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Course Content for Lean Six Sigma Green Belt

- **Introduction to Lean Six Sigma**

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

- **Stakeholders & Setting up a Lean Six Sigma Project**

Identifying and documenting stakeholder requirements

1. **1 Identifying stakeholders and customers**
2. **2 Data collection and analysis**
3. **3 Determining critical requirements**

Project Selection Criteria

1. **Identifying performance metrics**
2. **Using financial criteria to evaluate project benefits**
1. **3.Maximizing project benefits for the organization**

Project Planning

1. **Creating Project Charter**
2. **Charter Negotiation**

Managing Team Dynamics

1. **Initiating teams**
2. **Stages of team evolution**
3. **3.Maslow's hierarchy of needs**
4. **Motivation Techniques**
5. **Conflict Resolution Techniques**
6. **6.Management / Leadership styles**
7. **Roles played by people in a project**
8. **Important project management & planning tools**

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1Lean 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

Objectives of Measure Phase

Inputs – the outputs of the Define phase Tools

1. Data collection tools and techniques
2. Measurement scales
3. Validation techniques (Gauge R & R)
4. Statistical distributions
5. Data mining
6. Run charts
7. Process map
8. Stakeholder tools
9. Process costs

Outputs

1. Well defined processes
2. Baseline process capability
3. Process parameters affecting CTQs
4. Cost of poor quality (COPQ)
5. Measurement System

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• Lean Six Sigma Methodology – Analyze

- Objectives of Analyze Phase
- Inputs – outputs of the Measure phase
- Tools

1. **Ishikawa diagram**
2. **Failure mode and effects analysis**
3. **Hypothesis testing**
4. **Process capability study**

Outputs

1. **Important causes of defects**
2. **Special and common causes of variation**
3. **DPMO and sigma level**

• Lean Six Sigma Methodology – Improve

Objectives of Improve Phase

Inputs – outputs of the Analyze phase

Tools

1. **Returns on investment**
2. **Solution design matrix**
3. **Design of experiment**
4. **Taguchi robustness concepts**
5. **Response surface methodology**
6. **Project planning and management tools**
7. **Prototypes**

Outputs

1. **Cost / benefit for different solution**
2. **Selection of solutions for implementation**
3. **Implimantation Plan**

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• Lean Six Sigma Methodology – Control

1. 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