

COURSE-2: STATISTICS ESSENTIAL



**Digital
Disruption**
Invite Innovation

<u>Module-1</u> Analytics Problem Solving	<u>Session-1:</u> The CRISP-DM Framework Introduction 1. Define the Business Problem - Business Understanding 2. Owning an IPL Team - Business Understanding 3. Understanding Raw Data 4. Preparing Data for Analysis 5. The Heart of Data Analysis: Modelling 6. Model Evaluation and Deployment
<u>Module-2</u> Inferential Statistics	<u>Session-1:</u> Basics of Probability 1. Introduction: Inferential Statistics 2. Introduction: Basics of Probability 3. Random Variables 4. Probability Distributions - I 5. Probability Distributions - II 6. Expected Value - I 7. Expected Value - II

8.Summary: Basics of Probability
9.Practice Questions
10.Graded Questions

Session-2:

Discrete Probability Distributions

1.Introduction: Discrete Probability Distributions
2.Probability Without Experiment - I
3.Probability Without Experiment - II
4.Binomial Distribution
5.Binomial Distribution (Examples)
6.Cumulative Probability
7.Summary: Discrete Probability Distributions
8.Practice Questions
9.Graded Questions

Session-3:

Continuous Probability Distributions

1.Introduction: Continuous Probability Distributions
2.Probability Density Functions - I
3.Probability Density Functions - II
4.Normal Distribution
5.Standard Normal Distribution
6.Summary: Continuous Probability Distributions

7.Practice Questions
8.Graded Questions

Session-4:

Central Limit Theorem

1.Introduction: Central Limit Theorem
2.Samples
3.Sampling Distributions
4.Properties of Sampling Distributions
5.Central Limit Theorem
6.Summary: Central Limit Theorem -
Part I
7.Practice Questions - Part I
8.Estimating Mean Using CLT
9.Confidence Interval - Example
10.Summary: Central Limit Theorem -
Part II
11.Practice Questions - Part II
12.Graded Questions
13.MySQL Questions
14.Coding Practice (Graded)

Session-5:(Optional)

Applications of Sampling Methods
Introduction

1.Types of Sampling Methods

	2.Uses of Sampling in Market Research 3.Uses of Sampling in Marketing Campaigns 4.Uses of Sampling in Pilot Testing 5.Uses of Sampling in Quality Control 6.Practice Questions
<u>Module-3</u> Investment Assignment	<u>Session-1:</u> Investment Analysis Assignment Objectives 1.Honesty Pledge 2.Downloads 3.Checkpoints - Part 1 4.Checkpoints - Part 2 5.Evaluation Rubric 6.Final Submission
	<u>Session-2:(Optional)</u> 1.Assignment 2.Solutions
<u>Module-4</u>	<u>Session-1:</u> Concepts of Hypothesis Testing – I Introduction 1.Understanding Hypothesis Testing 2.Null and Alternate Hypotheses 3.Making a Decision

Hypothesis Testing	4.Critical Value Method 5.Critical Value Method - Examples 6.Summary 7.Graded Questions
	<u>Session-2:</u> Concepts of Hypothesis Testing - II Introduction 1.p-value Method 2.p-value Method - Examples 3.Types of Errors 4.Summary 5.Graded Questions 6.Coding Practice (Graded) 7.Graded MySQL Questions
	<u>Session-3:</u> Industry Demonstration of Hypothesis Testing Introduction 1.T Distribution 2.Two-Sample Mean Test 3.Two-Sample Proportion Test 4.A/B Testing Demonstration 5.Hypothesis testing in Python 6.Industry Relevance 7.Summary

<u>Module-5</u> Exploratory Data Analysis	<u>Session-1:</u> Data Sourcing-Introduction to EDA 1.Public and Private Data 2.Private Data 3.Public Data 4.Public Data Exercise 5.Summary
	<u>Session-2:</u> Data Cleaning Introduction 1.Fixing Rows and Columns 2.Missing Values 3.Standardising Values 4.Invalid Values 5.Filtering Data 6.Summary
	<u>Session-3:</u> Univariate Analysis Introduction 1.Data Description 2.Unordered Categorical Variables – Univariate Analysis 3.Ordered Categorical Variables - Univariate Analysis

4.Quantitative Variables - Univariate Analysis

5.Quantitative Variables - Summary Metrics

6.Summary

7.Graded Questions

Session-4:

Segmented Univariate Introduction

1.Introduction to Segmented Univariate Analysis

2.Basis of Segmentation

3.Quick way of Segmentation

4.Comparison of Averages

5.Comparison of Other Metrics

6.Graded Questions

Session-5:

Bivariate Analysis Introduction

1.Bivariate Analysis on Continuous Variables

2.Business Problems Involving Correlation

3.Practice Questions

4.Bivariate Analysis on categorical variables

	<p>5.Summary</p> <p>6.Graded Questions</p> <p><u>Session-6:</u></p> <p>Derived Metrics Introduction</p> <p>1.What are Derived Metrics?</p> <p>2.Types of Derived Metrics: Type Driven Metrics</p> <p>3.Types of Derived Metrics: Business Driven Metrics</p> <p>4.Practice Questions</p> <p>5.Types of Derived Metrics: Data Driven Metrics</p> <p>6.Summary</p> <p>7.Graded Questions</p> <p>8.Module Summary</p>
<p><u>Group case study-1</u></p> <p>Lending Club Case Study</p>	<p><u>Session-1:</u></p> <p>Lending Club Case Study</p> <p>1.Problem Statement</p> <p>2.Honesty Pledge</p> <p>3.Evaluation Rubric</p> <p>4.Final Submission</p>

	<u>Session-2: (optional)</u> Lending Club Case Study 1.Solution
<u>Additional References</u>	<u>Session-1:</u> 1.Pre-Reads for Statistics 2.Recommended Additional Content
	<u>Session-2:</u> Discrete Probability Distributions 1.Pre-Reads 2.Optional Questions
	<u>Session-3:</u> Basics of Probability 1.Pre-Reads 2.Optional Questions
	<u>Session-4:</u> Exploratory Data Analysis 1.Power Law 2.Election Data: Case Study