STAT 6190: Introduction to Mathematical Statistics
Fall 2014

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Class Schedule: 2:00pm-3:15pm MW
Location: Chemistry Bldg 260
Office Hour: 3:30pm-4:30pm MW
Grader: Chi Xin

Course Description:
This is an introductory course on probability theory, primarily for graduate students who are planning to take advanced courses in statistics. Topics covered in this course include: 1) Main concepts of probability: probability triple, independence, conditional probability, random variable, distribution, expectation and conditional expectation, moments generating function, characteristic function, and probability inequalities. 2) Probability models: famous probability distributions, multivariate normal distribution, ordered statistics, exponential distribution family, location and scale families, conjugate distribution, mixture distribution, and hierarchical model. 3) Limit theorems in probability: sum of independent random variables, different types of convergence, weak and strong laws of large number, and central limit theorem. More advanced topics (for instance, stochastic process and martingale) may be included if schedule permits.

Textbook:
George Casella and Roger L. Berger. 2001. Statistical Inference, Duxbury Thomson Learning, 2nd ed. (This is also the textbook for STAT 7110 in the coming spring term)

Useful References:
College-level textbook on probability theory:

Advanced textbooks on probability theory (with rigorous math)

Classical Probability Textbooks
Books on Limit Theorems

Books on Stochastic Process

Course Requirements:

1. Class participation. Students are expected to attend all lectures and participate actively in class discussion.
2. Homework. There will be around 8 written assignments. Each assignment will be weighted equally towards the final grades. Homework is designed to help students master and extend the knowledge obtained from lecture. It is strongly advised that the students should independently work on the problems before discussing with others. In order to be graded and counted towards the final grade, each assignment must be submitted on time. Extensions on assignment deadline will be granted only in the most exceptional circumstances. Any extension request must be made to the course instructor at least 24 hours before the due date.
3. Exams. Both mid-term and final exams are closed-book exams. However, students will be allowed to bring in two double-sided A4 sheets with written (NO PHOTOCOPY & NO PRINTING) notes in both exams. The date of mid-term exam is Oct 29th, 2:00pm-3:15pm. And the final exam will be taken place on December 12th, from 2:00pm to 5:00pm.

Grading Methods:
Attendance and Participation: 10%
Homework Assignments: 25%
Mid-term Exam: 25%
Final Exam: 40%

Honor Policy:
As the only true way to acquire knowledge is through your own hard work, it is of the uttermost importance that all the submitted works, such as homework assignments and exam papers, must reflect your independent efforts made during the learning process. Hence, the following honor policy will be enforced throughout the semester. Any breach to the policy will be reported directly to the UVa Honor Committee.

Although students may discuss homework assignments in small groups, each student must finish his or her assignments independently based on his or her own understanding. Copying others’ works will not be tolerated. Students must not consult any external resource other than the allowed sheets of written notes during both mid-term and final-term exam.