

Unit 1: 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

Unit 2: Measure - Data Sampling

- Need & Applications of Data Sampling
- Sampling Strategy & Approach for Sampling Plan
- Population & Process Sampling
- Sample Size Computation & Need
- Computing Discrete & Continuous Data Sample Size

Unit 3: Measure - Data Collection

- Data Collection Roadmap
- Data Collection Plan, Template
- Data Collection Methods

Unit 4: Measure - Intro to Business Statistics II

- Probability Distribution, Types, & Importance
- Multi - Vari Analysis
- Measures of Central Tendency - Mean, Median, Mode
- Relationship between Mean Median & Mode
- Measures of Dispersion - Range, Span, Variance, Standard Deviation
- Types of Descriptive Statistics - Graphical, Numerical
- Application & Properties of a Normal Distribution
- Outlier, Confidence Limits, Confidence Level & Confidence Intervals
- Definition of Central Limit Theorem & its relevance

Unit 5: Measure - Graphical Methods

- Interpretation, & Procedure of Histogram
- Interpretation, & Procedure of Box Plot
- Skewness & Kurtosis
- Normality Test & its Procedure
- Stem-and-Leaf Plot, Run Charts, Scatter Plots
- Run Chart Patterns & Interpretation
- Interpretation of Scatter Plots - Direction, Shape, & Strength of Relationship

Unit 6: Analyze - Theory of Hypothesis Testing

- Hypothesis - Introduction
- 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

Unit 7: 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

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Unit 8: Analyze - Correlation & Regression

- Correlation, Regression, Scatter Plots, & Correlation Coefficient
- Residuals Analysis
- Non- Linear Regression
- Confidence & Prediction Intervals
- Residuals Analysis
- Data Transformation, Box Cox
- 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 and Procedure for Pareto Chart
- Procedure of Control-Impact Matrix

Unit 9: Control - Control Plan

- Process Control, Role of Process Control in 6 σ projects & in Control Phase
- Process Control Plan, Control Parameters, Method of Control
- Reaction Plan & Procedure
- Statistical Process Control (SPC), History, & its Application
- CumSum Chart
- EWMA Chart
- 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