

# Course Outline

## Chapter 1 : Introduction to “Black Belt Six Sigma”

- Background
- What Is Six Sigma
- Parameters
- Five Phases
- Road maps for DfSS
- Basic failure mode and effects analysis (FMEA)
- Design FMEA and process FMEA

## Chapter 2 : Overview & define

- History of Lean Six Sigma, project selection and prioritization , QFD
- Defining and developing the project charter, Building goal/problem statement
- Project scoping; selection of team members, Assigning of roles for team members
- Business case and project sign off
- Capturing Voice of Customer (VOC) and its relevance
- Kano Model – Study customer delight factors
- CTQ characteristics – characteristic, unit of measure, target, specification limit, desired level of quality
- Process mapping using COPIS/SIPOC Model
- Change Management Tools like A-RM-I (Approver, Resource, Member of the team, Interested Party),
- GRPI (Goals, Roles, Processes, Interpersonal skills)

## Chapter 3 : Measure

- Data types: Discrete and Continuous
- Sampling plan and techniques
- Measurement Systems Analysis (MSA) using Variable Data - Gage R&R ; using Attribute Data - Attribute Agreement Analysis
- Performance standards – defect, unit and opportunity
- Data collection plan- five step data collection plan
- Defects, DPMO, DPO, Rolled Throughput Yield (RTY)
- Process capability analysis: The specification limits (double sided; single sided)
- Baseline sigma capability- Zst and Zlt
- Z calculator tool and use of Z conversion table
- Normality - why it matters, and what to do when your data is not normal
- Normality Test - Anderson Darling Normality Test
- Box Cox and Johnson Transformation

## Chapter 4 : Analyze

- Root Cause Analysis
- Fishbone/Ishikawa Diagrams; Cause and Effects Matrix; Box Whisker Plots
- MSA on Xs
- Hypothesis Testing, Regression and Correlation Analysis
- Hypothesis - Formation, Alpha and Beta Risks; Test of Means, Variances, Ratios
- Hypothesis Testing of One Y,X pair: Chi Square, ANOVA (Analysis of Variance)
- Analysis of multiple variables: Concept of rational sub grouping, ANOVA (Analysis of Variance)
- Pareto with Confidence Intervals, significance of Standardized effect.

## Chapter 5 : Improve

- Design of experiment – Full factorial experiments. Main effects plot; Interactions plot
- Introduction to TRIZ
- FMEA (Failure Mode and effect Analysis),
- Mistake proofing with Poka Yoke
- Solution selection
- Cost benefit analysis and reporting - Linkages to profit and loss

## Chapter 6 : Control

- Determine improved process capability
- Selection of SPC Charts (Attribute Data and Variable Data)
- Introduction to statistical process control - its relevance; common causes vs. special causes
- Introduction to control charts – Continuous and Discrete Data
- Discrete data control charts (P, U, defects vs. defectives). Variable data control Charts (I-MR and X-Bar R)
- Mistake proofing with Poka Yoke
- Cost benefit analysis and reporting - Linkages to profit and loss
- Lessons learned - documenting repeatable and replicable do's and don'ts on your project

## Meritphase advantage

### Offering

#### Structured programme for :

- Lean Six Sigma Green belt
- Lean Six Sigma Black belt

#### Customizable for :

- Lean Six Sigma Yellow belt
- Master Black belt

### Among the first

To have a Lean Six Sigma training practice in Globe.

Give trainer assistance to qualify the exam

### Leadership

Among the leaders in Open house Green Belt and Black Belt workshop  
Trained more than thousands of professionals across India, Middle East and Africa.

### Dedicated

Dedicated team of Lean Six Sigma resources including Master Black Belt, Black Belt and Green Belts.

### Credibility

Catering to audience from diverse domains those include: banking and finance, manufacturing, it/ites, hospitality, healthcare, defense, logistics, education and more... repeat deliveries across 85 per cent clients.

### Commitment

Contributing to the national skill development agenda of the Govt.

- Spreading Zero Defect awareness
- Enabling quality in manufacturing and service.
- Enabling people for fact-based decision making