STA 4322 Introduction to Statistics Theory
Spring 2018

Instructor Hani Doss, 222 Griffin-Floyd; Office Hours: Mon 4th period, i.e. 10:40–11:30 am (if you come to see me, please do so before 11:10 am) and WF 7th period, i.e. 1:55–2:45 pm (if you come to see me, please do so before 2:25 pm); Phone: 273-2991; email: `doss@stat.ufl.edu` (do not ask questions regarding the course material by email).

Teaching Assistant Yue Bai (`baiyue@ufl.edu`)—234 Griffin-Floyd.

Course Description and Objectives This is a calculus-based course which gives a theoretical foundation for fundamental methods in statistical inference. It covers the theory underlying point estimation, confidence intervals, and hypothesis testing for models based on standard parametric families. The course is designed to prepare students for graduate-level work in statistics and related fields, or for research in the sciences, social sciences or medical sciences of the type where advanced statistical methods are used. This is fundamentally a theory course, not a course in applied statistics.

Grading Your final course grade will be based on the four components below, with the stated weights:

Exam 1:	Wednesday February 14, 8:20 pm, room TBA; covers everything up to and including lecture of Monday February 12. Note evening time slot.	28%
Exam 2:	Friday March 23, 8:20 pm, room TBA; covers everything up to and including lecture of Wednesday March 21 (but with emphasis on material covered after Exam 1). Note evening time slot.	28%
Exam 3:	Wednesday April 25, 8:20 pm, room TBA; covers everything (but with emphasis on material covered after Exam 2).	28%
Homework:	There will be 9 or 10 homeworks assigned during the semester.	16%

Note the dates and times of the three exams. You should clear your schedule now so that you do not have a conflict with these time slots.

A course average of 93–100 will guarantee an A, 90–92 at least an A^-, 87–89 at least a B^+, 83–86 at least a B, 80–82 at least a B^-, etc. (The tests will be hard, and the actual cutoffs for the grades are very likely to be lower than these numbers.) Information on current UF grading policies for assigning grade points is given at `https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx`.

Prerequisites Prerequisites are:

- STA 4321 (Introduction to Probability)
- MAC 2311, 2312, 2313 (Calculus I, II, III)

If you have not taken all of these (or their equivalents), you may not register for this course.

Course Web Page `http://www.stat.ufl.edu/~doss/Courses/sta4322`

A password is needed to enter the Homeworks page; the password will be given out in class.

Text *Mathematical Statistics with Applications* by Wackerly, Mendenhall, and Scheaffer (7th edition, 2008).

This book is recommended, not required. We will not follow it closely. Some problems from the book will be assigned for homework, but otherwise, we will not use it.

Coverage Roughly, we will cover the material in Chapters 7–10 of the text (however, the level of this course is much higher than that of the book, so there is no real correspondence between what we cover and these chapters). *Note that there will be material covered in lectures which is not found anywhere at all in the textbook, and you will be responsible for that material.*

Main Topics

1. Rules for expectations and variances of linear combinations of random variables, and sampling distributions of random variables formed from independent samples from the normal distribution
2. The Central Limit Theorem
3. Point estimation
4. Confidence intervals
5. The Law of Averages
6. The likelihood function, sufficiency, the Factorization Theorem, and the Rao-Blackwell Theorem
7. Maximum likelihood estimation
8. Hypothesis testing

Each of these topics will take about two weeks, although it is not possible to specify exactly how long each topic will take.

Course Policies

Homework must be turned in at the beginning of the lecture on the due date. Late homework will not be accepted. All work must be entirely your own.

All exams are closed-book, closed-notes; however, you may bring two 8.5×11 (one-sided) sheets of notes to the exams. You should bring a calculator to the tests. Makeup exams must be approved before the time of the exam and will be given only in case of medical or family emergencies, or conflicts with other exams (any of which must be appropriately documented).

You are responsible for everything from lecture. Do not depend on the course web page for announcements regarding due dates for homeworks, changes in schedules, etc.

I am going to use the projector, and distribute hard copies of the slides (electronic versions of the slides will *not* be available). The hard copies will be distributed once. I am not going to bring slides from the previous lecture for the benefit of those who didn't come to class. The notes that are passed out will be a skeleton of the lectures (in other words, they are going to be incomplete) with the missing material developed during the lecture. Therefore, skipping class and getting a copy of the notes is not going to work.

Cell phones should be turned off (or set on silent). Laptops must be shut.

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to me when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

There will be no class on Friday January 19.