STA 7334 **Limit Theory** **Fall, 2018**
Section 193A **Class No. 20235**

Course Information

Time: MWF 12:50 – 1:40 p.m. (per. 6) **Location:** FLO 230 (Griffin-Floyd Hall)

Instructor: Dr. Brett Presnell

Office: FLO 225 **E-mail:** presnell@stat.ufl.edu
Office Hours: See instructor's web page. **Phone:** (352) 273-2989
Web Page: http://www.stat.ufl.edu/~presnell

Recommended Text: A. W. van der Vaart. *Asymptotic Statistics*. Cambridge Univ. Press, 2000.

Course Content and Objectives

This course will cover the fundamental tools and concepts of the large sample theory of statistics. Topics will include an introduction to the theory of weak convergence of probability measures, a review of some relevant results from probability theory, the multivariate delta method, large sample theory for moment estimators and quantiles, M-estimation (including maximum likelihood estimators), asymptotic relative efficiency of tests and estimators, U-statistics, and density estimation. If time permits, additional topics will be covered; possible topics include extreme value theory and the bootstrap.

Prerequisites

STA 7467 or permission of instructor.

Grading

Attendance will account for 5% of the course grade. Each student is allowed up to three unexcused absences; any additional absences will be excused only if they are documented and conform to the attendance policies of the Graduate School as described in the Graduate Catalog. If you know that you will have to miss class for an excused reason, please inform the instructor in advance of your absence.

Homework will be collected regularly throughout the term and will determine 35% of the course grade. Late homework will not be accepted.

There will be two in-class exams (30% apiece). Tentative dates for the exams are October 12 and November 30. Please see the guidelines for homework problems on the next page of this syllabus.

Supplementary References

You may find it useful to consult any of the following books.

Guidelines for Homework and Exams

(with thanks to Ian McKeague)

1. Start each problem on a separate sheet of paper; write your name at the top right-hand corner of the first sheet. If a problem continues over several pages, write *(continued)* at the bottom of the page and write the problem number and *(continued)* at the beginning of the next page.

2. Write neatly and legibly. Do not be overly concerned about saving paper: write only on the front side of each page, do not crowd your writing, and make it large enough so that it can be read without eyestrain.

3. Mathematics is prose. Each statement should be a sentence, generally with a subject, object, and verb. End an equation with a punctuation mark if it is at the end of a sentence. An $=$ sign can operate as a verb. Never start a sentence with a mathematical symbol or other notation.

4. Do not use unnecessary words—use notation to cut down on tedious repetition.

5. Do your exploratory work on scratch paper and do NOT turn it in with your final solution. If you are asked to prove something for all finite n, special cases (e.g., $n = 1$, $n = 2$) are considered exploratory, unless they are the beginning of an induction argument.

6. The Good Samaritan Rule: when you need to use a standard result, mention its *name*, and not a theorem number. If the result has no name, but appears in the textbook or course notes, then you may refer to it by number. Otherwise, you should state the result, at least in outline (and include a proof if it is not a standard result from class or from real analysis). Don't assume the reader knows what you are about to do—it is often helpful to outline the steps of your solution before plunging into details.

7. For homework problems, write out the question before giving the solution. Answer the problems in the order in which they were assigned. Staple the sheets of paper together (and do not write near the upper left-hand corner of the page where the staple will go).

8. If you introduce some notation which was not specified in the problem, you must define or specify it. A common mistake is to use an ϵ without initially saying "Let $\epsilon > 0$."

9. Your work will be more readable if you use displayed equations rather than embedding long equations in the text.

10. Each step of your solution needs to be justified, either by naming a standard result, or filling in the gap by a separate argument. If you are unable to fill the gap (or do any part of the problem), say so explicitly; this is far better than writing down a specious argument.

11. If you are stuck on a homework problem, ask me for a hint. You have nothing to lose by asking for a hint, but you do have something to lose by handing in incomplete work.

12. Do not copy from others. Your solution must reflect your own understanding of the problem, not that of someone else.