## 1. Inferential Statistics

Inferential statistics is used to make predictions or generalizations about a population based on sample data. It helps in decision-making using probability and statistical tests.

## 2. Hypothesis Testing

Hypothesis testing is a statistical method used to test assumptions about a population. It involves null hypothesis (H0), alternative hypothesis (H1), significance level, and p-value.

## 3. Confidence Interval

A confidence interval provides a range of values within which the true population parameter is expected to lie with a certain level of confidence, typically 95%.

## 4. Critical Value

The critical value is a threshold used to determine whether to reject the null hypothesis. It depends on the significance level and type of test.

## 5. P-value

The p-value represents the probability of obtaining results as extreme as the observed data assuming the null hypothesis is true. A p-value less than 0.05 typically leads to rejection of H0.

## 6. Type I and Type II Errors

Type I error occurs when a true null hypothesis is rejected. Type II error occurs when a false null hypothesis is not rejected.

## 7. Statistical Tests

Z-test is used for large samples, t-test for small samples, chi-square test for categorical data, and ANOVA for comparing means across multiple groups.

## 8. Covariance

Covariance measures how two variables change together. A positive value indicates that variables move in the same direction.

## 9. Correlation

Correlation measures the strength and direction of the relationship between two variables. It ranges from -1 to +1.