

# Syllabus

## STAT 509 Statistics for Engineers Summer 2017 Section 001

Instructor: Tahmidul Islam  
Class Time: MTWR 08:30 am - 10:10 am  
Place: Close-Hipp Building 350  
Prerequisite: MATH 142 or equivalent  
Office: 209F LeConte College  
Office Hours: 10:30 am - 11:30 am MTWR or by appointment  
Email: [islamt@email.sc.edu](mailto:islamt@email.sc.edu)  
Website: <http://people.stat.sc.edu/islamt/STAT509.html>

### Textbook

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

### Course Overview

This course is an introduction to probability and statistics at the undergraduate level. Applications in engineering will be emphasized. We will discuss the following topics:

- **Probability and distributions:** Sample spaces; events; probability laws; discrete and continuous random variables; probability mass/density functions; cumulative distribution functions; means and variances; percentiles; reliability.
- **Estimation and statistical inference:** Sampling distributions; the central limit theorem; one/two sample statistical inference involving means, variances, and proportions.
- **Regression:** Simple/multiple linear regression; least squares; estimation and prediction; confidence intervals and hypothesis tests; one-way analysis of variance;  $2 \times 2$  factorial treatment structures and generalizations.

### Learning Outcomes

By the end of the semester 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.
- Analyze data sets using parameter estimation, hypothesis testing and analysis of variance.
- Recognize and evaluate relationships between two variables using simple linear regression.
- Apply basic  $2 \times 2$  design of experiments in order to study and improve engineering processes.

### Computing

We will use R, one of the standard and free statistical softwares. It is OK if you do not know R, because you will learn by example. You can download R at [here](#) for Windows, Linux, or Mac OS X system. “The Introduction to R” manual available at [here](#) is an excellent resource.

### Homework and Quiz

After each lecture, I will assign homework problems based on material you have learned. For your benefits, I suggest you to 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. Working together on homework assignments is encouraged. Form a study group will lead to a win-win situation to all students included. Homework solutions will be posted on the same day, or the next day. Homework will not be collected or graded. Instead we will have in class quiz every Monday starting on May 21, in which homework problems will be selected to check whether students finish assignments on time. There will be 5 quizzes in total.

### Exam

We will have one midterm exam and one final exam. The midterm will be on Tuesday, June 05. The final exam will be given in our classroom on June 22, Friday - 9:00 a.m. Exams are all closed-book and closed-notes. Please note that I do not give make-up exams. If 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, I will use another exam score to replace the absent one.

### Grade Breakdown

Your course grade will be determined by your performance on quizzes ( $5 \times 10\% = 50\%$ ), the midterm exam (25%) and the final exam (25%). Final course grade will be assigned according to the following protocol, A=[90, 100); B+=[87, 90); B=[80, 87); C+=[77, 80); C=[70, 77); D+=[67,70); D=[60, 67); F=[0, 60).

### Daily Schedule

	Mon	Tue	Wed	Thu	Fri
05/14	Class starts				
05/21	Quiz 1				
05/28	No class	Quiz 2			
06/04	Quiz 3	Midterm			
06/11	Quiz 4				
06/18	Quiz 5				Final

### Expectations for Classroom Behavior

All cell phones are to be turned or silenced during class. 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.

### 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.

### 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.