STATS 120C/281C: Intro. to Probability and Statistics III

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Class Times: MWF 10 - 10:50am
Class Room: ICS 174
Office Hours: M 11:30am - 12:30pm; Th 2 - 3pm
Office: DBH 2032
Discussion Room: MSTB 124
Discussion Times: W 5 - 5:50pm; 6 - 6:50pm

Course Description

STATS 120C is the last of a three-quarter series on introduction to probability and statistics. The goal of this course is to introduce basic principles of probability and statistical inference, and learn how these methods are applied to real world problems. Topics that will be covered include basic principles of probability and statistical hypothesis testing, linear regression, analysis of variance, and model checking.

Required Materials

- **Required:** *Mathematical Statistics and Data Analysis, 3rd Edition*. John Rice. ISBN: 9788131519547.
- **Reference:** Neter, J., Kutner, MH., Nachtsheim, CJ., and Wasserman, W. (2005). *Applied linear statistical models, 5th edition*. McGraw-Hill Irwin.
- **Reference:** DeGroot, MH. and Schervish, MJ. (2002) Probability and Statistics, 3rd edition. Addison Wesley.

Prerequisites

Prerequisites: STATS 120B and (MATH3A or MATH 6G or I&C SCI 6N)

Software/Computing

The statistical package R will be used to illustrate examples. R is a free package that can be installed onto machines with different operation systems. For more information about R, please visit http://www.r-project.org.

Since all coding examples in the course will be presented in R, I strongly recommend using R for your homework. You may also use Python + Numpy + Scipy, but be aware this will likely require extra work on your part to learn the Python implementations of the methods.

Grading

The grade is **based upon eight homework assignments (30%), two in-class quizzes (5%), a midterm (30%) and a final exam (35%)**. No late homework will be accepted. Make-ups for a missed exam or quiz will be given only in case of an emergency, with supporting documentation.

Exams and Quizzes

All exams and quizzes are closed-book, closed-note, and in-class. One page of notes for the Midterm and two pages of notes for the final will be allowed (no notes for the quizzes). Calculators will not be needed and are not allowed. The final exam will be comprehensive.

Course Schedule

Week	Topics	Reading Assgn.	Graded Assgn.
1	Review, Hypothesis tests	Rice Ch 6, 9.1, 9.4, 9.5	HW 1
2	One-way ANOVA	p477–489	HW 2
3	Two-way ANOVA	489–499	Quiz 1, HW 3
4	Simple linear regression	542–563	HW 4
5	Multiple linear regression	564–580	Midterm
6	MLR, Fisher's exact test	564–580, 514–516	HW 5
7	Testing homogeneity and independence	p516–520, 520–523	HW 6
8	Matched pairs, measures of association	523–530	Quiz 2
9	Nonparametric tests	435–443	HW 7
10	Nonparametric tests	448–451	HW 8

Final Exam: June 10th, 10:30am - 12:30pm
Memorial Day (no class): May 27th