

## MAT 526 – Introduction to Stochastic Processes - Spring 2018

**Course Description** This is a first course in stochastic processes. Topics to be covered include: random walks, branching processes, Markov chains, the Poisson process and queuing theory.

**Prerequisite** Solid backgrounds in calculus (MAT 397) and probability (MAT 521), and some familiarity with linear algebra (MAT 331).

**Instructor** Prof. JT Cox, 311B Carnegie, 443-1488, [jtcox@syr.edu](mailto:jtcox@syr.edu)

**Class Time and Location** Tu/Thur 3:30-4:50, Carnegie 115

**Office Hours Held in Carnegie 311B**

- Tue 1:00-2:00, Wed 10:00-11:00
- and at other times by appointment (just email Prof Cox)

### Texts

- A comprehensive calculus book
- Introduction to Stochastic Processes with R, by Robert Dobrow

**Course Web page** Some use of [BlackBoard](#) and/or [WebWork](#) may be made.

**Calculator policy** A calculator is useful for homework problems, but the statistical freeware package “R” is recommended instead. Calculators **are not allowed** on exams.

### Cell phone policy

- Cell phones should be turned off and put away during class.
- Cell phones **are not allowed** on exams. Specifically, using or having available for use any calculator, cell phone or other electronic device during any exam will be considered a **violation** of the Academic Integrity Policy. During exams, cell phones and other electronic devices **must be stowed out of reach**, either in a closed backpack or at the front of the room.
- Violations of this policy will be considered Academic Integrity Violations.

**Attendance** You are expected to attend every class and every exam. You are expected to arrive on time for every class. *Please do not take this course if you cannot arrive on time every day.* If you do 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 a missed class.

**Homework/Reading** There will be daily required reading assignments and weekly homework assignments. You are expected to keep up with both, as both are essential for learning the course material. Homework will be collected weekly.

**Exams** There will be 2 midterm exams and a final exam. The **tentative** dates are

- Midterm 1: Thur Feb 15
- Midterm 2: Thur Mar 29
- Final: May 4, 8:00–10:00am **THE FINAL WILL NOT BE GIVEN AT ANY OTHER TIME!**

Exams will be based on class notes and examples, text readings and examples, and homework assignments. In addition to problems, definitions and theorem statements, short proofs will be asked on exams. There will be no “make up” exams given. The final exam will be given only at the scheduled time, it **will not be offered at any other time!** Do not make travel plans that conflict with any exam date.

**Quizzes** Announced and unannounced quizzes may be given occasionally.

**Grading** The course grade weighting scheme is as follows:

- Quizz 0-10%
- each midterm exam 25-30%
- final exam 35%

### **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

### **Specific Course Goals**

- understand the role of stochastic modeling
- gain practice developing and analyzing simple stochastic models
- learn and master some of the basic mathematical tools and techniques of stochastic modeling
- understand the relevant mathematical concepts and methods

**Disability-Related Accommodations** 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, TDD: (315) 443-1371** 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.**

**Academic Integrity.** Syracuse University's academic integrity policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The university policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same written work in more than one class without receiving written authorization in advance from both instructors. The presumptive penalty for a first instance of academic dishonesty by an undergraduate student is course failure, accompanied by a transcript notation indicating that the failure resulted from a violation of academic integrity policy. The presumptive penalty for a first instance of academic dishonesty by a graduate student is suspension or expulsion. SU students are required to read an online summary of the university's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. For more information and the complete policy, see <http://academicintegrity.syr.edu/>. For more precise details, see

- [One page guide: AI at SU](#)
- [10 things all students need to know about AI](#)

**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.**