DEPARTMENT OF MATHEMATICS
Syllabus

I. MATH 536 - Statistical Methods II - 3 credits

II. Catalog Description

A continuation and extension of the statistical methods introduced in Statistical Methods I (Math 535). Advanced topics in analysis of variance, randomized block designs, and experimental designs.

Prerequisite: Math 535 or permission of the instructor.

III. Course Objectives

Upon completion of the course, the students will be able to

A. demonstrate knowledge of the theory and methods of linear statistical models.

B. demonstrate that they understand the appropriate context of application and be able to construct an appropriate experimental design for statistical problems.

C. demonstrate that they understand the process of modeling and solving problems using linear statistical models.

D. use statistical software and interpret output from this type of computer package.

IV. Course Outline

A. Single-factor analysis of variance

1. Fixed effects model
2. Random effects model

B. Two-factor analysis of variance

1. Fixed effects model
2. Random effects model
3. Mixed effects model

C. Multifactor analysis of variance

1. Fixed effects model
2. Random effects model
3. Mixed effects model

D. Experimental design

1. Completely randomized designs
2. Randomized block designs
3. Incomplete block designs
4. Nested designs
5. Latin Square Designs
6. Split Plot Designs
7. Repeated Measures Designs

V. Suggested Texts

A. Keuhl, Design of Experiments: Statistical Principles of Research Design and Analysis, Second edition, Duxbury, 2000.

B. Kutner, Nachtsheim, Neter and Li, *Applied Linear Statistical Models,* Fifth edition, McGraw-Hill Irwin, 2004.

C. Ott and Longnecker, *An Introduction to Statistical Methods and Data Analysis,* 6th edition, Duxbury, 2010.

D. Snedecor and Cochran, *Statistical Methods,* Seventh edition, Iowa State University Press, 1980.

E. Montgomery, *Design and Analysis of Experiments,* John Wiley & Sons, 1976.

F. Elliot & Morrell, Learning SAS in the Computer Lab, 3rd Edition, Brooks/Cole, 2010

VI. General Education Credit

This course may not be taken for general education credit.