

## STA 5326 – Distribution Theory and Inference (Fall 2015)

**Time and Location:** Tuesday and Thursday 12:30pm–1:45pm, HCB 0309

**Instructor:** Fred W. Huffer

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Office Hours: Tuesday and Thursday 2:00pm–3:00pm (or by appointment)

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

**Prerequisites:** Three semesters of calculus and a semester long introduction to probability (or some exposure to probability plus a sufficiently strong math background).

**Syllabus:** (tentative)

[Except for the material on Poisson processes and Markov chains, 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
- The Poisson Process: Interarrival and waiting times, nonhomogeneous and compound Poisson processes
- Discrete Markov Chains: The Chapman-Kolmogorov equations, classification of states, limiting probabilities

**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:** (tentative)

**Exam 1:** Thursday, September 24

**Exam 2:** Thursday, October 29

**Exam 3:** To be decided; either December 3 or December 9

**Some Old Exams** are posted at: <http://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 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>.)

**Americans With Disabilities Act:** Students with disabilities needing academic accommodation should:

- (1) register with and provide documentation to the Student Disability Resource Center; and
- (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center  
874 Traditions Way  
108 Student Services Building  
Florida State University  
Tallahassee, FL 32306-4167  
(850) 644-9566 (voice)  
(850) 644-8504 (TDD)  
[sdrc@admin.fsu.edu](mailto:sdrc@admin.fsu.edu)  
<http://www.disabilitycenter.fsu.edu/>