

Syllabus

USC, Department of Statistics, Fall 2017

Course STAT 513-001: Theory of Statistical Inference

Class Time: 01:15 pm–02:30 pm Tuesday and Thursday (from Tuesday, August 24 to Thursday, December 07)

Class Place: Currell College 203

Prerequisite: Prereq: STAT 512 (with a grade of C or higher)

Instructor: Dr. Dewei Wang

Office: Leconte College 219B

Email: deweiwang@stat.sc.edu

Office Hours: 12:10 pm–01:10 pm Tuesday and Thursday in Leconte College 219B

Course Website: <http://people.stat.sc.edu/wang528/Teaching.html>

All the lecture notes and handouts will be posted here.

Textbook: **(Required)** Wackerly, Mendenhall, and Scheaffer. *Mathematical Statistics with Applications*, 7th Edition.

Computing: You need a scientific calculator, such as [TI-84](#), equipped with a STAT function which will help you in this course. Do bring your calculator to class.

We will also use R, one of the standard statistical softwares. You will learn it by example. The R package is available for free at <http://www.r-project.org/>. The “An Introduction to R” manual available at this site is an excellent resource, at <http://cran.r-project.org/doc/manuals/r-release/R-intro.pdf>.

No other electronic devices can be used in place of a calculator on in-class exams; otherwise, it will be treated as a violation of academic integrity.

Important Days: Wednesday, August 30 (last day to drop/add without W)
Tuesday, October 10 (Exam 1)
Monday, October 16 (last day to withdraw without WF)
Tuesday, November 21 (Exam 2)
Tuesday, December 12 (Final exam at 12:30 pm)

Learning Outcomes: In this course, we will continue, and finish, our exploration of probability and mathematical statistics. From Wackerly, Mendenhall, and Scheaffer (WMS), we will cover Chapters 10, 11, 14, and 16. This course is a mix of application and statistical theory. Here is a breakdown of the topics we will discuss:

- Hypothesis testing (Chapter 10). Type I/II Error, large-sample tests, power, Neyman-Pearson Lemma, uniformly most powerful tests, likelihood ratio tests.
- Regression models (Chapter 11). Simple and multiple linear regression models, least squares, sampling distributions, analysis of variance, F tests, confidence and prediction intervals.
- Analysis of categorical data (Chapter 14). The chi-square test, goodness-of-fit test, contingency tables.
- Bayesian inference (Chapter 16). Bayesian paradigm, prior model selection, posterior computation, point estimation, credible intervals.

Attendance and Email:

I expect you to attend every class. Very few students are able to master this material without keeping up on a regular basis. If you are absent, you are responsible for learning materials covered in class. If you are absent when an assignment is due, you must have submitted the assignment prior to the due date to receive full consideration.

Do not block my email. I will regularly send you announcements via email. And using email is the quickest way to reach me outside of class.

Homework:

After each lecture, I will assign homework based on material you have learned. For your benefits, I highly suggest you finish these problems prior to the beginning of the next class. It will help you develop a more in-depth understanding of the material and make the following class easier.

Homework will be collected regularly. Six problems will be randomly selected and each will be graded out of 10 points. Late homework will receive at most 25 percent credit. You should write up your solutions neatly and staple the work together.

I also give in-class **quizzes**. Quizzes will be counted towards your final course grade as a part of your homework.

Working together on homework assignments is very welcomed and encouraged, but each student should write up his/her solutions independently of others. Copying someone else's work is not tolerated. If it happens, both parties will receive a 0 for the assignment as well as being reported to the Office of Academic Integrity.

Exam:

We will have two in-class midterm examinations and an in-class cumulative final examination. Exams are all closed-book and closed-notes. Cheating on exams is an extremely serious offense and will be dealt with very harshly. Please note that I do not give make-up examinations unless your absence is due to a university function, you have given me appropriate documentation, and you have discussed it with me at least one week in advance.

Grade Breakdown:

Your course grade will be determined by your performance on homework (20 percent), two midterm exams (20 percent each), and the final exam (40 percent). If your final exam grade is higher than the lowest one of the two midterm exams, the lowest grade (only one grade) of the two midterm exams can be replaced by your final exam grade.

I will post your grades on Blackboard timely. If you have any concern about grading, contact with me as soon as possible.

Final course grades will be assigned according to the following protocol,

A: [90, 95)	A+: [95, 100]
B: [80, 85)	B+: [85, 90)
C: [70, 75)	C+: [75, 80)
D: [60, 65)	D+: [65, 70)
F: [0, 60)	

Recommended Study Habits:

- Read appropriate sections of the text/notes before class.
- Attend every class and be on time.
- Ask questions if you do not understand something or wish to know more.
- Check email often for announcements.
- Form small study groups to work on homework and to prepare for the exams.
- Email me and/or stop by my office as soon as possible if you have any questions.
- Make it your goal to understand everything we do.

Academic Integrity:

Students are expected to follow the University of South Carolina Honor Code and should expect that every instance of a suspected violation will be reported. Students found responsible for violations of the Code will be subject to academic penalties under the Code in addition to whatever disciplinary sanctions are applied. Cheating on an exam or copying someone else's work, will result in a 0 for the work, possibly a grade of F in the course, and, in accordance with University policy, be referred to the University Committee for Academic Responsibility and may result in expulsion from the University.

Expectations for Classroom Behavior:

All cell phones are to be turned off or silenced during class (not on vibrate). All cell phones are to be put away out of view during class; there is no text messaging, web browsing, etc, during class. Please be respectful of each other, the instructor, and any guest while in class. We are all here to learn! Any disrespectful or disruptive behavior may result in your referral to the Office of Student Judicial Programs.

Accommodating Disabilities:

I would like to talk to anybody with a disability that may require special attention with examinations or other aspects of the course. Please talk with me no later than Thursday, August 31, 2017.

Note that reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, TDD 777-6744, email sasds@mailbox.sc.edu, or stop by LeConte College Room 112A. All accommodations must be approved through the Office of Student Disability Services.