
STA 447/2006S is a course about random (stochastic) processes, designed for graduate and senior
undergraduate students in statistics and related disciplines.

Tentative list of topics to be covered: Markov chains in discrete and continuous time, martingales,
Poisson processes, renewal theory, and Brownian motion, with applications (as time permits) to Monte
Carlo algorithms, random walks on graphs, branching processes, option pricing, queueing theory, and
more.

[See also the evolving lecture notes, to be updated after each lecture.]

Instructor: Professor Jeffrey S. Rosenthal, Department of Statistical Sciences, University of Toronto.
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Lectures: Thursdays, 6:10 - 9:00 p.m., in room 128 of the Mining Building (170 College St.; building
"MB" on campus map). First class Jan 10. Last class April 4. No class Feb 21 (Reading Week). During
lectures, please put away your laptops and cell phones (unless you are using them specifically for a
class-related purpose with prior permission), and pay attention to the material being presented.

Course Web Page: Visit probability.ca/sta447 for course information and announcements.

Prerequisite: STA347. NOTE: This prerequisite will be strictly enforced for undergraduate students;
undergraduate students without STA347 will not be permitted to remain in STA447 except in very
special circumstances. (It does not suffice to simply have taken some other advanced statistics
courses.) For graduate students, it suffices to have taken a course equivalent to STA347 at another
university; if you are unsure about the equivalence then please ask me.

Evaluation:
28% Midterm #1 (135 minutes): Thurs Feb 7 during class time -- surname A-K in MS 2170, surname
L-Z in MS 3154. (See solutions.)
28% Midterm #2 (135 minutes): Thurs Mar 21 during class time -- surname A-L in Bahen (BA), 40 St.
George St, room 1160; surname M-Z in Haultain (HA), 170 College St (rear), room 403. (See solutions.)
44% Final Exam (three hours): scheduled for Friday April 12 at 7:00 pm in BHN3 (320 Huron St, third
floor)

Notes: On all tests and exams, BRING YOUR STUDENT CARD, and DO NOT SIT NEXT TO
ANYONE THAT YOU KNOW, and NO AIDS ALLOWED (not even calculators). The tests will
cover all lecture material up to that time. Although there are no graded homework assignments, you are
strongly encouraged to attempt the practice problems in the lecture notes and supplementary readings,
to learn the material well. See also the various student services and academic resources and wellness
centre which are available to you.

TA Office Hours: The TAs will hold office hours during semester each Wednesday 3:10 to 5:00 (except
Feb 20), and Friday 3:10 to 5:00 (except Feb 8 and 22 and Mar 22) in Sidney Smith Hall (SS) room
2119, at which you can ask them any questions about the course material and practice problems.
Additional TA office hours will be arranged before the tests and exam, including: Tues Feb 5 from 3:10 to 7:00 in Innis College (IN) room 313; Tues March 19 from 3:10 to 5:00 in SS 2119; Wed April 10 and Thurs April 11 from 6:00 to 8:00 PM in SS 1080; and Wed April 10 and Fri April 12 from 3:10 to 5:00 PM in SS 1080. You can also contact the TA at brian.ning@mail.utoronto.ca to ask questions or arrange other meeting times.

Instructor Office Hours: You are welcome to talk to the instructor after class, or any time you find him in his office (SS 5022), or you can e-mail him to arrange another time to meet. He will also hold special office hours in his office (SS 5022) before the midterms and exam, including: Tues Feb 5 from 12:30 to 2:30; Wed Feb 6 from 11:30 to 1:30; Tues Mar 19 from 12:30 to 2:30; Wed Mar 20 from 5:00 to 6:00; Tues Apr 9 from 4:00 to 6:00; Fri Apr 12 from 12:00 to 2:00.

Supplementary Readings: There is no required textbook. The instructor will post his rough lecture notes on this course web page after each lecture. In addition, the following books (among others) may be useful for further reading:


Regrading policy: Regrading requests should only be made for genuine grading errors, and should be initiated by writing or typing a complete explanation of your concern (together with your full name, student number, e-mail address, and telephone number) on a separate piece of paper, and giving this together with your original unaltered test/homework paper to the instructor within one week of when the graded work was first available. Warning: your mark may end up going down rather than up. (Note: for the final exam, a different Faculty-wide process should be followed instead.)

This document is available at probability.ca/sta447 or probability.ca/sta2006, or permanently at probability.ca/jeff/teaching/1819/sta447/