Unit 1: Introduction to Six Sigma I

- Six Sigma & its Goals
- Six Sigma as a Performance Measure, Problem Solving Tool, & Management Philosophy
- Problem Solving Tools Used in Six Sigma & its Evolution
- Variation and Significance
- Critical-To-Quality Measures & Specification Limits
- Definition & Understanding of Defects & Defect Opportunities
- Source of Defects – Variation & Off-Centered
- Quiz

Unit 2: Introduction to Six Sigma II

- Sigma Scores and Percentages
- Defectives per Million & Defects per Million Opportunities
- Relationship between Sigma Scores and DPMO and Percentages
- Lean, Goals of Lean & Lean Six Sigma

- Six Sigma Problem Solving Methodologies
- Six Sigma Tool Kit & Business Process Management Model
- Activities & Quiz

- Activity 1– Consolidating Six Sigma Views

Unit 3: Six Sigma Problem Solving

- Business Problem and Six Sigma Project & its Sources
- Generic Model & Approach to Business Problem Solving
- Logic and Intuition, Just do It, DMAIC, & DFSS – IDOV
- Selecting the Right Problem Solving Method
- Need & Criteria for Project Selection
- Project Selection tools - Pareto Diagram, & Project Selection Matrix
- DMAIC Project Roadmap & Characteristics of Problem Solving
- Project Tools, Tollgate Review & Project Durations
- DFSS Project Roadmap
- Activities & Quiz

Unit 4: Six Sigma Roles & Responsibilities

- Roles & Responsibilities
- Yellow, Green, Black, & Master Black Belt
- Champion / Process Owner & Deployment Champion
- Certification Criteria to be a Yellow Belt, Green Belt, Black Belt & Master Black Belt
- Career Chances: Six Sigma Professionals
- Types of Certification & ASQ Certification Criteria
- Canopus Six Sigma Green Belt Course
- Quiz

Unit 5: Listening to Customer

- Customer – Internal & External
- Voice of Customer (VOC) & Need for Voice of Customer
- Verbatim & Verbatim to Requirements
- Gather VOCs – Direct & Indirect Method
- Methods of Gathering VOC & Analyze VOC
- Definition & Procedure for Affinity Diagram
- Customer Priorities & Kano Model
- Customer Requirements – Must-Be's, Delighters, One Dimensional
- Quality Function Deployment & Flow Down of CTQs in House of Quality
- Importance & When to use QFD
- Activities & Quiz

Unit 6: Define - Completing a Project Charter

- ♻ Definition & Elements of Project Charter
- ♻ Business Case & Problem Statement
- ♻ Measure of Success of a Project
- ♻ Primary and Secondary Metrics
- ♻ Goal Statement
- ♻ Team Members & Roles
- ♻ Project Benefits, Translation Plan, & Project Duration Guidelines
- ♻ Project Kick-off & Weekly Meetings
- ♻ Need for Project Scoping, Project Scoping & Tools
- ♻ Procedure to use In Frame / Out Frame
- ♻ Activities & Quiz

Unit 7: Define - Process Mapping Tools

- ♻ Process Mapping Tools, its Purpose, & Types
- ♻ Definition & Purpose of SIPOC, Cross-Functional Process Maps, Process Flowchart, Standard Operating Procedure
- ♻ Procedure of SIPOC & Cross-Functional Process Map
- ♻ Process States - As-is, Should-be & To-be
- ♻ Value to customer & Definition & Purpose of Process Value Analysis
- ♻ Value Added, Non Value Added & Value Enabling Activities
- ♻ Process Cycle Efficiency
- ♻ Important Terms & Procedure of Process Value Analysis
- ♻ Activities & Quiz

- ♻ Activity 1 - SIPOC – Live Case Study
- ♻ Activity 2 - Create Process Map - Live Case Study
- ♻ Activity 3 - Identifying NVA – Live Case Study

Unit 8: Measure - Cause & Effect Relationships

- ♻ Definition of Cause & Effect
- ♻ Types of Causes – Possible, Potential, & Root Causes
- ♻ Cause & Effect Diagram
- ♻ Structure, Purpose, Benefits & Procedure of Cause & Effect Diagram
- ♻ Definition & Procedure for Performing 5 Why
- ♻ Definition & Procedure to Construct a Cause & Effect Matrix
- ♻ Definition of Root Cause Analysis
- ♻ Definition & Procedure for Practical RCA
- ♻ Definition of Graphical RCA
- ♻ Definition of Analytical RCA
- ♻ Activities & Quiz

○ Activity 1 - Cause & Effect
○ Activity 2 - Cause & Effect Matrix

Unit 9: Measure - Data Types

○ Data Collection Roadmap
○ Types of Data - Attribute, Variable & Locational Data
○ Comparison & Conversion between Variable & Attribute Data
○ Types of Measurement Scales – Nominal, Ordinal, Interval, & Ratio Scale
○ Quiz

Unit 10: Measure - Data Sampling

○ Definition, Need & Applications of Data Sampling
○ Sampling Strategy & Approach for Sampling Plan
○ Population & Process Sampling
○ Sample Size Computation & Need
○ Computing Discrete & Continuous Data Sample Size
○ Quiz

Unit 11: Measure - Data Collection

○ Data Collection Roadmap
○ Data Collection Plan, Template
○ Data Collection Methods - Check sheet, & Coding Data
○ Quiz

Unit 12: Measure - Intro to Business Statistics I

○ Need for Statistics in Business
○ Statistics, Population, Population Parameter, Sample, & Sample Statistic
○ Types of Statistics - Descriptive Statistics & Analytical Statistics
○ Probability, Statistical Experiment, Event, & Rules of Probability
○ Activities & Quiz
○ Activity 1 – Probability Rule

Unit 13: Measure - Intro to Business Statistics II

○ Definition of Probability Distribution, Types, & Importance
○ Measures of Central Tendency - Mean, Median, Mode
○ Relationship between Mean Median & Mode & Types of Distributions
○ Measures of Dispersion - Range, Span, Variance, Standard Deviation

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- ⚬ Types of Descriptive Statistics - Graphical, Numerical
- ⚬ Definition, Application & Properties of a Normal Distribution & Outlier
- ⚬ Confidence Limits, Confidence Level & Confidence Intervals
- ⚬ Definition of Central Limit Theorem & its Application
- ⚬ Activity :Descriptive Statistics
- ⚬ Quiz

Unit 14: Measure - Graphical Methods

- ⚬ Definition, Interpretation, & Procedure of Histogram
- ⚬ When to use a Graphical Summary
- ⚬ Definition, Interpretation, & Procedure of Box Plot
- ⚬ Skewness & Kurtosis
- ⚬ Normality Test & its Procedure
- ⚬ Definition of Stem-and-Leaf Plot, Run Charts, Scatter Plots
- ⚬ Run Chart Patterns & Interpretation with Run table
- ⚬ Interpretation of Scatter Plots - Direction, Shape, & Strength of Relationship
- ⚬ Activity :Run Chart, Box Plot
- ⚬ Quiz

Unit 15: Measure - Assessing Capability & Performance

- ⚬ Measures of Current Performance
- ⚬ Process Capability, Process Capability Study & Indices
- ⚬ Traditional Measures - C_p & C_{pk} & their Acceptable Limits
- ⚬ Sigma Capability, Computation of Sigma Scores & Z Tables
- ⚬ Traditional Measures & Sigma Capability
- ⚬ Impact of time of Process Capability
- ⚬ Long Term Vs Short Term & Long Term Indices
- ⚬ Relationship between Long & Short Term & Cpm
- ⚬ Quiz

Unit 16: Analyze - Theory of Hypothesis Testing

- ⚬ Hypothesis - Introduction
- ⚬ Need for Statistical Significance & Statistical Inference
- ⚬ Hypothesis Testing, Applications & Basics
- ⚬ Hypothesis Statements - Null & Alternative Hypothesis
- ⚬ Significance Levels, & Alpha Values
- ⚬ Tests of Significance - Statistical & Practical Significance
- ⚬ Test Statistic & P Value & Its Interpretation
- ⚬ Errors in Hypothesis Testing & Types of Errors
- ⚬ Quiz

Unit 17: Analyze - Performing Hypothesis Test

- Hypothesis Tests for Means, Variance, Proportions
- Selection of Hypothesis Tests & Criteria for Selection
- Z-Test, Z-statistic, & Assumptions
- t-Test, t-Statistic, 1-t Test & 2-t Test, & Assumptions
- Paired Data - Paired t-Test, Preparation & Procedure
- ANOVA & F-test, Assumptions, Preparation & Procedure
- Chi-square Test & Statistic, Assumptions, Preparation & Procedure
- Proportions Test - 1-p Test & 2-p Test, Assumptions, Preparation & Procedure
- Activities & Quiz

Unit 18: Analyze - Correlation & Regression

- Correlation, Regression, Scatter Plots, & Correlation Coefficient
- Procedure of Simple Linear Correlation & Interpretation of Scatter Plots
- Application of Regression & its Types
- Regression Line of Fit, Regression Equation, & its Statistical Significance
- R-SQ Value & Procedure of Simple Regression
- Prioritization of Causes, & Pareto Principle
- Definition & Procedure for Pareto Chart
- Definition & Procedure of Control-Impact Matrix
- Activities & Quiz

- Activity 1 – Correlation
- Activity 2 – Regression
- Activity 3 – Pareto Diagram

Unit 19: Improve - Lean Management Systems

- Definition, Origin, Principles & Goals of Lean
- Value, Value Stream, Concept of Muda (Waste) & Categories of Waste
- 7 Types of Wastes, How to Identify them, & Waste Identification Template
- Value Stream Mapping (VSM), Symbols, Benefits & Procedure
- Push System, Pull System, Single Piece Flow, 5S, Kaizen, SMED, Poka-Yoke
- Types of Poka-Yoke - Shut Down, Prevention, Warning, Instructions
- Heijunka & Visual Control
- Quiz

Unit 20: Improve - Generating & Screening Solutions

- Approach to Solution Generation, Definition, & Types of Lateral Thinking

  ♻ Edward De Bono, Definition & Concept of Random Stimulus
  ♻ Brainstorming – Unstructured, & Structured Brainstorming
  ♻ Brainstorming Principles & Types
  ♻ Solution Screening Techniques, Need, Approach, & Filtering Techniques
  ♻ Definition of N/3 Voting & Procedure
  ♻ Definition of Pay Off Matrix & Procedure
  ♻ Definition of Criteria Based Matrix (CBM) & Procedure
  ♻ Definition of Pugh Matrix & Procedure
  ♻ Quiz

Unit 21: Improve - Failure Mode Effects Analysis

  ♻ Definition & Elements of Process Risk
  ♻ Managing Six Sigma Process Risks
  ♻ Tools Used in Risk Management, Definition & Approach to FMEA
  ♻ Definition of Failure Modes, Effects, Cause, Current Controls
  ♻ Prioritizing Risks, Definition of Risk Priority Number & Calculation
  ♻ Definition of Severity & Severity Rating Scale
  ♻ Definition of Occurrence & Occurrence Rating Scale
  ♻ Definition of Detection & Detection Rating Scale
  ♻ Risk Mitigation Strategies & Application of FMEA
  ♻ Definition of DFMEA
  ♻ Quiz

Unit 22: Control - Control Plan

  ♻ Process Control, Role of Process Control in 6σ projects & in Control Phase
  ♻ Process Control Plan, Control Parameters, Method of Control
  ♻ Reaction Plan & Procedure
  ♻ Statistical Process Control (SPC), History, & its Application
  ♻ Definition, Purpose, Selection & Interpretation of Control Charts
  ♻ Control Limits, Normal Distribution, Specification Limits
  ♻ Stability Tests & Guidelines for Stability Tests
  ♻ Solutions Implementation & Statistical Validation of Improvements
  ♻ Post-Improvement Capability Analysis, Project Documentation & Benefits
  ♻ Project Closure & Translation Plan
  ♻ Quiz