SYRACUSE UNIVERSITY

MAT 526, INTRODUCTION TO STOCHASTIC PROCESSES

SPRING, 2017 SYLLABUS

SECTION 1, MW 3:45-5:05, Carnegie 200

Instructor   Professor Terry R. McConnell
Carnegie 317F
443-1499
trmcconn@syr.edu

Office Hours MW 9:30-11:00 and by appointment

Course Description. This course covers the basic properties and applications of stochastic processes, including Markov chains in discrete and continuous time, Poisson processes, random walks, queueing systems, and Brownian motion.

Text *Introduction to Stochastic Modeling*, 4th Edition, by Samuel Karlin and Mark A. Pinsky, Elsevier, Amsterdam, 2011. (ISBN: 978-0-12-381416-6)

Mathematics Prerequisite MAT 521

Catalog Description
MAT 526- Introduction to Stochastic Processes
College of Arts and Sciences
3 credit(s) Every Semester

Discrete time Markov chains, Poisson process, continuous time Markov chains and other selected stochastic processes.

PREREQ: MAT 521 OR GRADUATE STANDING IN MATHEMATICAL SCIENCES

Student Learning Outcomes of BS degree mapped to this course:

- Demonstrate facility with the techniques of single and multivariable calculus and linear algebra

- Effectively communicate mathematical ideas orally and in writing

- Make accurate calculations by hand and with technological assistance
- Reproduce essential assumptions, definitions, examples, and statements of important theorems
- Describe the logical structure of the standard proof formats, reproduce the underlying ideas of the proofs of basic theorems, and create simple original proofs

Grading Grades for the course will be based on the total number of points accumulated on homework, two tests and the final exam. Each test will count 25%, the final exam 35%, and homework 15% toward your course grade. There will be absolutely no make-ups for any reason. If you miss a test for a valid reason, the final will count correspondingly more.

Exams. The dates for the exams are;

Test 1: M, Feb 20

Test 2: W, Mar 29

Final Exam: Thursday, May 4, 3:00 pm-5:00 pm

The final exam will **only be given at this time**.   Arrange your travel plans accordingly.

Homework. Attempting to solve problems using what you have learned is the only proven way to learn mathematics. There is no more efficient way to find the gaps in your understanding than by trying to put that understanding to work solving problems. The learning cycle is: listen and read → attempt to do problems → review → attempt to do problems, and repeat the last 2 steps until successful.

Watching me perform the solutions of problems, or looking up solutions on the web – the equivalent of watching a recorded performance – no more teaches you to solve problems on your own that does watching the Olympics on TV improve your fitness. No pain, no gain.

I will provide lists of "practice problems" each week and you will have access to their answers so you can check your work. These will not be collected and graded, but will be models for all test questions, so if you do them all on your own, there is no reason why you shouldn't score 100% on the tests.

In addition, 2 or 3 problems from the text will be assigned each week for you to write up their solutions and hand them in to be graded. Graded homework will be returned to you promptly. These will be harder than the practice/test problems. Try to do them on your own as much as possible, and if you are forced to resort to outside sources, you MUST cite those sources in your write-up; not to do so is a violation of academic integrity.

Finally, depending my own luck and ambition in locating or creating suitable problems, we may use the (free) online home system, *WebWork.* If we do use it, go to

http://webwork.syr.edu/webwork2/MAT_526_Spring_2017_McConnell

Your username is your SU username and your password is your SUID.

Attendance You are expected to attend every class, every hour exam, and the final exam. If you miss a class, it is your responsibility to obtain a copy of the lecture notes for that class from another student. You are also responsible for any announcements about changes to the course schedule, the exam schedule, or the course requirements made during that class.

Calculator. You are allowed to use a calculator. If you do, it is your responsibility to learn how to use it effectively.

Students with disabilities. If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Related link: http://disabilityservices.syr.edu/faculty-staff/syllabus-statement/

Religious observances policy. SU religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to are religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice (Student Services -> Enrollment -> My Religious Observances) from the first day of class until the end of the second week of class.

Related link: http://supolicies.syr.edu/studs/religious_observance.htm

Academic Integrity. Syracuse University sets high standards for academic integrity. Those standards are supported and enforced by students, including those who serve as academic integrity hearing panel members and hearing officers. The presumptive sanction for a first offense is course failure, accompanied by the transcript notation "Violation of the Academic Integrity Policy". The standard sanction for a first offense by graduate students is suspension or expulsion. Students should review the Office of Academic Integrity online resource "Twenty Questions and Answers About the Syracuse University Academic Integrity Policy" and confer with instructors about course-specific citation methods, permitted collaboration (if any), and rules for examinations. The Policy also governs the veracity of signatures on attendance sheets and other verification of participation in class activities. Additional guidance for students can be found in the Office of Academic Integrity resource: "What does academic integrity mean?"

Related links: The Academic Integrity Policy: http://academicintegrity.syr.edu/academic-integrity-policy/   Twenty Questions and Answers about the Academic Integrity Policy:

http://academicintegrity.syr.edu/faculty-resources/   What does academic integrity mean?: http://academicintegrity.syr.edu/what-does-academic-integrity-mean/

Learning Goals. Students are expected to master the basic ideas of probability and to acquire the skills needed for the application of these ideas to the further study of probability and/or statistics.

Cell Phones. Cell phones should be turned off and put away during class. Calculators on cell phones may not to be used on tests.

For all other information, including detailed schedules, assignments, and other materials, consult the class Blackboard site.