

STAT/MATH 416, Section 002

Stochastic Modeling

Instructor: Dr. Armine Bagyan
Email: aub171@psu.edu
Office: 316B Thomas Bldg
Office Hours: R 11:00 am – 12:30 pm

TA: Mudong Zeng
Email: muz149@psu.edu
Office: 333 Thomas Bldg
Office Hours: T 1:30 pm – 2:30 pm, 3:00 pm – 4:00 pm

Class Information: M W F 11:15 am – 12:05 pm 106 Boucke Bldg

Course Prerequisites: STAT 414 (Introduction to Probability Theory) / STAT 318 (Elementary Probability) and MATH 230 (Calculus and Vector Analysis)

Course Materials:

- The textbook is *Introduction to Probability Models*, 11th edition by Sheldon M. Ross.
- A scientific calculator

Course Objective:

The course goal is to get experience with basic notions and models of the introductory theory of stochastic processes. After a brief review of introductory probability theory, the course will be focused on conditional probability and conditional expectation, discrete time Markov chains, Exponential distribution and Poisson process, continuous time Markov chains including birth and death processes, and some additional topics, if time permits.

Class Information and Materials:

Class announcements and materials will be regularly posted in [Canvas](#), so it is recommended that you check the site frequently. Some announcements and reminders will be made in class. Attendance is highly recommended. You are responsible for all announcements and supplements that are given in any class and/or email.

Homework:

For homework due dates see the course calendar in Canvas. Homework will be graded based on completeness and accuracy. To obtain full/partial credit for a problem show all work! For each homework you are required to

- write your name, the course and section number (Stat/Math 416, section 2) legibly on top of the first page
- staple homework to avoid lost pages and mixing of different homework
- write/type homework problems in the order they are assigned to avoid grading errors

Failure to comply with any of these requirements may lead to lost point(s). Collaboration on homework is encouraged, however you must write and submit your own solutions. Copying (even partial) is strictly not allowed.

Homework submission rules:

- Each homework assignment is to be turned in on paper at the beginning of class on the due date.
- After that the assignment will be considered late, and can be accepted with an automatic 20% reduction in your score only if you submit it to my mailbox in 325 Thomas Bldg by 4:00 pm on the same day it is due.
- After 4:00 pm on the due date, your late assignment will not be accepted and a 0 grade will be assigned.
- Homework assignments will not be accepted after the day they are due unless you make other arrangements with me before the due date.

- Do NOT bring your assignments to my office or TA’s office or mailbox! If homework is submitted to a wrong place (whether late or not), a 0 grade will be assigned.
- Electronic submission may be considered only in rare emergency situations for valid reasons (you will need to properly justify), and requires my explicit permission given at my discretion. This should not be expected and/or abused. If my permission for an electronic submission is granted, you must bring the homework on paper and without any changes to my mailbox by the time of the class following the due date.

Typically graded homework will be returned to you in class or right after class. It is your responsibility to contact me about your graded homework in case you missed the class when it was returned. Homework solutions will be posted in Canvas around the time the homework is returned to you.

The lowest homework grade will be dropped at the end of the semester.

Calculus Pretest:

Calculus Pretest on course prerequisites is required and is conducted in Canvas. See the deadline and requirements in the pretest module in Canvas.

Exams:

There will be two closed-book midterm exams given in class on the dates specified in the Exam Schedule in Canvas. One double-sided handwritten letter-sized (8.5x11 inch) sheet of notes is allowed for each of the midterms. All the other sources of information are not allowed during the midterms. You are required to bring your PSU ID card to the each of the exams.

The final exam will be comprehensive with larger weight for the later topics. You are required to bring your PSU ID card. You will be allowed to bring two double-sided handwritten letter-sized (8.5x11 inch) sheets of notes to the final exam. All the other sources of information are not allowed during the final exam. According to the [UP Spring 2018 schedule](#), the final exam will take place during the week of April 30, 2018. The exact time and place will be announced when it is determined and released by the Registrar. Do not plan any travel until after the final exam.

Course Breakdown and Grading Scale:

Homework	25%
Calculus Pretest	1%
Midterm Exams (2)	22% each
Final Exam	30%

Grade	A	A –	B +	B	B –	C +	C	D	F
%	93 – 100	90 – 92.9	87 – 89.9	83 – 86.9	80 – 82.9	77 – 79.9	70 – 76.9	60 – 69.9	0 – 59.9

Grades will not be curved in any way. I reserve the right to adjust the break points above based on overall and individual effort throughout the course.

Grading Appeals:

From the day that any graded material is returned, you have one week to bring any errors in grading to my attention. After that no grade adjustments will be made.

Makeup Policy:

No makeup exams will be given except for the University approved reasons. If due to a University approved reason you must miss an exam, you should talk to me as early as possible and provide me with an explanation in writing at least a week before the scheduled exam. All makeups are given at my discretion. Upon my approval a makeup exam will be scheduled. Without pre-notification and a valid reason you will receive a zero grade for the exam.

University Sanctioned Reasons for Makeup:

There are the following four University sanctioned reasons for a student to miss class.

- An official University activity
- Serious illness
- Serious negative personal or family problem
- Attending a religious holiday service

In each of these situations you must to notify me as early as possible and be able to present valid documentation (such as a letter from your adviser, coach, health services, the Student Affairs Office).

Academic Integrity:

All Penn State and Eberly College of Science policies regarding academic integrity apply to this course. You are expected to act in an open, honest, and responsible manner. See [Penn State Academic Integrity Policy](#) for details.

Cheating is unacceptable. If the TA or I suspect you of cheating, you will receive a zero grade on the assignment or exam.

Classroom Policy:

All foods and drink (except bottled water) are not allowed in the classrooms, see [Penn State classroom information](#).

Please turn off all cell phones and put away all electronic devices (phones, tablets, laptops, etc.) and materials that are not directly related to the course. It is important that non-essential conversations are minimized. If you must leave early, please let me know at the beginning of class and sit near an exit to minimize classroom disturbance. In case of a student's misbehavior and/or engagement in any activity that is not directly related to the class and learning in the class, I reserve the right to ask that student to leave the classroom. Consequences may follow.

Student Disability Resources (SDR) Statement:

Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Student Disability Resources (SDR) at 814-863-1807 (V/TTY). For further information regarding SDR, please visit the [Student Disability Resources website](#). In order to receive consideration for course accommodations, you must contact SDR and provide documentation (see the [documentation guidelines](#)). If the documentation supports the need for academic adjustments, SDR will provide a letter identifying appropriate academic adjustments. You must contact SDR and request academic adjustment letters at the beginning of each semester.

Counseling and Psychological Services (CAPS) Statement:

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

[Counseling and Psychological Services \(CAPS\)](#) at University Park: 814-863-0395

Penn State Crisis Line (24/7): 877-229-6400

Crisis Text Line (24/7): Text LIONS to 741741

Code of Mutual Respect and Cooperation and the Penn State Values:

"The Eberly College of Science Code of Mutual Respect and Cooperation embodies the values that we hope our faculty, staff, and students possess and will endorse to make The Eberly College of Science a place where every

individual feels respected and valued, as well as challenged and rewarded.” Penn State values integrity, respect, responsibility, discovery, excellence, and community. See [Climate and Diversity](#) information and [Penn State Values](#).

Learning Resources:

The Eberly College of Science is committed to the academic success of students enrolled in the College's courses and undergraduate programs. When in need of help, students can utilize various College- and University- wide resources for learning assistance. See [Penn State Science advising](#) and [learning support](#) for more information.