

## Lean Six Sigma Black Belt Course Summary

### Description

The Six Sigma Black Belt course is designed to refine technical problem-solving skills. Instruction is application focused, therefore requiring all participants to successfully complete a project while completing the classroom portion of the training. The focus of the instruction is knowledge transfer demonstrated by real-time application of technical problem-solving skills.

The accelerated Six Sigma Black Belt program and methodology focuses on employees who lead process improvement initiatives as a primary function of their job. Black Belts are responsible for leading process improvement teams through successful completion of the project. Black Belts may lead multiple projects at one time so they must understand stakeholders, project management, and time management. Black Belts are responsible for delivering a successful project outcome by leading a cross-functional team of employees with varying skill sets.

Six Sigma is a proven technique for methodically dissecting a complex problem and determining root causation. Six Sigma uses statistical methods to determine how various factors affect a dependent variable or feature of a product that may be causing defects or process problems. Six Sigma Black Belt Training consists of 40 hours of classroom training and a project. This course builds upon the Six Sigma Green Belt class and they should be taken together if seeking the Black Belt. The course will review past learning but will go broader and dive deeper into the subject matter. Students will use SigmaXL as a statistical software package that they will get to keep at the end of the session. A laptop or PC is required for this class. Students will be trained per IASSC® guidelines, and have the opportunity to test for certification. All students will receive a license for SigmaXL statistical software. Students are required to complete a project. A virtual project will be provided for those students who are not currently in the workforce or those who do not have a suitable project.

### Topics

- Define
- Measure
- Analyze
- Improve
- Control

### Audience

This course focuses on employees who lead process improvement initiatives as a primary function of their job.

### Prerequisites

Before taking this course, students should have:

- Six Sigma Green Belt certification
- Advanced Microsoft Excel skills
- Intermediate Math Skills
- Statistical mathematics experience

### Duration

Five days

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### Course Outline

#### I. Define

- A. Six Sigma Overview
- B. The Fundamentals Of Six Sigma
- C. Lean Six Sigma Projects
- D. Lean Fundamentals

#### II. Measure

- A. Process Definition
- B. Six Sigma Statistics
- C. Measurement System Analysis
- D. Process Capability

#### III. Analyze

- A. Patterns Of Variation
- B. Inferential Statistics
- C. Hypothesis Testing
- D. Hypothesis Testing: Normal Data
- E. Hyp Testing: Non-Normal Data

#### IV. Improve

- A. Simple Linear Regression
- B. Multiple Regression Analysis
- C. Design Of Experiments
- D. Full Factorial Experiments
- E. Fractional Factorial Experiments

#### V. Control

- A. Lean Controls
- B. Statistical Process Control (Spc)
- C. Six Sigma Control Plans