STAT 433 Spring 2022

Introduction to Stochastic Processes

Tuesday, Thursday 11:00 a.m. – 12:20 p.m. 1002 Lincoln Hall

Instructor: Alexey Stepanov E-mail: stepanov@illinois.edu

Office hours: Monday 4:00 – 5:00 p.m., Wednesday 8:00 – 9:00 p.m.,
Thursday 4:00 – 5:00 p.m., Friday 10:00 – 11:00 a.m. (on Zoom)
or by appointment.

Text: *Introduction to Stochastic Processes*
(not required) by Paul G. Hoel, Sidney C. Port, Charles J. Stone.

A stochastic process is a random process that represents the evolution of some system over time. The course is aimed at advanced undergraduate and beginning graduate students. Topics include Markov chains, birth-and-death chains, branching chains, stationary distributions, random walks, Markov pure jump processes, birth-and-death processes, Poisson process, queues, second order processes, Brownian motion (Wiener process), and Ito's lemma.

Examinations: There will be **two** Midterm Exams worth 80 points each given during class time. The exam dates are:

Exam 1: Thursday, February 24, Exam 2: Thursday, April 7.

There will be a comprehensive Final Exam worth 140 points on

Thursday, May 12, 8:00 – 11:00 a.m.

If you are unable to take an exam, you must contact the instructor in advance. All excuses must be verifiable. The make-up exams will be given only under exceptional circumstances.

Homework: There will be **twelve** homework assignments worth 10 points each that will be given during the semester as we cover the corresponding material. The lowest **two** homework score will be dropped. Homework must be submitted by 5:00 p.m. on the day it is due on Gradescope: https://www.gradescope.com/. **Late homework will NOT be accepted by the instructor or the TA regardless of the reason.**

Please put you final answers at the end of your work and mark them clearly. Show all work leading to your answers. No credit will be given without supporting work.

Homework assignments are meant to be learning experiences. You may discuss the exercises with other students in the class, but you must write-up the solutions on your own.

Course Grade: The final course grade will be based on the total number of points earned by a student during the term in

Midterm Exams	–	$2 \times 80 = 160$ points	40% (20% each)
Homework	–	$10 \times 10 = 100$ points	25%
Final Exam	–	140 points	35%
Total	**–**	**400 points**	

The grading scale will be as follows:

A+	TBD – 100% TBD – 400	A	93% – TBD 372 – TBD	A–	90% – 92.9% 360 – 371.5
B+	87% – 89.9% 348 – 359.5	B	83% – 86.9% 332 – 347.5	B–	80% – 82.9% 320 – 331.5
C+	77% – 79.9% 308 – 319.5	C	73% – 76.9% 292 – 307.5	C–	70% – 72.9% 280 – 291.5
D+	67% – 69.9% 268 – 279.5	D	63% – 66.9% 252 – 267.5	D–	60% – 62.9% 240 – 251.5

Grades are not curved or adjusted. This is not to dishearten students, but to let them know that their grade is based on individual effort and not on comparative effort.

Academic Integrity: The official University of Illinois policy related to academic integrity can be found in Article 1, Part 4 of the Student Code. Section 1-402 in particular outlines behavior which is considered an infraction of academic integrity: https://studentcode.illinois.edu/article1/part4/1-402/.

Safety: The university values your safety. Please read this document: https://police.illinois.edu/wp-content/uploads/2017/08/syllabus-attachment.pdf or watch this video: http://police.illinois.edu/emergency-preparedness/run-hide-fight/.

The instructor reserves the right to make any changes he considers academically advisable. Such changes, if any, will be announced in class. Please note that it is your responsibility to attend the class and keep track of the proceedings.