STA 4322/5328 (13269/18827)

Summer 2024

Introduction to Statistics Theory

MTWRF: 09:30-10:45 in FLO 100

Instructor: Demetris Athienitis

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Course Website: e-Learning

Course Material: Teaching will be in-person and in-class. Material will be available in e-Learning.

Course Communication:

- Discussion forum (link to Microsoft Teams available in course website).
- Office hours (posted in e-Learning).
- E-mail for questions regarding course policies. (Ensure that **STA 4322/5328** is in the subject line. Failure to do so may result in a non-response.)

Required Text(s): *Mathematical Statistics with Applications*, 7th Edition (Chapters 7-11)
Author(s): Wackerly, Mendenhall, and Scheaffer **ISBN-13:** 9780495110811

Course Description: Second part of the sequence STA 4321-4322 (5325-5328). This course covers the fundamental theories of sampling distributions, central limit theorem, estimation, properties of point estimators, confidence intervals, hypothesis testing, common large sample tests, normal theory small sample tests, uniformly most powerful and likelihood ratio tests, linear models and least squares, correlation, and introduction to analysis of variance.

Prerequisite(s): STA 4321
Credit Hours: 3

Course Objectives

This 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 course uses mathematical statistics to provide a rigorous understanding of statistical inference, such as point estimation, confidence intervals, and hypothesis testing for models based on standard parametric families.

Course Policies

The instructor reserves the right to update any parts of this syllabus as necessary.
Students will promptly be notified of any changes.

Demeanor

All members of the class are expected to follow rules of common courtesy in all classroom discussions, email messages, threaded discussion and chats. Please refer to expected class netiquette online and during class.

Assignments

- All **deadlines (excluding exams) are at 23:59** of the due/end date. These are ***hard* deadlines** meaning that any open or ongoing assignments will automatically be submitted at the deadline.
- Students are expected to work independently, unless otherwise specified in writing. **Offering** and **accepting** solutions - even from textbook - is an act of **plagiarism**, which is a serious offense and **all involved parties will be penalized according to the UF Student Honor and Conduct Code**. Discussion amongst students is encouraged, but when in doubt, direct your questions to the instructor.
- Students are expected to **show and explain their work**.
- All electronically **submitted work must be as one merged file**. In Canvas, all uploaded files automatically get a grade of 0, until the teaching assistant grades them.
- Feedback will provided within two business days from the assignment deadline.

Homework/Quizzes

Under each module in e-Learning,

- **Homework** that are based on (primarily) textbook exercises. Formatting requirements will be posted on e-Learning.
- **Quizzes** that are *timed* and range from conceptual to applied.

All deadlines are posted on e-learning. **Assignments are automatically submitted at deadline even if in progress.**

Exams

There will be two (2) in-class exams that may comprise of multiple choice questions and/or open-ended questions. Exams will emphasize more on conceptual questions. Allowed material:

- Provided formula sheet. Sheet will be provided ahead of time with practise set.
- Scientific/Graphing Calculator. No cell phones.

Important dates:

(Subject to change)

Exam #1 ..... July 19, 09:30
Exam #2 ..... August 9, 09:30

Grading

Grade distribution:

Exams 1, 2	(25% lowest, 35% best)	
Homework	20%	
Quizzes	20%	(includes Intro quiz, lowest quiz dropped)
Total	100%	
Extra Credit	0-1%	(class and discussion forum participation)

Final grade and can be calculated using:

$$\begin{aligned}\text{Final} =& 0.25(\text{lowest exam}) + 0.35(\text{best exam}) \\ &+ 0.20\left(\frac{\sum \text{HW}}{10(\#\text{ of HW})} \times 100\right) \\ &+ 0.20\left(\frac{\sum \text{quizzes} - \text{lowest}}{10(\#\text{ of quizzes} - \#\text{ of drops})} \times 100\right)\end{aligned}$$

Letter grade assignment:

There will be *no rounding up* of scores.

		A	91 to 100	A-	88 to $<$ 91
B+	84 to $<$ 88	B	80 to $<$ 84	B-	77 to $<$ 80
C+	74 to $<$ 77	C	70 to $<$ 74	C-	67 to $<$ 70
D+	64 to $<$ 67	D	60 to $<$ 64	D-	55 to $<$ 60
E	$<$ 55				

- Final grades are not shown on e-Learning as they do not account for the conditional weighing of exams.
- A minimum grade of C is required for any programs within the Department of Statistics, i.e. majors/minors.

- To view the result of the letter grades to your GPA please visit the UF Grade and Grading Policies.

Make-up

Requirements for class attendance and make-up exams, assignments, and other work in this course as well as policies regarding absences, religious holidays, illness and student athletes are consistent with UF Attendance Policies and Examination Policies.

Addressing Issues

Technical difficulties

Please contact the UF Help desk via e-Learning "Help" tab. Any requests for make-ups due to technical issues must be accompanied with appropriate documentation/proof including screenshots and communication with the help desk. You MUST contact your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Grievances/Commendations

Should you have any grievances or commendations with your experience in this course you can always address them to the instructor (anonymously) or to the Department of Statistics. For issues that are not satisfactorily resolved at the department level or which seem to be broader than one department, students are referred to the Office of the Ombuds.

UF and CLAS Policies

Dropping, Withdrawing and Incomplete

Dropping and Withdraw

For late course drops and course withdrawals check the catalog.

Incomplete

An incomplete grade may be assigned at the discretion of the instructor as an interim grade for a course in which the student has completed a major portion of the course with a passing grade, been unable to complete course requirements before the end of the term because of extenuating circumstances, and obtained agreement from the instructor and arranged for resolution of the incomplete grade in the next term. Instructors are not required to assign incomplete grades. For complete details please visit CLAS incomplete grade policy and contract.

Accommodating Students with Disabilities

Students requesting accommodation for disabilities must first register with the Disability Resource Center (DRC). The DRC will provide documentation to the students who must then provide this documentation to the instructor when requesting information. You must submit this documentation prior to submitting any assignments for which you are requesting accommodation.

U Matter, We Care

U Matter, We Care, through the Dean of Student's Office, offers care related resources and programs focused on health, safety, and holistic well-being.

Academic Misconduct

Students are held accountable to the UF Student Honor and Conduct Code.

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/.

Tentative Course Outline

Week	**Content**	**Textbook**	HW/Quiz
1	Estimators, Sampling Distributions and Central Limit Theorem	8.1-8.4, 7.1-7.3	1.1-1.2
2	Estimation	8.5-8.6, 8.8-8.9	2-3
3-4	Properties of Point Estimators and Methods of Estimation	9.1-9.7	4-5
Exam 1			
5	Hypothesis Testing	10.1-10.6, 10.8, 10.10-10.12	6-7
6	Linear Models and Estimation by Least Squares	11.3-11.4, 11.6, 11.10-11.14	8-9
Exam 2			