

Instructor: Dr. Yongjia Song, Office: Freeman Hall 264, Email: yongjis@clemson.edu

- Office Hours: Tuesdays/Thursdays 9:30-10:30 AM and by appointment.

Textbook:

- “Probability & Statistics for Engineers & Scientists,” by Walpole, Myers, Myers, and Ye, Prentice Hall, 2012 (9th edition). ISBN: 978-0-321-62911-1

Recommended Book:

- “A First Course in Stochastic Models,” by Henk C. Tijms, Wiley, 2003

Prerequisite: Graduate standing and consent of instructor.

Catalog Description: Application of probabilistic methods to engineering problem solving and decision making. Cases are presented illustrating use of Markov chains, queuing processes and other stochastic models in practice.

Course Objectives: This course will provide students the opportunity to develop a background in critical concepts in probability/statistics and related topics commonly used by engineers. Upon successful completion, students should be able to understand the fundamental concepts of probability theory and statistics, the relationships among random variables, their distributions, estimation, evaluation of the uncertainties in the data, and basic probability models applied in engineering systems such as discrete-time Markov chains. Relationship to program outcomes: (i) Students will attain the ability to identify, formulate, and solve engineering problems; (ii) Students will attain the requisite background to enter a doctoral program.

Main software: Julia and its packages

- Download Julia (<https://julialang.org>, current version: v1.1) and install it on your own computer. You should also install a Julia notebook on your computer for interactive coding. More information can be found at the course website on Canvas.
- More information about Julia:
 - (a) There are many online tutorial videos and courses on the programming language Julia.
 - (b) Pros: Simple interface with state-of-the-art FREE optimization/data science/scientific computing software and solvers; maintained by a group of excellent researchers from MIT.
 - (c) Cons: Julia is a new language, it is very dynamic and needs updates frequently.

Tentative Course Plan:

1. Introduction: 1 week.

2. Probability: 2 weeks.
3. Random variables and probability distributions: 2 weeks.
4. Mathematical expectation: 2 weeks.
5. Discrete probability distributions: 2 weeks.
6. Continuous probability distributions: 2 weeks.
7. Discrete-time Markov chains: 3 weeks.
8. Review and evaluations: 1 week.

Grading Policy: The grade is distributed into the following sections:

- Homework: 25%
- 1st mid-term exam: 25% (Oct. 3rd, in class)
- 2nd mid-term exam: 25% (Nov. 12th, in class)
- Final exam: 25% (scheduled at 7pm on Dec. 13th)

No makeup exams will be given unless a university-approved excuse is provided. When possible, excuses should be provided at least ten days prior to the exam.

Grading scale:

- A: ≥ 90
- A-: 86.7-89.9
- B+: 83.4-86.6
- B: 80-83.3
- B-: 76.7-79.9
- C+: 73.4-76.6
- C: 70-73.3
- F: < 70

Other policies:

1. Waiting: Students must wait 10 minutes before leaving the classroom if I am late.
2. Attendance: I will not take attendance. However, if you miss a class you are responsible to make sure that you are aware of what was discussed in class.
3. Disability: Students with disabilities needing accommodations should contact the Office of Student Disability Services in Suite 239, Academic Success Center building 864-656-6848, to discuss specific needs within the first month of classes.

4. 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. The policy is located at <http://www.clemson.edu/campus-life/campus-services/access/non-discrimination-policy.html>. Alesia Smith serves as Clemson's Title IX Coordinator and may be reached at alesias@clemson.edu or (864) 656-3181.

5. Integrity: "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. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately to charges of violations of academic integrity." (<http://gradspace.editme.com/AcademicGrievancePolicyandProcedures#integritypolicy>)