

**STAT 433**

**Fall 2019**

## **Stochastic Processes**

Tuesday, Thursday

2:00 – 3:20 p.m.

106B1 Engineering Hall

**Instructor:** Alexey Stepanov

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**Office hours:** Monday 11:00 a.m. – 12:00 noon, Wednesday 10:00 – 11:00 a.m.,  
Thursday 4:00 – 5:00 p.m. (104 Illini Hall) 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 70 points each given during class time. The exam dates are:

Exam 1: Thursday, October 3,

Exam 2: Thursday, November 14.

There will be a comprehensive Final Exam worth 140 points on  
Wednesday, December 18, 8:00 – 11:00 a.m.

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

**Homework:** There will be **seven** homework assignments worth 20 points each that will be given during the semester as we cover the corresponding material. The lowest homework score will be dropped. Homework must be turned in class or by 3:00 p.m. in Illini Hall on the date it is due. **Late homework and homework by e-mail will not be accepted.**

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. All work leading to your homework solutions should be given.

**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	–	$2 \times 70 = 140$ points	35%
Homework	–	$6 \times 20 = 120$ points	30%
Final Exam	–	140 points	35%
<b>Total</b>	–	<b>400 points</b>	

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: [http://studentcode.illinois.edu/article1\\_part4\\_1-402.html](http://studentcode.illinois.edu/article1_part4_1-402.html).

**Safety:** The university values your safety. Please read this document: <https://police.illinois.edu/dpsapp/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.