Lean Six Sigma Green Belt Agenda

Six Sigma and Organizational Goals

Value of Six Sigma
Organizational goals and Six Sigma projects
Organizational drivers and metrics
Design for Six Sigma (DfSS) Methodologies

1.0 Define Phase

1.1 The Basics of Six Sigma

1.1.1 Meanings of Six Sigma
1.1.2 General History of Six Sigma & Continuous Improvement
1.1.3 Deliverables of a Lean Six Sigma Project
1.1.4 The Problem Solving Strategy Y = f(x)
1.1.5 Voice of the Customer, Business and Employee
1.1.6 Six Sigma Roles & Responsibilities

1.2 The Fundamentals of Six Sigma

1.2.1 Defining a Process
1.2.2 Critical to Quality Characteristics (CTQ's)
1.2.3 Cost of Poor Quality (COPQ)
1.2.4 Pareto Analysis (80:20 rule)
1.2.5 Basic Six Sigma Metrics
    a. including DPU, DPMO, FTY, RTY Cycle Time; deriving these metrics

1.3 Selecting Lean Six Sigma Projects

1.3.1 Building a Business Case & Project Charter
1.3.2 Developing Project Metrics
1.3.3 Financial Evaluation & Benefits Capture
1.3.4 Project plannign tools- CPM, PERT
1.3.4 Project risk Analysis
1.3.4 Project closure

1.4 The Lean Enterprise

1.4.1 Understanding Lean
1.4.2 The History of Lean
1.4.3 Lean & Six Sigma
1.4.4 The Seven Elements of Waste
a. Overproduction, Correction, Inventory, Motion, Overprocessing, Conveyance, Waiting.
1.4.5 5S
    a. Straighten, Shine, Standardize, Self-Discipline, Sort

1.5 Team Dynamics and Performance

Team stages and dynamics

Team roles and responsibilities

Team tools

Team Communication

2.0 Measure Phase

2.1 Process Definition

2.1.1 Cause & Effect / Fishbone Diagrams

2.1.2 Process Mapping, SIPOC, Value Stream Map

2.1.3 X-Y Diagram

2.1.4 Failure Modes & Effects Analysis (FMEA)

2.2 Six Sigma Statistics

2.2.1 Basic Statistics

2.2.2 Descriptive Statistics

2.2.3 Normal Distributions & Normality

2.2.4 Graphical Analysis

2.3 Measurement System Analysis

2.3.1 Precision & Accuracy

2.3.2 Bias, Linearity & Stability

2.3.3 Gage Repeatability & Reproducibility

2.3.4 Variable & Attribute MSA

2.4 Process Capability

2.4.1 Capability Analysis

2.4.2 Concept of Stability

2.4.3 Attribute & Discrete Capability

2.4.4 Monitoring Techniques

3.0 Analyze Phase

3.1 Patterns of Variation

3.1.1 Multi-Vari Analysis

3.1.2 Classes of Distributions

3.2 Inferential Statistics

3.2.1 Understanding Inference

3.2.2 Sampling Techniques & Uses

3.2.3 Central Limit Theorem

3.3 Hypothesis Testing

3.3.1 General Concepts & Goals of Hypothesis Testing

3.3.2 Significance; Practical vs. Statistical

3.3.3 Risk; Alpha & Beta

3.3.4 Types of Hypothesis Test

3.4 Hypothesis Testing with Normal Data

3.4.1 1 & 2 sample t-tests
3.4.2 1 sample variance
3.4.3 One Way ANOVA
   a. Including Tests of Equal Variance, Normality Testing and Sample Size calculation, Performing tests and interpreting results.

3.5 Hypothesis Testing with Non-Normal Data

3.5.1 Mann-Whitney
3.5.2 Kruskal-Wallis
3.5.3 Mood's Median
3.5.4 Friedman
3.5.5 1 Sample Sign
3.5.6 1 Sample Wilcoxon
3.5.7 One and Two Sample Proportion
3.5.8 Chi-Squared (Contingency Tables)
   a. Including Tests of Equal Variance, Normality Testing and Sample Size calculation, Performing tests and interpreting results.

4.0 Improve Phase

4.1 Simple Linear Regression

4.1.1 Correlation
4.1.2 Regression Equations
4.1.3 Residuals Analysis

4.2 Multiple Regression Analysis

4.2.1 Non- Linear Regression
4.2.2 Multiple Linear Regression
4.2.3 Confidence & Prediction Intervals
4.2.4 Residuals Analysis
4.2.5 Data Transformation, Box Cox

4.3 Lean Tools

4.3.1Waste Elimination
4.3.2 Cycle time reduction
4.3.3 Kaizen and Kaizen blitz

5.0 Control Phase

5.1 Lean Controls

5.1.1 Control Methods for 5S
5.1.2 Kanban
5.1.3 Poka-Yoke (Mistake Proofing)

5.2 Statistical Process Control (SPC)

5.2.1 Data Collection for SPC

5.2.2 I-MR Chart

5.2.3 Xbar-R Chart

5.2.4 U Chart

5.2.5 P Chart

5.2.6 NP Chart

5.2.7 X-S chart

5.2.8 CumSum Chart

5.2.9 EWMA Chart

5.2.10 Control Methods

5.2.11 Control Chart Anatomy

5.3 Six Sigma Control Plans

5.3.1 Cost Benefit Analysis

5.3.2 Elements of the Control Plan

5.3.3 Elements of the Response Plan

5.4 Lean Tools for Process Control

5.4.1 Total productive maintenance (TPM)

5.4.2 Visual factory

Lean Six Sigma Green Belt class room training would be conducted for 5 days. The duration of the classes will be for a minimum of 41 hours to a maximum of 45 hours in which all the course agenda topics as per IASSC book of knowledge would be taught to the participants. Apart from the classroom training, the participants would be given a minimum of 16 hours to a maximum of 32 hours of online training and project guidance. It would be ensured that the total training hours for all the Lean Six Sigma Green belt training would be more than 56 hours, thus meeting the criteria of IASSC.