STA 4322: Introduction to Statistics Theory

Spring 2026

Instructor

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Class information
Classroom: LIT 101
Class Hours: 8:30 am - 9:20 am MWF

Teaching Assistant

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Office: TBA
Sections: All

Course description

The sequence of courses STA 4321/4322 (rep. 5325/5328) provides a formal and systematic introduction to mathematical statistics for students who have passed three semesters of standard undergraduate level calculus. The primary purpose of STA 4322/5328 is preparation for graduate-level study in statistics and closely related subjects. Major topics of STA 4322/5328 include normal-theory sampling distributions; estimation methods; properties of point estimators; confidence intervals; hypothesis testing and related theory; and basic linear regression.

Prerequisites

STA 4321/5325. A well prepared student should have taken an introductory statistics course, such as STA 2023 or STA 3032.

Course Webpage

Course materials (e.g., homework assignments and due dates) will be posted the course's eLearning site (Canvas), where grades will also be posted. Please check this site regularly for updates and announcements. Course documents and important information, including homework exercises, homework solutions, sample exams, and special announcements, will be posted there.

Textbook

Wackerly, Mendenhall, and Scheaffer, Mathematical Statistics with Applications (7th ed), Duxbury Press (Thomson Brooks/Cole Publishing), 2008.

This textbook is **required** for this course, as there will be assigned readings and associated reading quizzes throughout the semester. Exams will be based on material presented in lectures, which will approximately cover Chapters 7–11 of the textbook.

Grades

The grades will be determined according to the following scale:

Grade	Range
A	92-100
A-	89-91
B+	86-88
B	83-85
B-	80-82
C+	77-79
C	67-76
D	50-66
E	0-49

In total, there will be three exams, five quizzes, and four homework assignments. The class will be weighted as follows:

Item	Weight
Homework	30 %
Quizzes (highest 3)	10 %
Exam 1	20 %
Exam 2	20 %
Exam 3	20 %

Attendance and Make-Ups

Attendance is expected and will be essential for performing well in the class. Quizzes will take place on Mondays unless otherwise announced, and will be based on the assigned reading for that week. The dates of quizzes will not be announced beforehand, so in-person attendance is required for these. The two lowest quiz scores are dropped to account for students who may need to be absent on certain quiz days.

See university attendance policies:

https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Late homework will be graded with a 15% deduction per day late. More than 3 days late will receive a 0.

UF Grading Policies

https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Recordings

This class is 100% in-person, there will be no recordings of the lectures.

Weekly Schedule

Here is a **tentative** weekly schedule for the class (subject to change):

Week 1

- Introduction
- Parameters, Statistics
- Random Samples, Sampling Distributions
- Some `R`
- Estimators
- *Reading: Section 7.1*

Week 2

- No Class Monday
- Estimators Continued
- Bias and MSE
- Method of Moments
- *Reading: Sections 8.1, 8.2, 9.6*

Week 3

- Maximum Likelihood
- Sufficiency
- *Reading: Sections 9.4, 9.7*

Week 4

- Sufficiency Continued
- Intuitive estimators (for the mean, variance, difference in two population means)
- Statistics from a normal random sample
  - Chi-Squared and t distributions
- *Reading: Sections 8.3, 8.4, 7.2*

Week 5

- Normal random sample continued
- Error Probabilities
- Exam 1 Friday, Feb 13
- *Reading: NONE*

Week 6

- Quantiles
- Confidence Intervals/Limits
- Pivots
- *Reading: Section 8.5*

Week 7

- Convergence Concepts
- Central limit theorem
- *Reading: Sections 7.3, 8.6 OPTIONAL: 7.4*

Week 8

- Delta Method
- MLE Asymptotics
- *Reading: NONE*

Week 9

- WLLN and Consistency
- Rao-Blackwell and MVUE
- Exam 2 Friday, March 13th
- *Reading: Sections 9.3, 9.5*

Week 10

- SPRING BREAK

Week 11

- Statistical tests
- Type two error probability control
- Inverting tests
- p-values
- *Reading: Sections 10.1, 10.2, 10.3*

Week 12

- UMP Tests and the NP Lemma
- Score test
- *Reading: Section 10.10, 10.11*

Week 13

- Likelihood ratio test
- *Reading: Section 10.12*

Week 14

- Linear Models
- Distribution of regression coefficients
- *Reading: Sections 11.3, 11.4, 11.6*

Week 15

- No Class Friday
- Review
- Exam 3 Wednesday, April 22

If this document is updated, an announcement will be made in class, and the new version will be uploaded to the course website in canvas.