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Course Content for Six Sigma Green Belt

♣ Introduction to 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 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**
h. **Importance project management & planning tools**

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• Six Sigma Methodology – Define

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

2. Tools

a. **Organisation 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**

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- **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. **Implimantation plan**

- **Six Sigma Methodology – Control**

1. **Objectives of Control Phase**
2. **Input – Output of the implimantation 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**

- **Case Study**

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