

STAT 450

Regression and Analysis of Variance

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Grade Method: REG/AUD.

Prerequisite: *One year of post-calculus probability and statistics.*

Textbooks:

Required: Draper & Smith (1981), Applied Regression Analysis (2nd ed.), J. Wiley.

Strongly Recommended: Cody & Smith (1991), Applied Statistics and the SAS Programming Language (3rd ed.), North-Holland

Course Description:

Regression analysis is the area of statistics dealing with estimating the relationship between a dependent variable Y and one or several independent variables X , based on the method of least squares. Regression is an essential tool in applied statistics and is employed in the physical and engineering sciences, business and economics, biomedical research, and the social sciences. There is an intimate connection between regression and analysis of variance, which will also be treated in STAT 450. The course will stress applications and computational techniques, but a solid introduction to the theory will be provided.

Course Requirements:

There will be a midterm and a final exam. Frequent problem assignments will be made, some of which will involve computer analysis of data. The SAS statistical package will be used on the University's IBM mainframe.

Course Outline by Topical Areas:

- Review of statistical concepts. Use of SAS
- Simple linear regression and least squares.
- Examination of residuals to assess model assumptions.
- Multiple regression and use of matrices.
- Polynomials, dummy variables and transformations.
- Choosing the best regression model.

- Regression formulation of analysis of variance problems.

Examination Schedule:

Midterm: Friday, March 11, 2-2:50 pm

Final: Saturday, May 14, 8-10 am