

STAT 6300

Probability and Stochastic Processes I

MWF 12:30pm–1:20pm, 51 SH

Fall 2025

Instructor

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DEO

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Prerequisites

STAT 4100/5100 or equivalent course on probability theory.

Textbooks

- **Introduction to Stochastic Processes** by Paul G. Hoel, Sidney C. Port, and Charles J. Stone (ISBN: 0881332674)
- **Markov Chains** by J.R. Norris (*Optional*)
- **A Second Course in Probability (2nd edition)**
by Sheldon M. Ross and Erol Peköz (*Optional*)

Learning Objectives

Mostly chapters 1–4 of required class textbook. We will start with a review of conditional probability and expectations. We will then cover:

- Discrete time Markov chains on finite/countable state spaces

- Classification of states and stationary distributions
- Random walks, branching processes, and birth and death chains
- Stationary distributions and accompanying theory
- Poisson processes and continuous analogues of discrete-time processes
- Brownian motion and Gaussian processes

Course Website

<https://uiowa.instructure.com/courses/254076>

Lecture notes, homework assignments and solutions, grades, etc...

Office Hours

Office hours are a great time and place to discuss any questions that you have about the homework, exams, or other questions about the course. I encourage everyone to stop by at some point in the semester! Office hours will be held at the following times in my office 205 SH (unless there is an official university holiday):

Monday: 3:30pm–4:30pm

Wednesday: 10am–11am

Thursday: 1:30pm–2:30pm

I am available to meet in-person or on Zoom (by appointment) if you are not able to drop in at these times.

Grading

Homework	25%	Approximately 6–8 homeworks will be assigned.
Midterms	50%	Two in-class midterm exams of 25% weight each
Final	25%	

Exams will be curved as necessary. Final grades will be awarded based on the following ranges:

A		B		C		D	
A+	>97%	B+	>87%	C+	>77%	D+	>67%
A	>93.5%	B	>83.5%	C	>73.5%	D	>63.5%
A-	>90.5%	B-	>80.5%	C-	>70.5%	D-	>60.5%

Any final grade achieving less than 60.5% (inclusive) will be awarded an F.

Homework

Homework will be (mostly) be assigned on Fridays and due the following Friday in class. Homework will be accepted late if turned in the next class period (e.g. on Monday if due on Friday) with a 25% penalty. After that, it will only be possible to achieve a maximum of 50% on the homework.

Exams

There will be two in-class midterms, tentatively scheduled on the following dates:

- Friday, October 3rd
- Friday, November 7th

A single two-sided, 8.5" x 11" cheat sheet (handwritten) will be allowed for all exams. The final exam will mostly cover the material covered in the last few weeks of class. If you have an appropriate, documented reason why you must miss a midterm, please reach out and provide me with such documentation and reason for your absence so that you make take it at a different time. Students who miss a midterm without an appropriate, documented reason will receive a 0 on said midterm.

Attendances, Class Participation, and Absences

Attendance is not necessary, and I plan on uploading lecture notes online.

However, I should say that you will be much more well-equipped to succeed if you attend class! Students are encouraged to ask questions and come to office hours, as well as discuss homework problems with other students. Active participation in lecture is also encouraged. If there is something you don't understand, let me know—there's bound to be someone else who feels the same way.

University regulations require that students be allowed to make up examinations that have been missed due to *illness, religious holy days, military service obligations (including service-related medical appointments), or other unavoidable circumstances or University-sponsored activities*. Students with UI-authorized activities must discuss their absences with the instructor as soon as possible. Religious obligations must be communicated within the first three weeks of classes. Students are requested to use the **absence form** in ICON under Student Tools.

Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by the [college's standards of academic honesty](#). Undergraduate academic misconduct must be reported by instructors to CLAS according to [these procedures](#). Graduate academic misconduct must be reported to the Graduate College according to Section F of the [Graduate College Manual](#).

Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and/or the course supervisor (if applicable), and finally with the DEO (Chair) of the department, school or program offering the course. Sometimes students will be referred to the department or program's Director of Undergraduate Studies (DUS) or Director of Graduate Studies (DGS).

Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the [CLAS Graduate Affairs Manager](#) when additional support is needed.

Drop Deadline for this Course

You may drop an individual course before the drop deadline; after this deadline you will need collegiate approval. You can look up the drop deadline for this course [here](#). When you drop a course, a "W" will appear on your transcript. The mark of "W" is a neutral mark that does not affect your GPA. To discuss how dropping (or staying in) a course might affect your academic goals, please contact your Academic

Advisor. Directions for adding or dropping a course and other registration changes can be found on the [Registrar's website](#). Undergraduate students can find policies on dropping CLAS courses [here](#). Graduate students should adhere to the [academic deadlines](#) and policies set by the Graduate College.

Date and Time of the Final Exam

The [final examination date and time](#) will be announced by the Registrar generally by the fifth week of classes, and it will be announced on the course ICON site once it is known. **Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam.** According to the Registrar's final exam policy, students **have a maximum of two weeks after the announced final exam schedule** to request a change if an exam conflict exists or if a student has more than two exams scheduled for the same day (see the [policy](#) here).

Communication: UI Email

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community. For the privacy and the protection of student records, UI faculty and staff can only correspond with UI email addresses.

Artificial Intelligence (AI) Policy

Use of AI for the completion of assignments is *discouraged* but not strictly prohibited. Where AI-content generators such as ChatGPT are used, I expect there to be attribution made to said content. For example, even a brief sentence that some code was generated by ChatGPT and modified by the student can suffice. Without proper attribution, this constitutes academic dishonesty. If you are unsure about whether the use of an AI tool may constitute academic dishonesty, you are welcome to contact me, though my advice is to simply not use it.

Free Speech and Expression

The University of Iowa supports and upholds the First Amendment protection of freedom of speech and the principles of academic and artistic freedom. We are

committed to open inquiry, vigorous debate, and creative expression inside and outside of the classroom. Visit the [Free Speech at Iowa website](#) for more information on the university's policies on free speech and academic freedom.

Accommodations for Students with Disabilities

The University is committed to providing an educational experience that is accessible to all students. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through [Student Disability Services](#) (SDS). SDS is responsible for making [Letters of Accommodation \(LOA\)](#) available to the student. **The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated.** The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide. Additional information can be found on the [SDS website](#).

Absences for Religious Holy Days

The university is prepared to make reasonable accommodations for students whose religious holy days coincide with their classroom assignments, test schedules, and classroom attendance expectations. Students must notify their instructors in writing of any such Religious Holy Day conflicts or absences within the first few days of the semester or session, and no later than the third week of the semester. If the conflict or absence will occur within the first three weeks of the semester, the student should notify the instructor as soon as possible. See [Policy Manual 8.2 Absences for Religious Holy Days](#) for additional information.

Non-discrimination statement

The University of Iowa prohibits discrimination in employment, educational programs, and activities on the basis of race, creed, color, religion, national origin, age, sex, pregnancy (including childbirth and related conditions), disability, genetic information, status as a U.S. veteran, service in the U.S. military, sexual orientation, gender identity, or associational preferences. The university also affirms its commitment to providing equal opportunities and equal access to university

facilities. For additional information on nondiscrimination policies, contact the Senior Director, Office of Civil Rights Compliance, the University of Iowa, 202 Jessup Hall, Iowa City, IA 52242-1316, 319-335-0705, ui-ocrc@uiowa.edu. Although not required, students have the option to share their pronouns and chosen/preferred names in class and through [MyUI](#). Instructors and advisors can find information about a student's chosen/preferred name in MyUI.

Class Recordings

The unauthorized video or audio recording of academic activities (e.g., lectures, course discussions, office hours, etc.) by a student is prohibited. Students with a reasonable accommodation for recording approved by Student Disability Services should notify each instructor and provide the Letter of Accommodation prior to using the accommodation. A student may record classroom activities with prior written permission from the instructor and notice to other students in the class that audio or video recording may occur. Any and all classroom recording must be for personal academic use only. The distribution, sharing, sale, or posting of recordings on the internet (including social media), in whole or in part, is prohibited and doing so may be a violation of the Code of Student Life and/or state or federal privacy, copyright, or other laws.

Mental Health Resources and Student Support

Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found at counseling.uiowa.edu. Find out more about UI mental health services at: mentalhealth.uiowa.edu.

It can be difficult to maintain focus and be present if you are experiencing challenges with meeting basic needs or navigating personal crisis situations. The Office of the Dean of Students can help. Contact us for one-on-one support,

identifying options, and to locate and access basic needs resources (such as food, rent, childcare, etc.).

[Student Care and Assistance](#)

132 IMU

dos-assistance@uiowa.edu

319-335-1162

Basic Needs info:

- [Food Pantry at Iowa](#)
- [Clothing Closet](#)
- [Basic Needs and Support Resources](#)

Classroom Expectations

Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the [Code of Student Life](#). While students have the right to express themselves and participate freely in class, it is expected that students will behave with the same level of courtesy and respect in the virtual class setting (whether asynchronous or synchronous) as they would in an in-person classroom. Failure to follow behavior expectations as outlined in the [Code of Student Life](#) may be addressed by the instructor and may also result in discipline under the [Code of Student Life](#) policies governing E.5 Disruptive Behavior or E.6 Failure to Comply with University Directive.

Conflict Resolution

The Office of the Ombudsperson is a confidential, impartial, informal, and independent resource for any member of the university community with a problem or concern. The Office of the Ombudsperson offers a safe place to discuss conflicts or concerns. Students are encouraged to reach out for assistance. The office will brainstorm with students to help identify options, answer any questions, and provide referrals to other offices as appropriate. More information about the Office of the Ombudsperson, including how to schedule an appointment, can be found at ombudsperson.org.uiowa.edu.

Sexual Harassment/Sexual Misconduct and Supportive Measures

The University of Iowa prohibits all forms of sexual harassment, sexual misconduct, and related retaliation. The [Policy on Sexual Harassment and Sexual Misconduct](#) governs actions by students, faculty, staff and visitors. Incidents of sexual harassment or sexual misconduct can be reported to the [Office of Civil Rights Compliance](#) or to the [Department of Campus Safety](#). Students impacted by sexual harassment or sexual misconduct may be eligible for academic supportive measures and can learn more by [contacting the Office of Civil Rights Compliance](#). Information about confidential resources and videos explaining these resources can be found on the [Office of Civil Rights Compliance website](#).