STA 3180 Statistical Modelling: Forecasting

I. Forecasting

A. Definition and Overview

    1. Definition: Forecasting is the process of making predictions about the future based on past data and current trends.

    2. Overview: This section will cover the different types of forecasting methods, their advantages and disadvantages, and how to select the best method for a given situation.

B. Time Series Analysis

    1. Components of a Time Series: This section will discuss the components of a time series, including trend, seasonality, and cyclicality.

    2. Autocorrelation and Partial Autocorrelation: This section will discuss autocorrelation and partial autocorrelation, and how they can be used to identify patterns in a time series.

    3. ARIMA Models: This section will discuss the use of ARIMA models for forecasting, including how to identify the best model for a given situation.

C. Regression Analysis

    1. Linear Regression: This section will discuss linear regression, including how to interpret the results and identify the best model for a given situation.

    2. Nonlinear Regression: This section will discuss nonlinear regression, including how to interpret the results and identify the best model for a given situation.

D. Problem Solving Strategies

    1. Identifying the Best Model: This section will discuss strategies for identifying the best model for a given situation, including using cross-validation and other techniques.

    2. Interpreting Results: This section will discuss strategies for interpreting the results of a forecasting model, including how to identify and address any potential issues.

Problem Solving Strategies:

1. Understand the data: Before attempting to solve a problem, it is important to understand the data and the context in which it is being used.

2. Identify the best model: Once the data has been understood, it is important to identify the best model for the given situation. This can be done by comparing different models and selecting the one that best fits the data.

3. Interpret the results: After the best model has been identified, it is important to interpret the results and identify any potential issues.

4. Validate the model: Finally, it is important to validate the model by testing it on new data and ensuring that it produces accurate results.