

Define Phase

- ***Understanding Six Sigma***
 - Objectives of Six Sigma
 - Relationship between variation and sigma
 - Six Sigma concepts
 - Six Sigma implementation model
 - Role and responsibilities in Six Sigma

- ***Six Sigma Fundamentals***
 - Process Focus
 - VOC, VOB, and VOE, and CTQ's
 - COPQ
 - Process Map
 - The Basic Six Sigma metrics
 - Difference between FTY and RTY
 - Difference between DPU and DPMO

- ***Selecting Projects***
 - A structured approach to select projects
 - Refine and Define the problem into a Project Charter
 - Make an initial estimate of your project's benefits

- ***Elements of Waste***
 - Lean vs Six Sigma
 - Seven Components of Waste

Measure Phase

- ***Process Discovery***
 - A high level Process Map
 - Fishbone Diagram
 - X-Y Diagram
 - FMEA

- ***Six Sigma Statistics***
 - Statistics used to express location and spread of data
 - Normal Distribution
 - Difference between Special Cause and Common Cause Variation
 - Graphs for data

- **Measurement System Analysis**
 - Methodology in Variable and Attribute MSA's
 - Components of variation so corrections can be made and the gage error reduced
 - Differences between Repeatability, Reproducibility, Accuracy and Calibration
- **Process Capability**
 - Capability for Continuous Data
 - Impact of Non-normal Data on the analysis for Continuous Capability
 - Estimate Capability for Attribute Data

Analyze Phase

- **"X" Sifting**
 - Multi-Vari Analysis
 - Skewed data
- **Inferential Statistics**
 - Inferential Statistics
 - Basic tenets of the Central Limit Theorem.
 - Impact of sample size on estimates of population parameters.
 - Standard Error
- **Intro to Hypothesis Testing**
 - Hypothesis Testing
 - Concepts of the Central Tendency
 - Types of Hypothesis Tests
- **Hypothesis Testing Normal Data Part 1**
 - Sample sizes for testing Means
 - Hypothesis Tests for Means
- **Hypothesis Testing Normal Data Part 2**
 - Hypothesis Testing of Variances
- **Hypothesis Testing Non-Normal Data Part 1**
 - Hypothesis Testing for equal variance
 - Hypothesis Testing for Medians
- **Hypothesis Testing Non-Normal Data Part 2**
 - Calculate and explain test for proportions
 - Calculate and explain contingency tests

Improve Phase

- **Process Modeling Regression**
 - Steps in a Correlation and a Regression Analysis

- When Correlation and Regression is appropriate
- **Advanced Process Modeling**
 - Non-Linear Regression Analysis
 - Multiple Linear Regression Analysis (MLR)
 - Residuals Analysis and understand its effects
- **Designing Experiments**
 - The reason for experimenting
 - Difference between a physical model and a DOE model
 - OFAT experiment and its primary weakness
 - Create a Full Factorial Design
- **Experimental Methods**
 - Design, Conduct and Analyze an Experiment
- **Full Factorial Experiments**
 - Create Balanced & Orthogonal Designs
 - How Fit & Diagnose & Center Points factors into an experiment
- **Fractional Factorial Experiments**
 - Why & how to use a Fractional Factorial Design
 - A proper Fractional Factorial Design
 - Analyze a proper model with aliased interactions

Control Phase

- **Advanced Experiments**
 - A DOE to determine how to further optimize a process using the steepest ascent/descent method
- **Capability Analysis**
 - The importance of Capability Analysis as it is applied in the Control Phase
 - The appropriate method for Capability Analysis based on the type of data distribution of your process
- **Lean Controls**
 - The Vision of Lean Supporting Your Project
 - 5S - Workplace Organization
- **Defect Controls**
 - Methods of defect prevention
- **Statistical Process Control - SPC**
 - The elements of an SPC Chart and the purposes of SPC
 - Determine the frequency of sampling

- Understand the Control Chart selection methodology
- ***Six Sigma Control Plans***
 - Control Plan
 - Training
 - Documentation
 - Monitoring
 - Response
 - Aligning Systems and Structures