Course description
A theoretical introduction to asymptotic statistics. Intended for graduate students majoring in Statistics who need to become familiar with advanced statistical methods. Participants will be assumed to have a solid grounding in advanced probability theory and measure theory.

Prerequisite: STAT 614 or equivalent.

Course objectives
By the end of the course, students should be familiar with well-established concepts from classical asymptotic statistics (see Course topics below). They should have acquired the skills and knowledge required for advanced special topic classes and research in theoretical statistics.

Instructor
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Office hours: T 11-12 and 1:30-2:30 from January 19 to April 26, and by appointment.

Resources
Your main resource for this course will be our regular classes. There is no recommended textbook: we will use examples and problems from various sources. Two books worth looking at are Approximation Theorems of Mathematical Statistics by Robert J. Serfling (Wiley), and Asymptotic Statistics by Aad W. van der Vaart (Cambridge).

Homework and additional materials will be posted on eCampus: ecampus.tamu.edu

Course topics will include:
- Review of some basic concepts from STAT 614
- Asymptotic joint distributions
- Variance stabilizing transformations
- Empirical estimators
- Sample quantiles and Bahadur representation theorem
- M estimators and estimating equations
- Asymptotic properties of maximum likelihood estimators
- Nonparametric maximum likelihood and empirical likelihood
- U-statistics and V-statistics
- Differentiable statistical functions
- Large sample tests
- Bootstrap
- Empirical processes, Donsker's theorem
Exam dates

Midterm exam: in class on Tuesday, March 8
Final exam: Thursday, May 5, 12:30-2:30

Course grade

Your grade will be based on your performance over the semester: homework will make up 20% of the course grade, the midterm exam will count for 30% and the final exam for the remaining 50%.

If you have to miss the midterm exam because of illness or other circumstances beyond your control, please notify me or the Department of Statistics main office before the exam. If the absence is approved, arrangements can be made for you to take the exam at a later date. If you cannot complete a homework assignment because of illness or other circumstances beyond your control, please notify me.

The previous two paragraphs set out the only method that will be used to determine course grades. If you feel that personal circumstances are affecting your academic performance, or are concerned that your work is not going to earn you the grade that you require for some purpose (e.g. getting/keeping an assistantship or a scholarship), please explore your options and take appropriate action in good time.

Other course information

Regular class attendance is assumed. I do not monitor attendance or give unannounced quizzes. However, syllabus details, including homework assignments and test dates, may be changed by in-class announcements. Anything that is missed because a student is not in class is the student's responsibility.

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services: visit disability.tamu.edu for more information.

Academic integrity and fairness

I aim to treat you fairly. I expect you to treat me and your fellow students fairly. I take academic honesty seriously, and expect you to do so as well.

You should be aware of the Honor Council rules and procedures, the Honor Code, and the definitions of “academic misconduct” at aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx.