Math 421– Introduction to Probability

Spring 2016, MWF 1:55–2:45 PM, 2102 SAS Hall
Instructor: Seth Sullivant, office: SAS Hall 3114, email: smsulli2@ncsu.edu, Phone: 919-513-7445
Office Hours: W 2:45– 3:45 PM, Th 1:30-2:30 PM, or by appointment
Prerequisites: Math 242 (Specifically, you will need to be able to compute with infinite series, multivariable integrals, and improper integrals.)
Course Website: http://www4.ncsu.edu/~smsulli2/MA421_Spring2016/MA421.html

Course Description:
Probability is the area of math concerned with randomness and chance. Probability theory provides an axiomatic framework for discussing and quantifying our assessments of how likely events are to happen. While its origins come from the analysis of games of chance, probability theory permeates nearly all of applied mathematics, and forms one of the core mathematical disciplines used in statistics.

We will cover the following topics in this course: basic combinatorics, the axioms of probability, conditional probability and independence, discrete and continuous random variables, joint densities and mass functions, expectation, and the central limit theorem. The material covered comes from selected sections of Chapters 1-8 in the text.

Student Learning Outcomes: By the end of the course, the students will be able to:

- Outline key definitions and theorems in probability.
- Identify properties of commonly occurring random variables.
- Apply main results in probability to solve freshly encountered probabilistic problems.

Homework: Homework will be assigned weekly and is due at the beginning of class on Friday. Students must write up their own solutions. Working with other students is allowed, however, you must first attempt all problems on your own before discussing solutions with other students. Each student must write up their own solutions. Please indicate on your homework any sources that you used in preparing solutions (e.g. any groups members you worked with or discussed the problems with, if another student helped with a solution, or you were aided by reading a particular text).

It is acceptable to use other sources besides the course notes and the text to aid your learning. However, using other student’s homework solutions from previous courses, online homework solutions from courses at other universities, online discussion boards where people post problem solutions, or copying the solutions out of books are unacceptable sources for preparing your homework, and violate the university’s academic integrity policy.

Policy on Late Homework: Homework is due in class on Fridays, unless otherwise indicated. Late homework will be accepted up to Monday class time of the following week, either to my mailbox, delivered to me in person, or by email and will received 80% of the points. Each student may turn in at most 2 late homework assignments during the semester. If you must miss a class on the day a homework is due and you want full
credit, it is your responsibility to get the homework to me by the beginning of class on Friday. **I do not accept scans or photos of homework.**

**Exams:** There will be two in-class midterm exams on February 12 and April 1, and an in-class final exam. The final exam will take place in the usual classroom from 1:00 - 4:00 PM, May 2nd.

**Grades:** Grades will be based on Homework (20%), Midterms (20% each), and Final Exam (40%). Grades are based on the following scale A : (> 85%), B: (70-85 %) C: (60-70%) D-F: (<60%).

**Attendance:** Students are expected to arrive on time, to contribute to group work and class discussions, and to stay until the class ends. Attendance at all meetings of the class is expected.

**Adverse Weather:** Announcements regarding scheduled delays or the closing of the University due to adverse weather conditions will be broadcast on local radio and television stations and posted on the University homepage.

**Electronic Devices:** You may use your electronic devices in class as long as it is not distracting to the other students or me. (Warning: I get distracted very easily.) Acceptable: Using a tablet to take notes. Unacceptable: Answering your phone, texting or sending emails. Borderline: Taking notes/typing on a laptop (please try to sit to the side or back of class so you don’t distract other students).

**Academic Integrity Statement:** Students are required to follow the NCSU policy. “Academic dishonesty is the giving, taking, or presenting of information or material by a student that unethically or fraudulently aids oneself or another on any work which is to be considered in the determination of a grade or the completion of academic requirements or the enhancement of that student’s record or academic career.” (NCSU Code of Student Conduct). The Student Affairs website has more information.

**Students with Disabilities:** Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State’s policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.01).

**Class Evaluations:** Online class evaluations will be available for students to complete during the last two weeks of class. Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential; instructors will never know how any one student responded to any question, and students will never know the ratings for any particular instructors.