



Lean Six Sigma Green Belt – LIVE ONLINE

10 half-day sessions (2 session per week for 5 weeks) for a total of 5 days
Lean Six Sigma Green Belt Certificate awarded upon successful completion

The following curriculum is for the online Green Belt workshop. The in-person workshop covers the same topics in the same order in five 8-hour days.

Day 1: (half day, approx. 4 hours including breaks)

Instructor: Larry Parah, MLSSBB

Introduction to Lean Six Sigma (LSS) & Use of common LSS Tools

Process:

- Types: Management, Core, Support

Lean:

- Definition, Values Analysis, Little's Law, Process Cycle Efficiency, Take Time
- Lessons of Lean

Six Sigma

- Definition
- 6 Causes of Variation

Lean Six Sigma

- Definition

DMAIC (Define, Measure, Analyze, Improve, Control)

- Start a case study: Learn the DMAIC model in detail through case study and, use of common LSS Tools

Day 2: (half day, approx. 4 hours including breaks)

Instructor: Larry Parah, MLSSBB

DMAIC (Define, Measure, Analyze, Improve, Control)

- Finish the case study from Day 1: Learn the DMAIC model in detail through case study, and use of common LSS Tools

Day 3: (half day, approx. 4 hours including breaks)

Instructor: Jim Hall, MLSSBB

Lean in Detail

Waste Identification

- Seven wastes

Level Loading

- What is it?
- How might you achieve level loading

Flow

- One-Piece Flow (use in manufacturing/service?)
- Batch or Batch Processing
- Consider (set-up costs, machine downtime cost)

Push/Pull Systems/Lead Times

- Push Definition and Example
- Pull Definition and Example
- Establishing lead times and setting goals

Layout the Workflow

- Functional Layout
- Product Layout
- Dedicated Work Cells

Day 4: (half day, approx. 4 hours including breaks)

Instructor: Jim Hall, MLSSBB

Value Stream Mapping

Types of Maps

- Flowcharts (process maps)
- Value Stream Maps

Value Stream Mapping (VSM)

- What is a VSM?
- When do you use a VSM?

Value Stream Mapping

- Symbols (Icons)
- Steps to the Present State Map
- The Data Box
- Using Little's Law
- Push, Pull, FIFO
- Steps to the Future State Map
- Putting VSM to Work

Day 5: (half day, approx. 4 hours including breaks)

Instructor: Dr. Ron Lasky, LSSMBB

Six Sigma: Introduction to Statistics

Purpose(s) of Using Statistics and SPC

- To Define a problem objectively and precisely
- To make an inference about the population from a sample
- To control a process

Variation and the Normal Curve

- The Concept of Variation (6 Ms)
- The Normal Curve
 - Population vs Sample
 - Central tendency

Data and Variation

- Types of Data (attribute, variable)
- Expected Variation (common cause)
- Unexpected Variation (special cause)
- Drawing and using Histograms
 - Calculating cell intervals
 - Histogram analysis (random, capable, centered, acceptable process)

Measures of Central Tendency

- Arithmetic Mean (average)
- Media
- Mode

Standard Deviation

- Definition
- The formula
- Six Sigma (+/-6 standard deviations)
- Why is standard deviation important (Cp & Cpk)?
- Standard deviation exercises

Day 6: (half day, approx. 4 hours including breaks)

Instructor: Dr. Ron Lasky, LSSMBB

Statistical Process Control (SPC)

What is SPC and why use it?

- Definition
- Precision & Accuracy
- SPC Charts
 - Purpose of a control chart
 - The control chart elements
 - X-bar charts (example)
 - R-bar charts
 - X-bar R charts
 - UCL/LCL
 - USL/LSL
- Building an X-bar R chart (examples)
- Interpreting a control chart
 - Shewhart Rules

Day 7: (half day, approx. 4 hours including breaks)

Instructor: Dr. Ron Lasky, LSSMBB

Introduction to Design of Experiments (DOE)

- What is DOE and why use it?
- DOE Size
- Steps to Conducting a DOE
- DOE Example(s) and Exercises

Day 8: (half day, approx. 4 hours including breaks)

Instructor: Tim King, CMQ/O/CQA

TEAMWORK – Green Belt

Why Teams:

- Power of a Team Approach
- Research on Team Successes & Failures
- Culture of Collaboration
- Best Practices from Successful Companies

Types of improvement teams

- Project teams
- Process Teams
- Kaizen team
- Quality Steering Team

Common Team Problems

- Floundering
- Negativity
- Opinions not Facts
- Jump to Solutions
- Magnifying the problem out of control
- Workstyle Clashes

LSS Team Roles

- Process Owner
- Sponsor
- Team Leader (Black Belt)
- Meeting Roles: Leader, Facilitator, Scribe, Timekeeper, Parking Lot
- Team Member (usually GB or non-belt)

Team Development Stages and How To Move Through Them

- Forming
- Storming
- Norming
- Performing
- Adjourning

Team Guidelines

- The rules of operation
- Meeting Structure
- Decision Making Methods

Day 9: (half day, approx. 4 hours including breaks)

Instructor: Tim King, CMQ/O/CQA

Team Formation:

- Charter Setup
- Defining the project
- Defining the problem to be solved
- Creating an Initial Milestone Plan

Team Tools Along the DMAIC Roadmap

- Brainstorming
- SIPOC
- Flowcharts
- Root Cause
- Decision Matrix
- Multivoting
- Force Field Analysis
- Risk Analysis

The Green Belt's Role in Managing Roadblocks in your Company / Organization

- Structural Issues
- Functional Organizations
- Sales Driven Organizations
- Geographic Issues
- Navigating Matrix Management
- Cultural & Political Roadblocks

Additional Resources for Further Learning

- Recommended books
- Websites
- Tools

The Green Belt's Role in Managing Conflict

- Team Conflict
- Organizational Conflict
- Conflict Resolution
 - Negotiation
 - Win-win agreements

Evaluating Team Performance

- Measuring performance against original goals (DMAIC)
- Making presentations to management

Day 10: (half day, approx. 4 hours including breaks)

Instructor: Larry Parah, LSSMBB

Quality Management Systems (ISO 9000)

Overview of Quality Management

- What is ISO 9001: 2008?
- Quality Definitions

ISO 9001: 2008 Requirements: Some of the details of Clause 4.0 through Clause 8.5

- Levels of Documentation
- Required Procedures
- Required Records
- Management Responsibilities
- Resource Management
- Product Realization
- Measurement, Analysis and Improvement

How Does Lean Six Sigma Complement ISO 9000?

- Root Cause & the LSS Tools
- Continual Improvement

Audits – Types, Purpose, Objectives, Responsibilities

- 1st party, 2nd party and 3rd party audits

Sustaining Your ISO 9001 Quality Management System

- Principles
- Practices
- Culture
- Tools

TAKE HOME EXAM: (half day, approx. 4 hours including breaks)

Exam

This exam is take home. You must complete the exam and email it to the instructor within 5 business days of the last session on day 10. Those who do not return the exam within 5 business days will not be eligible for the LSS Green Belt Certificate (NO EXCEPTIONS).

This is an open notes exam so you can use all of the material that the instructors have provided to you. The exam will be primarily question and answer format with some of the math that you have learned during the course.

The exam should be completed in 2.5 to 3 hours. It is a pass/fail exam.