Fall 2018
Department of Applied Mathematics and Statistics,
Stony Brook University
AMS 507: Introduction to Probability

INSTRUCTOR: Jiaqiao Hu
CLASS: Mondays and Wednesdays 5:30pm -6:50pm, Engineering 143
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RECITATION SECTION: Mondays 7:00pm -7:50pm, Engineering 143

Course Description: The topics include sample spaces, axioms of probability, conditional probability and independence, discrete and continuous random variables, jointly distributed random variables, characteristics of random variables, law of large numbers and central limit theorem, Markov chains. Note: Crosslisted with HPH 696.

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

- calculate probabilities of events by working with sets that represent them.
- use the law of total probability and Baye's rule to calculate probabilities of complex events.
- use random variables and their distributions to model the outcomes of random experiments.
- apply the general properties of the expectation and variance operators.
- calculate cumulative distributions, marginal distributions, conditional distributions, and moment generating functions.
- understand the basic convergence modes of random variables.
- explain and use the law of large numbers and the central limit theorem.

Required Text Book: Sheldon Ross. *A First Course in Probability,* (8th or 9th ed.), Pearson.

Topics to be covered: Chapter 1 through Chapter 8, specific topics include: Axioms of probability, random variables and their probability distributions, joint distributions, conditional probability and expectation, limiting theorems.

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 three exams (two midterms and one 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. Calculators are allowed in the exams.

Grading Policy: Your total average score will be calculated based on 20% homework, 40% midterms (20% per midterm), and 40% 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.