STA 3180 Statistical Modelling: Multivariate Analysis

LECTURE NOTES:

Multivariate Analysis (STA 3180 Statistical Modelling)

Key Concepts:

• Multivariate analysis is a statistical technique used to analyze data with more than one variable.

• It allows researchers to explore relationships between multiple variables and identify patterns in the data.

• Multivariate analysis can be used to understand complex data sets, uncover hidden relationships, and make predictions about future outcomes.

Definitions:

• Dependent Variable: A dependent variable is a variable that is affected by other variables. It is the outcome or response that is being measured in an experiment.

• Independent Variable: An independent variable is a variable that is not affected by other variables. It is the predictor or cause that is being manipulated in an experiment.

• Covariance: Covariance is a measure of how two variables are related. It is a measure of the degree to which two variables vary together.

• Correlation: Correlation is a measure of the strength of the relationship between two variables. It is a measure of the degree to which two variables move in the same direction.

Rules:

• Multivariate analysis should only be used when there are multiple variables that need to be analyzed.

• It is important to understand the relationships between the variables before performing multivariate analysis.

• The assumptions of the model should be checked before performing multivariate analysis.

• The results of multivariate analysis should be interpreted carefully and critically.

Examples:

• A researcher is studying the relationship between income and education level. They could use multivariate analysis to explore the relationship between these two variables and identify patterns in the data.

• A researcher is studying the relationship between age, gender, and health. They could use multivariate analysis to explore the relationship between these three variables and make predictions about future health outcomes.