

General Information

Classroom	MRDC, Room 2404
Time	Tuesdays and Thursdays, 9:35 – 10:55 AM
Instructor	Sigrún Andradóttir
Office	Groseclose (ISyE) Building, Room 328
Phone	404-894-3933
E-mail	sa@gatech.edu (please include the course number, ISyE 6650A, ISyE 6650Q, or ISyE 6650QSZ in the subject line)
URL	www.isye.gatech.edu/faculty/sa
Office Hours	Tuesdays and Thursdays, 1:45 – 2:45 PM, or by arrangement
Description	<p>This three-credit course will introduce you to basic techniques for modeling and analyzing industrial systems in the presence of uncertainty. After successfully completing this course, you should:</p> <ol style="list-style-type: none">Understand the major capabilities and limitations of probabilistic operations research as applied to problems in industry or government.Be able to recognize, formulate, and analyze simple probability models in practical situations. Understand the assumptions underlying these models and the effects on the modeling process when these assumptions do not hold.
Required Textbook	Sheldon M. Ross, <i>Introduction to Probability Models</i> , Eleventh Edition, Academic Press, 2014.
Topics	<ol style="list-style-type: none">Review of probability (Chapters 1, 2, and 3 of text)Discrete time Markov chains (Chapter 4 and Section 7.6 of text)Poisson processes (Chapter 5 of text)Continuous time Markov chains (Chapter 6 of text)Queueing theory (Chapter 8 of text)Reliability theory (Chapter 9 of text)Introduction to Brownian motion and option pricing (Chapter 10 of text, if there is time)

Prerequisites

You *must* know probability at the level of ISyE 2027.

References

Gilbert Strang, *Linear Algebra and Its Applications*, Second Edition, Harcourt Brace Jovanovich, San Diego, CA, 1980.

Richard Durrett, *The Essentials of Probability*, Duxbury Press, Belmont, CA, 1994.

Carol Ash, *The Probability Tutoring Book: An Intuitive Course for Engineers and Scientists (and Everyone Else!)*, Revised Printing, IEEE Press, New York, 1993.

Available at <http://ieeexplore.ieee.org/xpl/bkabstractplus.jsp?reload=true&bkn=5265221>

Howard M. Taylor and Samuel Karlin, *An Introduction to Stochastic Modeling*, Academic Press, Orlando, FL, 1984.

Barry L. Nelson, *Stochastic Modeling – Analysis and Simulation*, McGraw-Hill, New York, NY, 1995.

Randolph W. Hall, *Queueing Methods for Services and Manufacturing*, Prentice Hall, Englewood Cliffs, NJ, 1991.

Ronald W. Wolff, *Stochastic Modeling and the Theory of Queues*, Prentice Hall, Englewood Cliffs, NJ, 1989.

Richard E. Barlow and Frank Proschan, *Statistical Theory of Reliability and Life Testing: Probability Models*, Holt, Rinehart, and Winston, New York, NY, 1975.

Final Grade

Midterm 1	27.5%
Midterm 2	27.5%
Final Exam	35%
Assignments	10%

Class Attendance

Attendance in class is strongly recommended. Should you miss class, it is your responsibility to remedy the situation (e.g., to find out what material was covered, obtain copies of handouts, etc.). Finally, the use of electronic devices (including computers and phones) is prohibited in class.

Assignments

Homework will be assigned in most weeks as a means to help you understand the concepts and to give you practice in applying them. Please staple multiple sheets together before turning them in.

Unless otherwise indicated, you are encouraged to *discuss* the homework with other students (at a high level). However, *the work that you hand in must be your own*. In other words, you must do the modeling, calculations, and writing yourself. Also, it is your responsibility to safeguard your work so that other people do not exploit it.

All homework will be due before class starts on the date the homework is due. In general, *late work will not be accepted*. Occasionally, reasonable exceptions may be made. To allow yourself time to get help for unexpected problems, you are urged to complete the assignments in advance of the deadline.

Regrading Policy If we have made a mistake, we will be happy to correct it. However, if a test is submitted for a grade correction, we reserve the right to regrade the entire test. In other words, it is possible to *lose* additional points by submitting a test for a grade correction. In all cases, *requests for a grade correction must be made within one week* of when the graded material (homework or exam) was returned to the class.

Teaching Assistant Şeyma Güven-Koçak

TA Office ISyE Studio, ISyE Main/Annex Building, Room 103

TA E-mail seymaguven@gatech.edu

TA Office Hours Mondays and Wednesdays, 3:30 – 5 PM

Scheduling Reading and homework assignments will be made in class. However, the following dates have been fixed for examinations:

Midterm 1 Tuesday, September 29, in class

Midterm 2 Tuesday, November 17, in class

Final Thursday, December 10, 8:00 – 10:50 AM

All examinations will be closed book, closed notes (with the possible exception of a small card of a specified size), calculators or other electronic devices not permitted, and must be completed alone. Please bring your BuzzCard to all examinations, and leave personal belongings whose use is not permitted (including phones) at home or at the front, left, or right side of the examination room. Due to the inability to proctor restrooms, *restroom breaks will not be allowed* without prior arrangements.

Midterms will not be rescheduled under any circumstances. Moreover, individual students will not be able to take the final examination prior to the scheduled time. Special arrangements for a missed examination will only be made at the discretion of the instructor and will require that the examination was missed for an exceptionally good reason and that the student involved provides valid documentation of such a reason promptly. Under no circumstances will interviews, car problems, or other travel related problems be accepted as valid reasons for missing an examination. Similarly, oversleeping and confusion about the examination date are not valid reasons for missing an examination. Medical excuses will only be considered if a letter from a physician documenting a serious condition and dated no later than the examination date is provided.

Expectations

This course will operate according to the student-faculty expectations available at www.catalog.gatech.edu/rules/22.php. I reserve the right to assign homework on new material covered during the week preceding final examinations, see www.catalog.gatech.edu/rules/12c.php.

Honor Code

Students in this class are expected to abide by the Georgia Tech Honor Code and avoid any instances of academic misconduct, including but not limited to: (i) possessing, using, or exchanging improperly acquired written or verbal information in the preparation of homework or for examinations, (ii) substitution for, or unauthorized collaboration with, a student in the commission of academic requirements, and (iii) submission of material that is wholly or substantially identical to that created or published by another person or persons. The complete text of the Honor Code may be found on the web at www.honor.gatech.edu.

All academic violations will be dealt with according to the Georgia Tech Honor Code. This includes the submission of work other than your own and also cheating off of another person's homework or examination. Moreover, unauthorized use of any solutions manuals or previous semester course materials, such as tests, homework, projects, solutions, etc., is prohibited in this course, and will be considered a violation of the Honor Code. For any questions involving these or other Honor Code issues, please consult me or www.honor.gatech.edu.

Distance Learning

Deadlines for distance learning students will be one week later than for other students (use eastern standard time). This applies to both homework and exams.