

Spring 2018
Department of Applied Mathematics and Statistics,
Stony Brook University
AMS 342: Operations Research II: Stochastic Models

INSTRUCTOR: Jiaqiao Hu

CLASS: Tuesdays and Thursdays 4:00pm-5:20pm, Earth&Space 131

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OFFICE HOURS: Tuesdays and Thursdays 1:30pm-2:30pm

COURSE WEBSITE: www.ams.sunysb.edu/~jqhu/courses/342/AMS342.html

TA: Wesley Suttle

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OFFICE HOURS: Tuesdays and Thursdays 2:30-3:30pm

TA: Yiwen Wang

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OFFICE HOURS: Mondays 3:00-5:00pm

Course Description: Methods and techniques for stochastic modeling and optimization, with applications to queueing theory, Markov chains, inventory theory, games, and decisions. AMS 341 and 342 may be taken in either order, though it is recommended that AMS 341 be taken first. Prerequisites: AMS 210 or MAT 211; AMS 311.

Learning Objectives: Upon successful completion of this course, students will be able to:

- apply the double expectation formula in calculating expectations/probabilities involving multiple random variables.
- understand the basic concepts in Poisson processes.
- understand the basic concepts in discrete time Markov chains.
- understand the basic concepts in renewal processes.
- understand the basic concepts in continuous time Markov chains.

Text Book: Sheldon M. Ross, *Introduction to Probability Models (11th ed.)*, Elsevier.

Topics to be covered: Chapter 1 through Chapter 8, specific topics include: review of probability theory, Poisson processes, renewal processes, discrete-time Markov chains, and continuous-time Markov chains.

Prerequisites: Students are required to have a strong background in probability theory (for example, at least a B in AMS 311 or equivalent courses) and multivariate calculus.

Homework: Homework will be assigned on a weekly basis, and will be due at the beginning of class on the due date. The lowest two scores will be dropped before calculating your average. No late homework will be accepted. For full credit, please write down all intermediate steps needed, not just final answers.

Exams: There will be two exams (a midterm and a final, time and location to be announced in class two weeks prior to the exam date). All exams will be in class, closed notes and book. A letter-sized *hand-written* (not typed or xeroxed) formula sheet and a calculator will be allowed in the exam.

Grading Policy: Your total average score will be calculated based on 20% homework, 30% midterm, and 50% final.

Disability Policy: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room 128, (631) 632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information, go to the following web site <http://www.ehs.sunysb.edu/fire/disabilities.asp>.

Academic Integrity: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.