COLLEGE OF ENGINEERING
Systems & Industrial Engineering

SIE 520: Stochastic Modeling I
Spring 2022

Instructor Contact Information

Dr. Afrooz Jalilzadeh (afrooz@email.arizona.edu)
Office Hours (via Zoom or in-person): Wednesday, Friday 1:00pm-2:00pm (or by appointment)
Office: ENGR 318B Zoom Link for office hour: TBD

Time and Location

Mon, Wed 3:05PM-4:20PM
Location: Engineering, Room 301

Textbooks

- Ross, S. Stochastic Processes, (2nd edition), Wiley & Sons, 1996 (Required)
- Resnick, S. Adventures in Stochastic Processes, Birkhäuser, 1992 (Reference)

Course Prerequisites

- SIE 321 Probabilistic Models in Operations Research; a working knowledge of probability.

Course objectives

- To develop a fundamental understanding of stochastic process models
- To improve the ability to analyze stochastic systems
- To apply probabilistic models in engineering, finance, public policy, etc.

Course topics

- Probability theory (convergence properties, limit theorems, probability inequalities)
- Markov chains (modeling, transition probabilities, stationary distributions)
- Renewal theory (elementary/key renewal theorem, renewal reward processes)
- Poisson processes (memoryless property, arrival times, filtered process, non-homogenous Poisson processes)

Course Format and Course Website

- This course will be delivered in-person.
- You need to check https://d2l.arizona.edu at least once per day for lecture notes, homework assignments, project instructions, supplemental readings, grades, etc.

Class Recordings

- The class will be recorded using Panopto and it will be uploaded on D2L website. If you have any questions or concerns about the recording, please contact the instructor.
- For lecture recordings, which are used at the discretion of the instructor, students must access content in D2L only. Students may not modify content or re-use content for any purpose other than personal educational reasons.

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Grading Scale and Policies

Homework (30%): There will be about five homework assignments in total. Discussion is allowed and individual submission is required. No Credit for late submission.

Midterm exam (35%): TBD, 3:30 PM – 4:20 PM in our regular classroom.

Final exam (35%)**:** Final exam is on Tuesday, May 10, 3:30 PM - 5:30 PM in our regular classroom and its format is similar to the midterm exam.

Exam Policy: Exams are closed-book and closed-notes, and students are allowed to use one letter-sized "cheat sheet". Only calculators are allowed on exams, no laptops, smartphones, or tablets.

Regrading: You may request regrading in a written form outlining the potential error and submit it to the instructor via email within one week of it being returned. This timetable will be strictly adhered to.

Final grade: A: 90-100; B: 80-89.99; C: 70-79.99; D: 60-69.99; E: ≤59.99.

Covid-19 Requirements

- Requirements related to COVID-19 may change during the semester. Please check COVID-19 website (https://covid19.arizona.edu) regularly to access the most up-to-date information.

Classroom Attendance

- Students are expected to attend class. If you miss class, you are responsible for obtaining the class notes, assignments, and announcements.

Accessibility and Accommodations

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, https://drc.arizona.edu) to establish reasonable accommodations.

Academic honesty

All students are expected to commit themselves to be honest in all academic work and understand that failure to comply with this commitment will result in disciplinary action. This is a reminder to uphold your obligation as a UA student and to be honest in all work submitted and exams taken in this course and all others.

This syllabus is tentative, and the instructor reserves the right to make modifications if appropriate.