SYLLABUS FOR STAT 4157, FALL 2012
Instructor: Somak Chatterjee
Office: 2140 Pennsylvania Ave. NW, Room B-04
Office Hours: Wednesdays and Thursdays 12pm - 1pm, or by appointment
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Class Schedule: Tuesdays and Thursdays 3.45pm - 5.00pm
Classroom: Phillips Hall, Room 110


COURSE DESCRIPTION: Basic concepts of probability theory, random variables and distribution functions, multivariate probability distributions, central limit theorem and normal approximation of distributions.

COURSE PREREQUISITES: MATH 1232 or equivalent (and preferably STAT 1053 or equivalent).

LEARNING OUTCOMES: The purpose of this course is to introduce students to the fundamental concepts and basic applications of mathematical statistics. As a result of successfully completing this course, students will be able to understand modern probability theory, grasp the concept of random variables, apply the most commonly used distributions like normal, binomial, poisson, chi square, student’s t etc and be able to interpret and solve real world problems.

TOPICS TO BE COVERED: The following schedule will give you an approximate idea and depending on time and scope, any detail can be altered without prior notice.

08/28/2012 - 10/09/2012 Tentative date for First Midterm is 10/11/2012
Ch-2 Probability of an event, conditional probability, independence of events, Bayes’ rule, random sampling
Ch-3 Definitions, expected value and variance, common discrete distributions, moment generation functions, Moment inequalities
Ch-4 Definitions, expected value and variance, common continuous distributions

10/16/2012 - 11/13/2012 Tentative date for Second Midterm is 11/15/2012
Ch-4 Common continuous distributions contd. , moment generation functions, Moment inequalities
Ch-5 Random vectors, joint distributions, marginal and conditional distributions, independent random variables, expected value of a function of random vectors, moments, multinomial distribution, bivariate normal distribution, conditional expectations
Ch-6 Functions of random variables and their distribution functions

11/20/2012 - 12/06/2012
Ch-6 Ordered statistics
Ch-7 Sampling from a normal population, central limit theorem, normal approximation to the binomial distribution
GRADING AND HOMEWORK:

1. **Exams:** There will be **TWO** 75 minute midterms (weight: 20% each) and **ONE** cumulative 2 hour final exam (weight: 30%). *In accord with university policy, the final exam will be given during the final exam period and not on the last week of the semester.*

2. **Homework:** There will be **ABOUT TEN** graded homework assignments (weight: 15%).

3. **Quizzes:** There will be **ABOUT FIVE** announced or pop quizzes (weight: 15%).

*Any one having a final raw score which is less than 50% of the highest score in the class will not receive a passing grade.*

CLASS POLICIES:

1. Attendance is expected.

2. Make-up exams/quizzes will be given only for legitimate, documented reasons. Under no circumstances will make-ups be given to accommodate travel arrangements that conflict with scheduled course activities. If you must miss an exam, then it is your responsibility to contact me directly, in person, and in advance of the scheduled exam to make alternate arrangements.

3. Late homework **WILL NOT BE ACCEPTED**.

4. In writing up homework, it is not sufficient to give only the answer to a problem; you must show reasonably detailed justifications/calculations.

5. Discussion of homework with fellow students is allowed, but students are expected to work alone while writing up the solutions. No credit will be given to either party for work that has been copied.

RELIGIOUS HOLIDAYS: Please visit [http://www.gwu.edu/~regweb/web-content/policies.html#religious_holidays](http://www.gwu.edu/~regweb/web-content/policies.html#religious_holidays) for GWU Policy on Religious Holidays. It states that

1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance.

2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations.

3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to re-schedule missed classes or to make other provisions for their course-related activities.

ACADEMIC INTEGRITY: I personally support the GW Code of Academic Integrity. It states: Academic dishonesty is defined as cheating of any kind, including misrepresenting one’s own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. For the remainder of the code, see: [http://www.gwu.edu/~ntegrity/code.html](http://www.gwu.edu/~ntegrity/code.html)

SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM:

1. **DISABILITY SUPPORT SERVICES (DSS):** Please inform the instructor if you have a documented disability and need special arrangements for tests or quizzes. To establish eligibility and coordinate reasonable accommodations for exams, please contact the Disability Support Services Office (202-994-8250), in Rome Hall, Suite 102, or at [http://gwired.gwu.edu/dss/](http://gwired.gwu.edu/dss/)

2. **UNIVERSITY COUNSELING CENTER (UCC):** The University Counseling Center offers 24/7 assistance and referral to address students personal, social, career, and study skills problems. Services for students include crisis and emergency mental health consultations, confidential assessment, counseling services (individual and small group), and referrals visit [http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices/](http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices/) or call 202-994-5300.

SECURITY: In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter in Gelman Library.