# STA 3180 Statistical Modelling: Monte Carlo Methods

I. Monte Carlo Methods

A. Definition and Overview

      1. Definition of Monte Carlo methods

      2. Overview of Monte Carlo methods

      3. Examples of Monte Carlo methods

B. Applications

      1. Simulation

      2. Optimization

      3. Integration

C. Algorithms

      1. Random Number Generation

      2. Rejection Sampling

      3. Markov Chain Monte Carlo

D. Problem Solving Strategies

      1. Understand the problem and the data

      2. Identify the appropriate Monte Carlo method

      3. Implement the Monte Carlo method

      4. Analyze the results

      5. Interpret the results

      6. Validate the results