STAT 515, Statistical Methods I -- Spring 2018

Instructor:
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Course Web Page: http://people.stat.sc.edu/Hitchcock/stat515.html
                         (Also accessible via Blackboard)

Class Meeting Times: MWF, 10:50 am - 11:40 am, Gambrell 201

Office Hours:
Mon 2:15-3:00 pm, Tuesday 11:00-11:45 am, Wednesday 2:15-3:00 pm, Friday 2:15-3:00 pm, or **please feel free** to make an appointment to see me at other times.

Textbook:
Statistics (13th Edition), by J.T. McClave and T. Sincich. This book is available at the USC bookstore, and there is also a copy on reserve (for in-library use) at the circulation desk at the Thomas Cooper library.

Course Outline: Chapters 1 – 11 and 13 of the McClave & Sincich textbook. Topics covered include: Applications and principles of descriptive statistics, elementary probability, sampling distributions, estimation, and hypothesis testing. Inferences for means, variances, proportions, simple linear regression, and contingency tables.

Course Description: STAT 515—Statistical Methods I. (3) (Prereq: a grade of C or higher in MATH 122 or MATH 141; or both MATH 111 or higher and any statistics class) Applications and principles of elementary probability, essential discrete and continuous probability distributions, sampling distributions, estimation, and hypothesis testing. Inferences for means, variances, proportions, one-way ANOVA, simple linear regression, and contingency tables. Statistical packages such as SAS or R.

Learning Outcomes: By the end of the term successful students should be able to do the following:
- Demonstrate an understanding of and use basic statistical terminology.
- Recognize and be able to apply standard discrete and continuous probability distributions, including the binomial, hypergeometric, Poisson, normal and exponential distributions.
- Demonstrate an understanding of the variation in data and its relationship to the normal-theory based sampling distributions for the mean, variance, and ratio of two variances, including the concept of robustness.
- Conduct inference using parameter estimation and hypothesis testing for one and two samples, simple linear regression, one-way analysis of variance, and contingency tables, including use of appropriate technology.
- Interpret and explain the results of inferential procedures in the appropriate context.

During Class: No cell phones may be on during class. Laptop computers must be put away during class time. Tablets (e.g., i-pads) may be used *only for note-taking*, only if flat on the desk like a traditional notebook. Students may not use tablets to look at web pages, play games, etc.

Grading: The course grade will be based on homework average (16%), the three midterm exams (23% each), and a take-home final exam (15%). 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.

Homework: Homework exercises from the textbook will be assigned periodically on the course web page. Due dates are given on the course web page. Late homework will be penalized.

        You may help each other with homework problems, but each student's homework must be written up independently. 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**.]

        Everyone is expected to do every problem. Please write up homework papers neatly and clearly! Many problems on the exams will be similar to homework problems.

Graduate Students: Any students enrolling in the course for graduate credit will be required to do some extra homework problems, which will be specified on each homework assignment. Such extra problems will be optional and extra credit for undergraduate students.

Exams: There will be three in-class midterm exams (February 9, March 23, April 25) and a take-home final exam due on May 8. Exams may not normally be made up, except in extreme circumstances, for which written documentation of excuse (doctor's note, funeral notice, etc.) is required. If you suspect you may miss an exam day, it is important to contact me well in advance of the test date.

Take-Home Final Exam:
The take-home final exam will ask you to conduct a few data analyses using real data sets and to write the conclusions in a typed report. You should use appropriate statistical software (such as SAS Studio) to help with some of the analyses. More information would be given near the end of the semester about the take-home final exam.

Computing: Some problems in this course involve significant computations, and for these, we will learn to use the software SAS Studio. You will be able to create a free SAS Studio account that will allow you to access SAS Studio via the internet. Instructions are given on the course web page. You will receive an enrollment link in an email from the course instructor.

        It is not assumed that you have any previous experience with SAS. In many industries and jobs, SAS is the standard statistical computing package used, and this course will introduce you to some of the most common SAS procedures.

Course Schedule: Mon-Wed-Fri, January 17 through April 30, except:
No class (Spring Break): March 12, 14, 16 (Monday, Wednesday, Friday)

Friday, February 9: Exam 1
Friday, March 9: Midpoint (last day to withdraw without a "WF")
Friday, March 23: Exam 2
Wednesday, April 25: Exam 3
Monday, April 30: Last day of classes
Tuesday, May 1: Take-home final exam will be posted.
Tuesday, May 8: Take-home final exam will be due at 10:00 pm.