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

- o Components of variation so corrections can be made and the gage error reduced
- o Differences between Repeatability, Reproducibility, Accuracy and Calibration

- **Process Capability**
  - o Capability for Continuous Data
  - o Impact of Non-normal Data on the analysis for Continuous Capability
  - o Estimate Capability for Attribute Data

Analyze Phase

- **"X" Sifting**
  - o Multi-Vari Analysis
  - o Skewed data

- **Inferential Statistics**
  - o Inferential Statistics
  - o Basic tenets of the Central Limit Theorem.
  - o Impact of sample size on estimates of population parameters.
  - o Standard Error

- **Intro to Hypothesis Testing**
  - o Hypothesis Testing
  - o Concepts of the Central Tendency
  - o Types of Hypothesis Tests

- **Hypothesis Testing Normal Data Part 1**
  - o Sample sizes for testing Means
  - o Hypothesis Tests for Means

- **Hypothesis Testing Normal Data Part 2**
  - o Hypothesis Testing of Variances

- **Hypothesis Testing Non-Normal Data Part 1**
  - o Hypothesis Testing for equal variance
  - o Hypothesis Testing for Medians

- **Hypothesis Testing Non-Normal Data Part 2**
  - o Calculate and explain test for proportions
  - o Calculate and explain contingency tests

Improve Phase

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

- o Understand the Control Chart selection methodology

- **Six Sigma Control Plans**
  - o Control Plan
    - Training
    - Documentation
    - Monitoring
    - Response
    - Aligning Systems and Structures