Questions to identify what is critical to customer satisfaction
- Understand the Kano model
- Juran's customer needs

Lesson 12: Critical to Quality Flowdown (Define Phase)

- Understand the definition and purpose of Critical to Quality
- Understand the Critical to Quality steps or flowdown
- Essence of Cost of Poor Quality (COPQ)
- Hard and soft savings

Lesson 13: Quality Function Deployment (Define Phase)

- Brief history of QFD
- Questions answered using QFD
- House of quality
- Building the House of Quality

Lesson 14: Performance Metrics (Define Phase)

- Explain what performance metrics are and they can be used to measure the effectiveness and efficiency of a process and establish goals for a project's anticipated outcome
- Explain the difference between process and business metrics
- Know what questions to ask to determine the quality of the performance metrics

Lesson 15: Project Charter (Define Phase)

- Understand the purpose of a project charter
- Understand the requirements and the elements of a project charter
- Know how to phrase a problem statement
- Know what questions to ask to determine the quality of the performance metrics

Lesson 16: Project Management and Tracking (Define Phase)

- Creation of a project baseline
- Project tracking
- Determine the reason for experimenting
- Structure and characteristics of Work Breakdown Structure (WBS)
- Purpose and examples on Gantt Chart

Lesson 17: Wrap Up & Action Items (Define Phase)

Lesson 18: Processes and Process Characteristics (Measure Phase)

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

- Define a process
- Explain different types of processes
- Explain different process characteristics

Lesson 19: Process Maps and Flow Chart (Measure Phase)

- Understand how to create a process map
- Understand the different types of process maps
- Describe process flow metrics and how they are used

Lesson 20: SIPOC (Measure Phase)

- Understand meaning and importance of SIPOC diagram
- Understand when to use SIPOC
- Create a SIPOC diagram

Lesson 21: Data Types and Measurement Scales (Measure Phase)

- Understand how to choose different data collection methods
- Know how to use check sheets and when to use different types of check sheets
- Understand the advantages and disadvantages of automated gauging
- Know how to code data and the advantages and disadvantages of coding data
- Understand the concepts of data integrity and accuracy

Lesson 22: Data Collection (Measure Phase)

- Understand how to choose different data collection methods
- Know how to use check sheets and when to use different types of check sheets
- Understand the advantages and disadvantages of automated gauging
- Know how to code data and the advantages and disadvantages of coding data
- Understand the concepts of data integrity and accuracy

Lesson 23: Sampling Strategies (Measure Phase)

- Understand the concept of sampling and the different types of sampling strategies
- Apply probability sampling strategies
- Apply non-probability sampling strategies
- Know how to calculate and determine sample size for continuous and discrete data

Lesson 24: Fishbone Diagram (Measure Phase)

- Understand the purpose and meaning of the Ishikawa or Fishbone diagram
- Apply the Fishbone diagram
- Apply non-probability sampling strategies
- Know how to calculate and determine sample size for continuous and discrete data

Lesson 25: Relational Matrix /Prioritisation Matrix (Measure Phase)

- Understand that a relational matrix is a tool used to measure which of the input variables has the greatest effect on output
- Know when and how to use a relational matrix
- Understand the differences between the X-T matrix and the Quality Function Deployment (QFD)

Lesson 26: Basic Statistics (Measure Phase Module)

- Explain the various statistics used to express location and spread of data
- Describe the characteristics of a Normal Distribution
- Explain the measures of dispersion
- Understand and use measures of symmetry
- Explain the Central Limit Theory
- Explain frequency distribution

Lesson 27: Graphical Methods (Measure Phase)

- Understand how to construct histograms and differences in distribution shape
- Construct a histogram using Minitab
- Construct a stem and leaf plot
- Construct a box plot
- Construct a run chart
- Explain the significance of P values in relation to hypotheses
- Compare graphical methods and decide which is best to use

Lesson 28: Inferential Statistics (Measure Phase)

- Steps involved in analytical statistics
- The Rules of Probability
- Combinations and Permutations in probability
- Probability distribution
- Discrete and continuous distributions

Lesson 29: Gauge R and R (Measure Phase)

- Understand the concept of gauge repeatability and reproducibility
- Understand the concepts of accuracy, precision, linearity, stability and bias
- Apply Gauge R and R
- Apply Gauge R and R regression analysis

Lesson 30: Process Capability Analysis (Measure Phase)

- Understand causes of variation
- 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 31: Wrap Up & Action Items (Measure Phase)

Lesson 32: Graph and Data Analysis (Analyse Phase)

- Construct a scatter diagram
- Understand correlation and regression analysis
- Apply the method of least square
- Apply a simple linear regression model
- Apply multiple linear regression analysis

Lesson 33: Multi-Vari Analysis (Analyse Phase)

- Perform a Multi-Vari Analysis
- Interpret and a Multi-Vari Graph
- Identify when a Multi-Vari Analysis is applicable

Lesson 34: Intro to Hypothesis Testing (Analyse Phase)

- Articulate the purpose of Hypothesis Testing
- Explain the concepts of the Central Tendency
- Be familiar with the types of Hypothesis Tests
- Statistical inference
- Understand the concepts between statistical and practical significance
- Calculate point and interval estimations
- Calculate margin of error and sample size
- Calculate confidence intervals

Lesson 35: Hypothesis Testing Normal Data (Analyse Phase)

- Determine appropriate sample sizes for testing Means
- Conduct various Hypothesis Tests for Means
- Properly Analyse Results
- Be able to conduct Hypothesis Testing of Variances
- Understand how to Analyse Hypothesis Testing Results

Lesson 36: Hypothesis Testing Non-Normal Data (Analyse Phase)

- Conduct Hypothesis Testing for equal variance
- Conduct Hypothesis Testing for Medians
- Analyse and interpret the results
- Calculate and explain test for proportions
- Calculate and explain contingency tests

Lesson 37: Pareto Charts (Analyse Phase)

- Explain the objectives of a Pareto chart

Lesson 38: Failure Mode and Effects Analysis (Analyse Phase)

- Construct a Pareto chart
- Test proportion = specified value
- Test if two proportions are equal

- Explain the of conducting FMEA and its various elements
- Explain and calculate Risk Priority Number
- Understand procedures involved in conducting FMEA
- Understand differences of design and process FMEA
- Explain advantages and disadvantages of conducting FMEA

Lesson 39: Non-Value Added Activities (Analyse Phase)

- Understand the seven types of process waste
- Understand the difference between value and non-value added activities
- Identify non-value added activities from process maps

Lesson 40: Value Stream Mapping (Analyse Phase)

- Understand VSM process and symbols used
- Create a Value Stream Map
- Understand the difference between cycle time and takt time
- Know when to use Lean Systems
- Construct a spaghetti chart
- Outline the benefits of VSM

Lesson 41: Wrap Up & Action Items (Analyse Phase)

Lesson 42: Generate New and Re-usedSolutions (Improve Phase)

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.

- Generate solution ideas
- Apply six thinking hats to evaluate solutions
- Understand the role of bench-marking solutions
- Understand the concept of process entitlement

Lesson 43: 5S (Improve Phase)

- Understand the 5 concepts in the 5S model
- Understand the effect of 5S on improvements

Lesson 44: Evaluate and select top solution (Improvement Phase)

- Understand the approach to design and implement a solution
- Prepare process maps that reflect the desired state
- Understand the concept of poka-yoke (mistake proofing)
- Understand the steps to pilot the top solution

Lesson 45: Designing Experiments (Improve Phase)

- Understand the concept of experiment design and the terminology

Lesson 46: Kaizen and Kanban and Theory of Constraints (Improvement Phase)

- Understand the concept of Kaizen and Demming cycle and a Kaizen event

- Nomenclature for factorial experiments
- Understand different types of design
- Understand the difference between balanced and orthogonal designs and the role of centre points
- Conduct two-way ANOVA experiments with and without replicas
- Analyse factorial experiments
- Create a Full and a Fractional Factorial Design

- Understand the concept of Kanban and the Push vs Pull system of production
- Know how to create strategic buffer
- Understand the Theory of Constraints and the five focusing steps

Lesson 47: Single Minute Exchange of Die (Improve Phase)

- Understand the objectives of SMED
- Understand the techniques of implementing and the effects of SMED

Lesson 48: Risk Analysis and Mitigation (Improve Phase)

- Understand the purpose of a risk assessment tool
- Understand how to conduct a SWOT and PEST analysis
- Understand the concept of poka-yoke (mistake proofing)
- Understand the steps to pilot the top solution

Lesson 49: Total Productive Maintenance (Improve Phase)

- Explain the concept of TPM
- Understand the 8 pillars of TPM
- Explain the benefits of TPM

Lesson 50: Lean Six Sigma Logistics (Improve Phase)

- Understand how Lean Six Sigma techniques can be used to optimise the performance of an organisation's logistics network
- Know how to implement Lean Logistics and how they can reduce inventory maintenance costs

Lesson 51: Wrap Up & Action Items (Improve Phase)

Lesson 52: Statistical Process Control - SPC (Control Phase)

- Describe the elements of an SPC Chart and the purposes of SPC
- Understand how SPC ranks in defect prevention
- Describe the special cause detection rules
- Design subgroups if needed for SPC usage
- Understand the differences between Attribute and Continuous Control Charts
- Create an I-MR control chart
- Create an X-bar R chart
- Create an X-bar S chart
- Create P and Np charts
- Create a U chart
- Create time-weighted charts
- Explain the purpose of a Visual Factory

Lesson 53: Maintain Controls (Control Phase)

- Understand the purpose of conducting a cost benefit analysis
- Understand the purpose of a Control Plan
- Understand the purpose of a documentation plan
- Understand the concept of lessons learned

Lesson 54: Wrap Up & Action Items (Control Phase)

WEB LINKS

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