Syllabus

USC, Department of Statistics, Spring 2017

Course STAT 509-E01: Statistics for Engineers

Class Time:	TR 6:00 pm–7:15 pm
Class Place:	Sloan 112
Prerequisite:	MATH 142 or equivalent
Instructor:	Chuan-Fa Tang
Office:	LeConte 209D
Email:	tang9@email.sc.edu
Office Hours:	1:30 pm–3:00 pm TR in LeConte 209D

Textbook: Montgomery, D. and Runger, G. (2014). *Applied Statistics and Probability for Engineers*, Sixth Edition. John Wiley and Sons, Inc.

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 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:

Monday., Jan. 9	Class Begin
Tuesday., Jan. 17	Last Day to Drop/Add without W
Thursday, Feb. 16	Midterm
Monday, Mar. 2	Last day to withdraw without WF
Thursday, Mar. 23	Midterm
Monday, Apr. 24	Last Day of Classes
Thursday, Apr. 27	Final Exam

Holidays:	Monday, Jan. 16	Dr. Martin Luther King, Jr. Service Day
	Sunday, Mar. 5 – Sunday, Mar. 12	Spring Break

Learning Outcomes:

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

- Understand and be able to correctly use basic statistical terminology
- Make statistical inference using basic parameter estimation and hypothesis testing.
- Compare data sets using parameter estimation, hypothesis testing and analysis of variance
- Recognize and evaluate relationships between two variables using simple linear regression
- Apply basic 2×2 design of experiments in order to study and improve engineering processes

Topics Covered:

- Chapter 2–5: sample spaces, events, probability laws, discrete and continuous random variables, probability mass/density function, cumulative distribution functions, mean and variance
- Chapter 6–10: descriptive statistics, point estimation, sampling distribution, the central limit theorem, one/two-sample inference including confidence intervals and testing statistical hypotheses
- Chapter 11–14: Simple linear regression, least squares, estimation and prediction, confidence intervals and hypothesis tests, one-way analysis of variance, 2×2 factorial treatment structures and generalizations

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. When you miss class, you miss important information. 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 send you announcements via email, so make sure to check your inbox daily. While email is the quickest way to reach me outside of class, it is more efficient to answer your questions face-to-face.

Homework:

There will be about 6 homework assignments during the semester. Four 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 reserve the right to 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; one after completing Chapter 5 on **Thursday, February 16** and one after completing Chapter 10 on **Thursday, March 23**. We will have an in-class cumulative final examination on **Thursday, April 27 at 7:30 pm**. Exams are all closed-book and closed-notes. However, for each midterm exam, you can bring **one** single-page double-sided cheat sheet; for the final exam, you can bring **two**.

Each cheat sheet should be no larger than 8.5in×11in and must be prepared by your own writing. During exams, you cannot use someone else's sheets. 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 (30 percent), two midterm exams (15 percent each), and the final exam (40 percent). 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:	$[90, +\infty)$		
B:	$[80, 85)$	B+:	$[85, 90)$
C:	$[70, 75)$	C+:	$[75, 80)$
D:	$[60, 70)$		
F:	$[0, 60)$		

For example, if your homework is 430 out of 480, midterm exams are 92 and 89, and the final exam is 91, then your final course grade will be calculated as

$$\frac{430}{480} \times 30 + \frac{92}{100} \times 15 + \frac{89}{100} \times 15 + \frac{91}{100} \times 40 = 90.43,$$

which means an A!

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.

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.