Instructor: Joshua M. Tebbs
Course: Mathematical Statistics II
Class Time/Place: 8:05-9:20 in 201A LeConte
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Required Textbook:

- Casella, G. and Berger, R. (2002). *Statistical Inference*, Second Edition. Duxbury.

Course overview: This is the second semester of a two-semester sequence in mathematical statistics, taught at the graduate level. A mastery of the material from STAT 712 is assumed. After tying up loose ends in Chapter 5, we will cover most of the material in Chapters 6-9 from Casella and Berger and parts of Chapter 10. In particular, we will discuss

- Convergence (Section 5.5). Modes of convergence, CLT, Slutsky's Theorem, Delta Method, multivariate extensions.
- Data reduction (Chapter 6). Sufficiency, ancillarity, minimality, completeness.
- Point estimation (Chapter 7). Methods of finding estimators (MOM, MLE, Bayes), methods of evaluating estimators, best unbiased estimators.
- Hypothesis testing (Chapter 8). Likelihood ratio tests, Neyman-Pearson Lemma, most powerful and UMP tests, probability values.
- Interval estimation (Chapter 9). Methods of finding intervals (test inversion, pivoting, etc.), methods of evaluating intervals.
- Asymptotic evaluations (Chapter 10). Consistency, large-sample properties of MLEs, likelihood-based inference (Wald, score, and LRT).

Homework: I will give numerous homework assignments throughout the semester. In addition to the homework, I encourage you to work out solutions to other problems in the text and other extra problems I assign. This is really the best way to learn the material and much can be learned by doing (or at least reading) extra problems.

Exams: We will have two midterms, one after Chapters 5-6 and one after Chapters 7-8. We will have a cumulative final examination on Friday, May 4 at 9.00am. I plan to give midterm exams outside of class (in a closed-book, closed-notes setting) so that you can have more time. Please note that I do not give make-up examinations.

Grade Breakdown: Your course grade will be determined by your performance on the two midterms (25 percent each) and the final exam (50 percent). Final course grades will be assigned according to a 85-75-60-50 scale. I will use your homework scores as guidance on whether to adjust your final grade in the event that you are near the boundary of a grade cutoff (e.g., 84, 59, etc.).