



STA 4322/5328

Spring 2019

Introduction to Statistical Theory /  
Fundamentals of Statistical Theory

Meets Tuesdays (1:55 – 2:45) and Thursdays (1:55-3:50)  
in Griffin-Floyd 100

**Instructor:** Joseph Antonelli

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Office hours: Tuesdays 2:45pm - 3:50pm, Wednesdays 9:35am – 11:30am

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Office hours: Mondays 1:55pm – 2:45pm, Wednesdays 4:05pm – 4:55pm, Thursdays 10:40am – 11:30am

**Course Website:** [e-Learning](#)

**Course Notes/Material:** Notes for the week will be posted at the beginning of each week on the course website. These should contain nearly all of the material that we cover in class, however, I will likely present some additional material in class that is not posted on the course website.

**Required Text(s):** Seventh edition of Mathematical Statistics with Applications by Wackerly, Mendenhall, and Scheaffer. (ISBN: 9780495110811)

**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. 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. The primary purpose of STA 4322/5328 is preparation for graduate-level study in statistics and closely related subjects.

**Prerequisite(s):** STA 4321/5325

**Credit Hours:** 3

## Homework

There will be approximately four homework assignments spread out throughout the semester. You are allowed to work together on homework assignments although I strongly encourage you to try all problems on your own before consulting with fellow classmates. The homeworks are intended to prepare you for the exams, and they will best prepare you if you try them on your own first.

## Exams

There will be three exams given in class. You will be allowed a double sided, one page formula sheet on the exam. This sheet should be handwritten, and must be on a standard 8.5" by 11" sheet of paper. We will have practice exams posted on the website that we will go over in class together the class preceding the exam.

**Important dates** (These are tentative and subject to change. Any changes will be announced in class and on the course website)

Exam #1 ..... February 7th at 1:55 in FLO 100

Exam #2 ..... March 21st at 1:55 in FLO 100

Exam #3 ..... May 1<sup>st</sup> at 10:00am location TBD

## Grading

### Grade distribution

Exams 1, 2 and 3	25% each
Homework	25%

### Letter grade assignment

These are tentative and subject to change, however, they will only change in the direction that is good for you. There is a good chance that the course will be curved and the requirements for getting any particular grade level will be lower than what you see here. If your grade falls above a given threshold below, then you are guaranteed to get at least that grade for the course.

	A	90 to 100	A-	87 to < 90
B+	B	80 to < 84	B-	77 to < 80
C+	C	70 to < 74	C-	67 to < 70
D+	D	60 to < 64	D-	55 to < 60
E		< 55		

## 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 \(https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/\)](https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/)

Additional make-up policy requirements:

- Every effort should be made to complete the assignment/exam during the open period. Only extreme situations will warrant a makeup. Contact the instructor prior to the exam - as soon as you realize you will be unable to take the assignment/exam at the scheduled time. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite for scheduling a makeup under such extenuating circumstances.
- Make-ups need to be scheduled within a week from the assignment deadline. Student is responsible for scheduling.
- Being on vacation or booking a trip prior to the completion of the semester is not a valid reason to request a makeup. Please reference the most recent [Academic Calendar \(https://catalog.ufl.edu/UGRD/dates-deadlines/pdfs/\)](https://catalog.ufl.edu/UGRD/dates-deadlines/pdfs/)

## UF and CLAS Policies

### Dropping, Withdrawing and Incomplete

#### Dropping and Withdraw

For late course drops and course withdrawals please visit <https://catalog.ufl.edu/UGRD/academic-regulations/dropping-courses-withdrawals/>

#### 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 policies and forms](https://www.advising.ufl.edu/academicinfo/clas-policiesprocedures/incomplete-grades/). (<https://www.advising.ufl.edu/academicinfo/clas-policiesprocedures/incomplete-grades/>)

#### Accommodating Students with Disabilities

Students requesting accommodation for disabilities must first register with the Dean of Students Office. The Dean of Students 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.

### Academic Misconduct

Students are held accountable to the [UF Honor Code](https://sccr.dso.ufl.edu/process/student-conduct-code/). (<https://sccr.dso.ufl.edu/process/student-conduct-code/>)

### Evaluations

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

## Tentative Course Outline

Week	Content
1	Estimators, unbiased estimators, mean squared error
2	Unbiased estimators, chi-squared distribution, t-distribution
3	Evaluating estimators, confidence intervals
4	Central limit theorem, two population problems
5	EXAM 1
6	Efficiency, Consistency, sufficiency, likelihoods
7	MVUE estimators, Rao-Blackwell, method of moments, maximum likelihood
8	Maximum likelihood, statistical tests
9	Spring break
10	EXAM 2
11	Hypothesis tests, Type II error
12	P-values, Neyman-Pearson lemma, Uniformly most powerful tests
13	Likelihood ratio tests, linear models, least squares estimators
14	Least squares, multivariate linear models
15	Multivariate linear models
16	EXAM 3