

Course Content for Lean Six Sigma Green Belt

• Introduction to Lean Six Sigma

1. History of Quality (Deming, Juran, JIT, Ishikawa, Taguchi, etc.)
2. Evolution of Six Sigma
3. Defining Six Sigma – philosophy and objectives
4. Overview of Six Sigma DMAIC process

• Stakeholders & Setting up a Lean Six Sigma Project

1. Identifying and documenting stakeholder requirements
 - a. Identifying stakeholders and customers
 - b. Data collection and analysis
 - c. Determining critical requirements
2. Project Selection Criteria
 - a. Identifying performance metrics
 - b. Using financial criteria to evaluate project benefits
 - c. Maximizing project benefits for the organization
3. Project Planning
 - a. Creating Project Charter
 - b. Charter Negotiation
4. Managing Team Dynamics
 - a. Initiating teams
 - b. Stages of team evolution
 - c. Maslow's hierarchy of needs
 - d. Motivation Techniques
 - e. Conflict Resolution Techniques
 - f. Management / Leadership styles
 - g. Roles played by people in a project
5. Important project management & planning tools

• Lean Six Sigma Methodology – Define

1. Inputs – Need for Six Sigma project, Executive management sponsorship, core team Identified

2. Tools

- a. Organization hierarchy
- b. High level process maps
- c. High level Pareto charts
- d. Idea generation and categorization tools

3. Outputs

- a. Project charter
- b. Established metrics
- c. Problem statement
- d. Roles & responsibilities

• Lean Six Sigma Methodology – Measure

1. Objectives of Measure Phase

2. Inputs – the outputs of the Define phase

3. Tools

- a. Data collection tools and techniques
- b. Measurement scales
- c. Validation techniques (Gauge R & R)
- d. Statistical distributions
- e. Data mining
- f. Run charts
- g. Process map
- h. Stakeholder tools
- i. Process costs

4. Outputs

- a. Well defined processes
- b. Baseline process capability
- c. Process parameters affecting CTQs
- d. Cost of poor quality (COPQ)
- e. Measurement system

• Lean Six Sigma Methodology – Analyze

1. Objectives of Analyze Phase
2. Inputs – outputs of the Measure phase
3. Tools

- a. Ishikawa diagram
- b. Failure mode and effects analysis
- c. Hypothesis testing
- d. Process capability study

4. Outputs

- a. Important causes of defects
- b. Special and common causes of variation
- c. DPMO and sigma level

• Lean Six Sigma Methodology – Improve

1. Objectives of Improve Phase
2. Inputs – outputs of the Analyze phase
3. Tools

- a. Returns on investment
- b. Solution design matrix
- c. Design of experiment
- d. Taguchi robustness concepts
- e. Response surface methodology
- f. Project planning and management tools
- g. Prototypes

4. Outputs

- a. Cost / benefit for different solution
- b. Selection of solutions for implementation
- c. Implementation plan

- **Lean Six Sigma Methodology – Control**

1. Objectives of Control Phase
2. Inputs – outputs of the Improve phase
3. Tools
 - a. Control plan
 - b. Statistical process control
 - c. Lean enterprise
 - d. 5S
 - e. Kaizen
 - f. Kanban
 - g. Total productive maintenance
 - h. Measurement system reanalysis
4. Outputs
 - a. Implemented solutions
 - b. Revised measurement system
 - c. Control plan for sustaining benefits
 - d. Improves process capability
 - e. Lessons learned

- **More on Lean**

1. Lean is speed
2. Value stream map
3. Total supply chain
4. Lean six sigma logistics
5. Standard operations
6. Operator work instructions
7. Cycle time reduction and talk time

- **Case Study**

- a. Case Study Part 1
- b. Case Study Part 2
- c. Case Study Part 3