



Leading the Modern  
Quality Movement in Pakistan



SQI  
INTERNATIONAL

# Lean Six Sigma Black Belt

*18 Days International Certification from SQII Singapore spread over three months with one week class (5 Days) in a month*

## Introduction

This is an advance course in Six Sigma and considered one of the most important international courses for managing and improving organizational Quality. This program imparts a thorough in-depth knowledge & understanding of all aspects of Lean and Six Sigma. Black Belts have the ability to lead LSS projects and also provide expert guidance to other staff members in their LSS project work. By integrating elements of Lean and Six Sigma organizations can successfully realize the full potential of both strategies. LSS enhances team problem solving with the use of advanced statistical and other Quality tools. It is a customer focused, data driven approach to optimize products, processes and services. LSS is a proven pathway for enterprise-wide productivity, quality and efficiency improvements.

## Who is Six Sigma Black Belt?

Six Sigma Black Belt is just a nomenclature used in Six Sigma programs which is an advance program in Total Quality Management or Process Improvement. Introductory level training is known as 'Six Sigma Yellow Belt'; middle level is called 'Six Sigma Green Belt'; while the advance level is called 'Six Sigma Black Belt'. There is no need to do these courses step by step. In case of six sigma black belt, there is no need to do other levels.

## Six Sigma Black Belt Real Life Projects

This is one of the most advanced courses in Quality and includes a large number of Quality Tools and approaches. The course is specially designed to provide practical exposure to participants with practical projects and hands on experiences on advance statistical software packages so that they are useful in their companies from practical points of views and can actually build the company to the world-class level.

## Useful For

Managers, engineers, technical staff, process owners, quality professionals, preferably diploma holders and above with minimum two years of work experience. Specially useful for Army, Navy & Air Force Quality Directorates.

## Duration/ Timings

Six Sigma Black Belt is a four months course spread over three months and a take home project to be submitted in the 4th month. The distribution of days is as follows:

- **Phase I:** Five days classes with take home assignments
- **Phase II:** Five days classes with take home assignments
- **Phase III:** Five days classes with take home assignments
- **Project submission after one month of Phase III**

## Six Sigma: Body of Knowledge and Topics

The body of knowledge of this course is compatible to the one defined by the American Society of Quality – ASQ®. The following is the guidelines of the topics to be covered in the course.

### LEAN SIX SIGMA BLACK BELT

- Six Sigma Theory & Practices
- Basic Concepts of Lean, Integration of Lean & Six Sigma

#### Define Phase:

- Lean Six Sigma Overview
- Voice of Customer (VoC)
- Project Selection & Prioritization
- SIPOC
- Project Charter & Metrics
- Process Mapping
- Six Sigma Team Dynamics & Management
- Development of Key Performance Indicators (KPIs)
- Calculating Process Performance Metrics
- Enterprise Leadership Responsibilities

#### Measure Phase:

- Gage R&R
- Collecting and Summarizing Data
- Pivot Analysis
- Graphical Methods
- Non-Normal Data
- Process Characteristics
- Process Capability & Performance
- Central Limit Theorem
- Confidence Intervals
- Measurement System Analysis (MSA)
- Value Stream Mapping (VSM)

## Venue

PIQC Training Center Lahore

### Analyze Phase:

- Measuring and Modeling Relationships between Variables
- Causal Analysis
- Hypothesis Testing
- Types of Correlation & Regression
- Non-Parametric Statistics
- Sampling
- Waste Analysis
- Analysis of Variance (ANOVA)

### Improve Phase:

- Experimentation on Solutions
- Advance Design of Experiment (DOE)
- DoE Exercises
- Piloting and Implementation
- Process FMEA
- Response Surface Design
- Basic of Total Productive Maintenance (TPM)

### Control Phase:

- Control Methods
- Statistical Process Control (SPC)
- Lean Six Sigma

### Lean Management:

- Cycle Time Reduction
- 5S & Kaizen
- Kanban, Just-in-Time (JIT)
- Value Stream Mapping (VSM)
- Waste Reduction (7-wastes)
- Mistake Proofing / Poka-Yoke
- Total Productive Maintenance (TPM)



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