

STA 5326 – Distribution Theory and Inference (Fall 2023)

Time and Location: Monday and Wednesday 3:05pm–4:20pm, OSB 110

Instructor:

Fred W. Huffer
Office: Room 209C OSB (Rogers Building)
E-mail: huffer@stat.fsu.edu

Instructor's Office Hours:

Monday and Wednesday 1:50pm–2:50pm in my office (or by appointment).
Zoom meetings also available by appointment.

You can come by my office with questions anytime I am there, and I will answer them if I have time. But if you want to be sure in advance that I will be there and have time to answer your questions, you should come during office hours or make an appointment.

Teaching Assistant:

Yuhui Wang
E-mail: ywang38@fsu.edu
Office hour: Tuesday, 11:30am-12:30pm, Room 322 OSB

Course Announcements will be sent to your **fsu.edu** e-mail address. You should check this on a regular basis.

Required Textbook: *Statistical Inference* (Second edition) by Casella and Berger

Prerequisites: Three semesters of calculus and a semester long undergraduate introduction to probability.

Topics to be Covered:

[Except for the material on Markov chains and Poisson processes, this material is mostly from Chapters 1–4 of the text.]

- Introductory examples. Axioms and basic properties of probability.
- Combinatorial probability.
- Conditional probability and independence.
- Applications of the Law of Total Probability and Bayes Theorem.
- Random variables.
- Cumulative distribution, density, and mass functions.
- Distributions of functions of a random variable.
- Expected values.
- Computations using indicator random variables.
- Moments and moment generating functions.
- Common families of distributions.

- Joint and conditional distributions.
- Bivariate transformations.
- Covariance and correlation.
- Hierarchical models. Variance and conditional variance.
- Bivariate normal distribution
- (time permitting) Discrete Markov Chains: The Chapman-Kolmogorov equations, classification of states, limiting probabilities
- (time permitting) The Poisson Process: Interarrival and waiting times, non-homogeneous and compound Poisson processes

Grading: Your grade will be based on three exams. The exams are equally weighted. The exams are **not** cumulative (except in the sense that the material is naturally cumulative). The default grade cutoffs are 93.0% for A, 90.0% for A-, 87.0% for B+, 83.0% for B, 80.0% for B-, 77.0% for C+, 73.0% for C, 70.0% for C-, 60.0% for D. The actual grade cutoffs could be **lower** than this, if warranted by the distribution of scores.

Exam Schedule:

Test #1: Monday, October 2 at 3:05pm in OSB 110

Test #2: Monday, November 6 at 3:05pm in OSB 110

Test #3: Wednesday, December 6 at 3:05pm in OSB 110

Some Old Exams are posted at:

<https://ani.stat.fsu.edu/~huffer/mordor/5326>

This address must be typed completely; you cannot get there by clicking on a series of links. The posted files are pdf files and require Acrobat Reader to read and print them.

Lecture Notes and Homework Solutions will also be posted in mordor.

University Attendance Policy

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid written excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to ". . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/Academics/Academic-Honor-Policy>)

Academic Success

Your academic success is a top priority for Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups, such as veterans and students with disabilities. The following information is not exhaustive, so please check with your advisor or the Department of Student Support and Transitions to learn more.

Americans With Disabilities Act

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Office of Accessibility Services; and (2) request a letter from the Office of Accessibility Services to be sent to the instructor indicating the need for accommodation and what type; and (3) meet (in person, via phone, email, skype, zoom, etc...) with each instructor to whom a letter of accommodation was sent to review approved accommodations. This syllabus and other class materials are available in alternative format upon request. For the latest version of this statement and more information about services available to FSU students with disabilities, contact the:

Office of Accessibility Services
874 Traditions Way
108 Student Services Building
Florida State University Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
oas@fsu.edu
<https://dsst.fsu.edu/oas>

Confidential campus resources

Various centers and programs are available to assist students with navigating stressors that might impact academic success. These include the following:

Victim Advocate Program University Center A, Room 4100, (850) 644-7161, Available 24/7/365, Office Hours: M-F 8-5 https://dsst.fsu.edu/vap	Counseling & Psychological Services Askew Student Life Center, 2ndFloor, 942 Learning Way (850) 644-8255 https://counseling.fsu.edu/	University Health Services Health and Wellness Center (850) 644-6230 https://uhs.fsu.edu/
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