

Instructor: Joshua M. Tebbs

Course: Statistical Methods I

Class Time/Place: 10:50-11:40am MWF in LeConte 107

Office: LeConte 217

Office hours: 12:00-1:00pm MWF (I also have an “open door” policy)

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Course Overview: This course is an introduction to statistical methods for undergraduate students who are specializing in the statistical sciences. There are many ways to satisfy the mathematical prerequisite for this course, including by taking high school or college courses in algebra or calculus; see the Academic Bulletin. We will discuss the following topics:

- Probability and distributions (Chapter 4): Probability, discrete and continuous random variables, mean, variance, percentiles, normal distribution, sampling distributions and Central Limit Theorem, quantile-quantile plots
- One- and two-sample inference (Chapters 5-7): Confidence intervals for population means and variances, hypothesis tests, Type I and II Error, sample size calculations, sampling distributions (t , χ^2 , and F), nonparametric and resampling methods
- Comparing multiple population means (Chapters 8-9): One-way classification, analysis of variance, overall F test, multiple comparison methods, contrasts
- Categorical data analysis (Chapter 10): Confidence intervals for proportions (one- and two-sample), contingency tables, hypothesis tests for homogeneity, goodness-of-fit, and independence, odds ratios
- Simple linear regression (Chapter 11): Least-squares estimation, inference for regression parameters, confidence and prediction intervals, correlation.

Course Materials: My course notes are available as a .pdf file on the course home page; paper copies will be distributed in class. The textbook for the course is required:

- Ott, R. and Longnecker, M. (2016). *An Introduction to Statistical Methods and Data Analysis*, 7th Edition, Cengage Learning.

Computing: We will use R. It is OK if you do not know R (or have never heard of it), because you will learn by example. The R package is available for free at www.r-project.org; the latest version is R 4.6.1 (2026-06-24, Happy Hop). The “An Introduction to R” manual available at this site (on the left, under “Manuals”) is an excellent resource.

Homework: I plan to give weekly (or bi-weekly) homework assignments. Homework must be written up neatly, stapled, and handed in to me during class. I do not accept homework through email. Each assignment will count towards your final grade. Late homework will not be accepted. You will need to have access to a printer to print off your R code and output.

Examinations: We will have three in-class midterms:

- Exam 1: Friday, September 18 (Tentative: Chapter 4)
- Exam 2: Friday, October 23 (Tentative: Chapters 5-7)
- Exam 3: Friday, November 20 (Tentative: Chapters 8-9, 11).

We will have a cumulative final examination (covering Chapters 4-11) on Friday, December 11, at 9:00am. All exams are closed-book and closed-notes. 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 in person at least one full week in advance.

Course Grades: Your course grade will be determined by your performance on homework (15 percent), the midterms (45 percent; 15 percent each) and the final exam (40 percent). Final course grades will be assigned according to a 90-80-70-60% schedule. I will use “+” grades at 88%, 78%, and 68%.

Classroom Management: Students who attend my lectures regularly usually do the best in my courses. I do not use Blackboard. Please turn off phones during class. I reserve the right to give in-class assignments or quizzes whose points may be used at my discretion.

Use of AI: Although I do not forbid the use of generative AI tools (e.g., ChatGPT, etc.) when working on assignments, I strongly discourage you from using them. My assignments are designed to challenge you to develop creativity, critical thinking, and problem-solving skills. Using AI technology to complete my assignments will limit your capacity to develop these skills. Students who rely on this technology to do the homework will likely do poorly on my in-class examinations.

Additional remarks and expectations:

1. Students who need special accommodations with exams or other aspects of the course should contact the Student Disability Resource Center. All examinations given through this office will run concurrently with the dates/times listed above.
2. Feel free to ask questions during class; your questions are an important part of this course. You can also ask me questions in office hours.
3. Attend every class and be on time. Being “on time” means being early (5-10 minutes).
4. Read/review appropriate sections of the notes before and after class.
5. Take my homework assignments seriously. These are designed to assess your understanding of the topics we discuss in class. They will also challenge you to think critically in new situations.

Finally: I am always happy to spend time with students answering questions about the course or about other topics. Please feel free to drop by my office and introduce yourself. I look forward to meeting all of you!