MATH 4221 Syllabus

Stochastic Processes I, Section AU,AG,BU,BG, 3 credit hours

Fall 2026

Instructor Information

Instructor: Dr. Jérémy Zurcher

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General Course Information

Description

We study the notion of discrete stochastic processes through examples: Markov chain, random walk, and Poisson processes. The law of large numbers and the central limit theorem will be used and supposed to be known.

Course Learning Outcomes

- Study Markov chains with finite state space;
- Study the random walks, and the notion of recurrence
- Learning basics about Poisson processes

Prerequisites

MATH 3235 is really appreciable. MATH 3215 or MATH 3225 or MATH 3670 or MATH 3770 or ISYE 3770 or CEE 3770

Required Course Materials

The class will be mainly based on two books : *Introduction to Stochastic Processes*, Lawler, 2nd edition and *Introduction to Probability Models*, Ross, 10th edition.

Grading Policy

There will be homework, two midterm and one final. Here's how the final grade will be given

$$\text{Final Grade} = 20\%\ \text{HW} + 80\% \max\left\{\frac{\text{Mid1} + \text{Mid2} + \text{Final}}{3}, \text{Final}\right\}.$$

The maximum is **not available** if:

- You have been caught cheating;
- You have been missing on a Midterm without warning the instructor, and without any justification.

Assignments

- Homework every two weeks, except on Midterm weeks;
- Midterms, graded on 100, during 1 hour
- Final, 2 hours.

Description of Graded Components

Every exercise proposed on Midterms and on the Final will exclusively come from HW. If you work well on HW, you have all your chances for Midterms and Final. If you cheat on HW, you won't learn anything, and you won't perform well.

The exam dates will be given the first day of class.

Course Policies

Attendance and Participation

There is no attendance policy. If you prefer working remotely, it is at your convenience. Nevertheless, the instructor do not recommend it.

The only moment where your presence is mandatory is during Midterms and Final.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.