STA 3180 Statistical Modelling: Multivariate Analysis

I. Multivariate Analysis

A. Definition and Overview

1. Definition: Multivariate analysis is a statistical technique used to analyze data from multiple sources simultaneously.

2. Overview: Multivariate analysis can be used to identify relationships between variables, to compare groups of observations, and to make predictions.

B. Types of Multivariate Analysis

1. Principal Component Analysis (PCA): PCA is a method of reducing the dimensionality of a dataset by transforming it into a set of uncorrelated variables called principal components.

2. Factor Analysis: Factor analysis is a method of identifying underlying factors or latent variables that explain the variation in a dataset.

3. Discriminant Analysis: Discriminant analysis is a method of classifying observations into different groups based on their characteristics.

4. Cluster Analysis: Cluster analysis is a method of grouping observations into clusters based on their similarity.

C. Problem Solving Strategies

1. Understand the problem: Before attempting to solve a problem, it is important to understand the problem and the data that is available.

2. Identify the appropriate technique: Once the problem has been understood, it is important to identify the appropriate technique for solving the problem.

3. Analyze the data: After selecting the appropriate technique, it is important to analyze the data using the technique.

4. Interpret the results: After analyzing the data, it is important to interpret the results and draw conclusions.

5. Validate the results: Finally, it is important to validate the results by comparing them to other sources of information.