

Syllabus
MATH 4000/6000: Theory of Probability
Spring 2019, Section 001

Instructor: Brian H. Fralix

Instructor's Office: Martin O-310

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Office Hours: 2:00PM - 3:00PM Mondays and Wednesdays, Martin O-310.

Course Location and Meeting Time: Martin M-102, 12:30 - 1:45 TTH

Course Website: <http://bfralix.people.clemson.edu/math4000.htm>

Textbook: Introduction to Probability, First Edition, by J.K. Blitzstein and J. Hwang

Prerequisites: MATH 2060 (Calculus of Several Variables), or consent of instructor

Attendance Policy: I will keep a record of your attendance, but your attendance record will not affect your final grade in the course.

Late Instructor: If the instructor is late, students should wait 15 minutes before leaving.

Course Description: (*From the Undergraduate Announcements*) "Principal topics include combinatorial theory, probability axioms, random variables, expected values, special discrete and continuous distributions, jointly distributed random variables, correlation, conditional expectation, law of large numbers, central limit theorem."

I plan to cover the majority of Chapters 1-5, Chapter 7, and parts of Chapters 6 and 8.

Goals and Objectives: Upon completion of the course, students will be able to do the following:

- Use simple counting arguments to calculate probabilities of events within a sample space having outcomes that are equally likely to occur.
- Use the Axioms of Probability to calculate probabilities of events from probabilities of simple events.
- Understand how to interpret the concepts of conditional probability and independence, and how to use them in calculations.
- Understand the role that random variables play in probability theory, as well as how to make use of objects associated with random variables (like cumulative distribution functions, probability mass functions, probability density functions) in calculations.
- Know when it is useful to use well-known random variables (e.g. Bernoulli, Binomial, Poisson, Hypergeometric, Uniform, Exponential, Gamma, Normal) to model random phenomena.
- Use joint distributions to model possible interactions between multiple random variables.
- Use the ideas of expected value, variance, covariance, and other moments to gain a rough understanding of the behavior of various types of random variables.

Grading Policy: There will be two in-class tests (each worth 20% of your grade), along with the final exam (worth 40%, and is cumulative), which will also be taken in-class. Homeworks will also be assigned periodically throughout the semester, and these will account for the remaining 20% of your grade.

Your end-of-semester grades will be assigned according to the following scale: $[90, 100] \rightarrow A$, $[80, 90) \rightarrow B$, $[70, 80) \rightarrow C$, $[60, 70) \rightarrow D$, and $[0, 60) \rightarrow F$. The instructor has the right to curve grades upward, i.e. a score of 90 represents *at least* an A, a score of 80 represents *at least* a B, etc..

Homework: Homework assignments will be announced in class, and posted on the course web site. I will try to assign homework (almost) weekly, so you should have about eleven or twelve total homework assignments for the semester.

Test Dates: Test 1 will be held on Tuesday, February 26, and Test 2 will be held on Thursday, April 4. The Final Exam will take place on Monday, April 29 from 3:00PM - 5:30PM in Martin M-102.

MATH 6000 Students: Students enrolled in MATH 6000 will have extra questions on each homework assignment, as well as tests/exams that are different from the tests/exams taken by the MATH 4000 students.

Official Statement of Academic Integrity: (*From the Undergraduate Announcements*) “As members of the Clemson University community, we have inherited Thomas Green Clemson’s vision of this institution as a ‘high seminary of learning.’ Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.”

Disability Access Statement: “Students with disabilities requesting accommodations should make an appointment with Dr. Arlene Stewart (656-6848), Director of Disability Services, to discuss specific needs within the first month of classes. Students should present a Faculty Accommodation Letter from Student Disability Services when they meet with instructors. Accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

Clemson University Title IX Statement: “Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran’s status, genetic information or protected activity (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is located at

<http://www.clemson.edu/campus-life/campus-services/access/title-ix/>.

Mr. Jerry Knighton is the Clemson University Title IX coordinator. He also is the Director of Access and Equity. His office is located at 111 Holtzendorff Hall, 864-656-3181 (voice) or 864-565-0899 (TDD).”