STAT 518, Nonparametric Statistical Methods-- Fall 2017

Instructor:
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Course Web Page: http://www.stat.sc.edu/~hitchcock/stat518.html
(Also accessible via Blackboard – go to course page in Blackboard
And then click on "Course Web Page" link on left of page)

Classes:
Meeting Times: MWF 9:40 am - 10:30 am, WMBB Nursing 409 **or via distance by streaming video**

Office Hours: Mon-Wed-Fri, 10:45-11:55 a.m., or **please feel free** to make an appointment to see me at other times.

Textbook:
Practical Nonparametric Statistics (3rd Edition), by W.J. Conover, Wiley, 1999.

Prerequisite: STAT 515 (or equivalent) with a grade of C or higher.

Course Outline: Chapters 2-6 of the Conover textbook. Topics covered include: Statistical Inference: properties of estimators, properties of hypothesis tests; Tests Based on the Binomial Distribution: the binomial and quantile test, the sign test, McNemar's test; Methods Based on Ranks: Mann-Whitney test, Kruskal-Wallis test, squared rank test, measures of rank correlation, nonparametric linear regression, Wilcoxon signed ranks test, Friedman test; Goodness of Fit Tests: Kolmogorov goodness of fit test, Kolmogorov test for two samples; Categorical Data: chi-squared goodness of fit, chi-square test for r by c contingency tables, Mantel-Haenszel test, Cochran's test for related observations, measures of dependence, loglinear models.

Learning Outcomes: By the end of the term successful students should be able to do the following:

- Understand the principles and applications of commonly used nonparametric methods
- Compare these methods to their parametric counterparts
- Use the basic methods for analyzing contingency tables

Exams:
There will be two in-class exams (September 29 and November 3) and a final exam on Wednesday, December 13 at 9:00 a.m. Each exam will be given in the classroom during the regularly scheduled class time. If you are not able to come to campus for the exams, you must contact Shannon Carson at distributed learning (scarson@mailbox.sc.edu or 803-777-2189) to set up a proctor. See https://sc.edu/dl/ss/testsite.html for information about approved testing sites in the state of South Carolina. If you are on campus and not able to attend class live, you may either contact the distance education office to set up a proctor, or may arrange with me to take it at some other time.

Homework: Homework will be assigned on the course web page. Due dates will be posted given on the course web page. Late homework will be penalized. You must do each homework problem independently. You may not look at another student's work while doing the homework. You may ask me for help on the homework problems. If homework is found to have been copied, all students involved will receive a 0. [To be clearer, students can ask each other informal ORAL questions about homework, but **cannot look at or copy each other's homework papers**. All submitted homework must be the student's **own work** and **NOT come from any other person or external source**.]

Project: All students must do a data-analysis project. This project will be completed in two parts, one part midway through the semester and another part near the end of the semester. The project will contain the analysis of a real data set of interest using both parametric and nonparametric methods, and a typed report detailing the findings of the analyses. The details about the project will be announced about a month into the course.

Graduate Students: Any students enrolling in the course for graduate credit will do some extra homework problems during the semester.

Grading:
The course grade will be based on homework average (15%), project grade (10%), the two midterm exams (25% each), and a final exam (25%). The overall course average will result in the following grades: 90-100 = A, 87-89 = B+, 80-86 = B, 77-79 = C+, 70-76 = C, 67-69 = D+, 60-66 = D, 59 and below = F.

Computing: Some problems in this course involve significant computations, and for these, we will learn to use the free software package R. This is available in the labs and also as a free download for your home computer (see course web page for details). It is not assumed that you have much/any previous experience with R. Example code in R is given on the course web page.

During Class: No cell phones may be on during class. In the distance studio where class is recorded, laptops and tablets (e.g., i-pads) may be used only for note-taking and other course-related activities. Students may not use laptops and tablets to look at unrelated web pages, play games, etc.

Course Schedule: MWF, August 25 through December 8. Special dates:
No class (Labor Day): September 4 (Monday)
Last day to withdraw without "WF" grade: October 16 (Monday)
No class (Fall Break): October 20 (Friday)
No class (Thanksgiving Break): November 22, 24 (Wednesday, Friday)

Friday, September 29: Exam 1
Friday, November 3: Exam 2
Wednesday, Dec. 13 (9:00 a.m.) final exam