



QUALITY MASTERS GROUP

Six Sigma Black Belt Training Agenda

Course Objectives

- From project definition through to process control, participants will be trained to become **Six Sigma Black Belts**.
- The participants will learn the five-phase **DMAIC** approach to Six Sigma, using a combination of informal lecture, small group breakout sessions, and hands-on practice.

Who Should Attend?

- This course is designed for individuals who wish to learn the Six Sigma tools so as to apply such learning into process improvement project.

Prerequisites

- Participants will be expected to arrive at the training with a process improvement project already identified (and approved), by your company.
- Participants will also need to bring their own laptop computers, with **MINITAB** software loaded.

What Shall I Learn?

- **Define** - participants will be taught tools to ensure that a **project** is well **defined** in scope, expectations, resources, and timeline.
- **Measure** - participants will learn and practice employing tools to **quantify** the "**problem**" using actual data.
- **Analyze** - the heart of Six Sigma. Participants will learn to **apply statistical tools to validate root causes** of problems.
- **Improve** - once the root cause of the problem is known, it is time to fix it. Participants will be introduced to various **methods of solution** identification, prioritization, and implementation.
- **Control** - a solution needs to stay in place, even after the project is over. Process control systems will be developed to ensure that the **process does not revert** to the "old way" over time. The improved process will also need to be handed over to its owner, and that owner will need to be prepared to manage it.

Week 1:

- 1.Introduction to Six Sigma
- 2.Project Selection

3. Basic Quality Tools
4. Basic statistics
5. Basic Minitab
6. Process Mapping
7. Cause & Effect Analysis
8. Failure Mode and Effects Analysis (FMEA)
9. Project presentation

Week 2:

1. Measurement System Analysis
2. Introduction to Statistical Process Control (SPC)
3. Hypothesis Testing
4. Continuous and attribute data Analysis
5. Z-statistics
6. Capability Analysis
7. ANOVA/T-Tests/ Non-parametrics
8. Chi-square, Tally and Cross Tabulation
9. Project presentation

Week 3:

1. Linear and multiple regression
2. Time Series and Multi-vari analysis
3. Introduction to Experimentation – OFAT, Full and Fractional Factorials (2 and mixed levels)
4. DOE Design
5. DOE Planning
6. DOE Analysis
7. Evolutionary Operations (EVOP)
8. Response Surface Modeling
9. Project presentation

Week 4:

1. Class presentation – Six Sigma projects
2. Attribute MSA
3. Attribute DOE – Response
4. Specialty Control Charts – CuSum, EWMA
5. Process Excellence Control Plan & Its Implementation
6. Procedure Writing
7. Poka Yoke
8. 5 Whys
9. 5S and Kanban
10. Kaizen
11. Visual Process Control
12. Wrap-up
13. Final Quiz