Advanced Statistics (Elective)

Course # DMNS 3032E

Credits 6

Pre-requisites and Co-requisites: Introduction to Probability and Statistics; Calculus-I

Course Description

This course introduces advanced topics in statistics for computer science majors. This course teaches essential background and techniques for understanding advanced statistical methods, enabling students to perform data analysis and evaluate research. The course starts with a review of introductory statistics and probability, then covers topics such as sampling distributions, point estimation, inference, ANOVA, and an introduction to machine learning. Python and/or R programming packages will be used to enhance understanding and application of statistical techniques taught throughout the course.

Course Learning Outcomes

Upon completion of the course, students should be able to:

- Define sampling distribution and its properties.
- Test statistical hypotheses and determine significance.
- Analyze data using programming language and interpret results.
- Select appropriate statistical models and justify choice.
- Regress data using programming language and interpret results.
- Predict and draw conclusions using linear and multiple regression.
- Analyze data using programming packages.

Course Assessments and Grading

Item	Weight
Homework	10%
Project	10%
Quizzes	20%
Class Participation	5%
Midterm Exam	25%
Final exam	30%