Syllabus – Math672 – Spring 2018
Statistical Methods, Part II

Instructor: Dr. Hailin Sang  Office hours: TuTH 2:30-3:45 or by appoint.
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Class time: TTh 1:00-2:15 pm  Place: Hume Hall 331

Goal:
Linear statistical models for regression, analysis of variance, and experimental design are widely used today in business administration, economics, engineering and the social, health and biological sciences. Successful applications of these models require a sound understanding of both the underlying theory and the practical problems that are encountered in using the models in real-life situations. This course follows Math671, covering the second parts of the textbook: ANOVA models and experimental design. The goal is to seek blending theory and applications effectively, avoiding the extremes of presenting theory in isolation and of giving elements of applications without the needed understanding of the theoretical foundations. Through out the semesters, students will practice data analysis and implementation of the introduced methods and will gain experience of solving practical statistical problems involving real data sets.

Course outline:
1. One way, two way ANOVA models and higher order treatment structures.
3. Experimental design: balanced designs, nested designs, repeated measure designs, Latin squares and similar designs.
4. Random effects, randomized block designs.
5. Split-plot designs, split-split-plot designs.

Grading:
Quizzes 20%, Projects 25%, Midterm exam 25%, Final exam 30%
>90%=A, 87%-90%=A-, 83%-87%=B+, 80%-83%=B, 75%-80%=B-, 70%-75%=C+, 65%-70%=C, 60%-65%=C-, <60%=D

Important:
1. Quizzes are based on homework. Homework will be assigned but not collected and graded. A steady effort to work out all the assigned problems is essential for learning statistical methods and successful performance in this course. Brief or full homework solutions will usually be given.
2. Exams and Quizzes are open book, notes.
3. Projects are assigned every 4-5 weeks. Recently acquired statistical methods will be used to analyze various data sets. Projects should be done in R, SAS or Matlab. A report containing the code, only essential parts of the output, your comments, results and answers should be submitted for grading.