

COURSE OUTLINE: LSSGB

- **Introduction to 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 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
- **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
- **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
- **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
- **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
- **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

- **Lean**

1. A Value Stream Map
2. Lean is Speed
3. Total Supply Chain
4. Lean Six Sigma Logistics

- **Case Study**

1. Case Study Part 1
2. Case Study Part 2
3. Case Study Part 3