Syllabus – Math671 – Fall 2019
Statistical Methods, Part I

Instructor: Dr. Hailin Sang
Office hours: TTh 10:45-12:00pm or by appoint.
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Class time: TTh 1:00-2:15 pm
Place: Hume Hall 321

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 and the following Math672 course seek to blend 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. Throughout the semesters, student will practice data analysis and implementation of the introduced methods using R, Statistical Analysis Software (SAS) or Matlab and will gain experience of solving practical statistical problems involving real data sets.

Course outline:
1. Basic statistical methods most often used in the analysis of data: estimation, confidence intervals, hypothesis testing, understanding and use of P-values.
2. Linear regression and regression diagnostics, analysis of variance, goodness of fit, analysis of residuals.

Grading:
Quizzes 20%, Homework 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 every 2-3 weeks. A steady effort to work out all the assigned problems is essential for learning statistical methods and successful performance in this course. Recently acquired statistical methods will be used to analyze various data sets. Homework 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. Brief or full homework solutions will usually be given.
2. Exams and Quizzes are open book, notes.