SYRACUSE UNIVERSITY

MAT 521, INTRODUCTION TO PROBABILITY AND STATISTICS

SPRING, 2017 SYLLABUS

SECTION 3, MW 2:15-3:35, Carnegie 200

Instructor   Professor Terry R. McConnell
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Office Hours MW 9:30-11:00 and by appointment

Course Description. This course is an introduction to probability theory. It provides a logical framework for quantifying uncertainty and randomness, with the aim of strengthening probabilistic intuition and promoting accurate computation. Topics include probabilities, distributions, random variables, expectation, inequalities and limit theorems.

Text *Introduction to Probability*, Joseph K. Blitzstein and Jessica Hwang, CRC Press, Boca Raton, 2014 (ISBN-13: 978-1-4665-7557-8)

Mathematics Prerequisite MAT 397.

Catalogue Description MAT 521 – Introduction to Probability
College of Arts and Sciences
3 credit(s) Every Semester

Algebra of sets. Probability in finite sample spaces. Binomial and multinomial coefficients. Random variables. Expected value and standard deviation. Density functions. Statistics applications.

PREREQ: MAT 397 OR GRADUATE STANDING IN THE MATHEMATICAL SCIENCES

Student Learning Outcomes of B.S. 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

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 13

      Test 2: M, Apr 3

      Final Exam: Wed., May 10, 8:00 am-10:00 am (Period 19)

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

Homework. Homework is comprised of two parts aligning with the two main aims of the course. The first is to encourage accurate computation. For this homework will be assigned on **WebWork**, an online homework system. This will involve routine computational problems, a successful understanding of which should be considered the minimum requirement to pass the course. It will count 15% toward your grade. The second part is to strengthen probabilistic thinking and obtain a deeper understanding of the subject. For this *strategic practice problems* will be assigned from the book. Some of these problems are quite challenging, but you will gain a great deal from attempting to solve them. Solutions to these problems are available online, but you should make a concerted effort to solve the problems before looking at the solutions. Each week, two or three of these problems will be assigned, collected, graded and returned to you. The other problems will not be graded, but minor variations of some of these problems may appear on midterms and the final. To be successful in this course you should expect to spend a minimum of 8 hours a week studying for and working on the homework.

WebWork To access WebWork, go to

      http://webwork.syr.edu/webwork2/MAT_521_Spring_2017_McConnell

Your username is your SU username and your password is your SUID. (You may change your password after you log in for the first time.) The first assignment, describing how to use WebWork, is up and available for you to work on after you have registered for the course.

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 will need a calculator which contains tables of the binomial, normal and Poisson distributions. The TI-83+ will be used to demonstrate these functions in class.

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.

SRATEGIC PRACTICE PROBLEMS

CHAPTER   PROBLEMS

CHAPTER	PROBLEMS
1	8,9,15,16,18,22,23,26,29,31,32,48,52
2	1,2,30,31,32
3	6,11,18,21,25,28,29,35,37,42
4	13,17,22(a),24,26,30,31,32,50,56,59,60,63,65
5	11,12,16,36,38,50,51
6	13,14,21
7	18,20,24,31,32,39,52
8	4,6,16,24
10	1,2,17,18,21,22,23