Mathematical Statistics I — Stat 7710, Section 001, Fall 2008

(as of 9/2/2008)

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Office hours: MWF 12:00noon–1:00pm and by appointment.

Classes & Rooms: MWF 9:30am – 10:20am, Mo 8/25 – Fr 12/5, 2008: Geol 315.

Text: *Statistical Inference* (Second Edition) by George Casella and Roger L. Berger.

Course Objectives:
This course and its sequel, Stat 6720, will work through Casella and Berger fairly linearly. However, I reserve the right to skip around, omit some parts, or bring in some outside material. Casella and Berger will be the only textbook for this sequence although you should also check some of the books held on reserve for this course at the library.

Topics:

- Probability Theory
- Random Variables and Transformations
- Expectations and Other Moments
- Random Vectors
- Particular Distributions
- To be continued in Stat 6720...

Course Requirements:

0) Prerequirement: Although I will not insist on any specific course as a prerequisite, knowledge similar to "Theory of Probability and Introduction to Mathematical Statistics" (preferably at a strong enough level to pass the masters qualifying exam in probability and statistics) is highly desireable. Also valuable, but not required, is a good background in linear algebra and (advanced) calculus. If you are concerned about your preparation, please contact me.

1) Class Attendance: You are responsible for all material assigned as required reading and/or presented in the lectures.

2) Lecture Notes: Lecture notes will be prepared by the instructor. A "working" version will be handed out at the beginning of each Section (or Chapter).

3) Lecture Preparation & In–Class Presentation: Each student has to prepare and teach one 50 min lecture during the course of the semester. This includes the preparation of a

working version of the lecture notes and teaching the lecture. A "final" version of a previous Stat 6710 lecture that contains the material to be discussed in class will be provided about 7 to 10 days before a lecture has to be taught by a student. This part is worth a total of 20% (200 points) of your course grade.

4) Homework: Assignments will be handed out in class every 10 to 14 days. Homework will be collected in class about two weeks thereafter (the exact due date will be stated on each homework assignment). Homework mailed in, sent by FAX, or sent by e–mail by the due date will be accepted as well. In general, late homework will not be accepted. Homework assignments are worth a total of 20% (200 points) of your course grade. **Homework assignments will be group assignments this semester.** We will determine groups of 2 or 3 students that have to submit a joint solution to the homework questions. It is not permitted to submit more than one solution per group. You can use your favorite strategy how to solve the homework questions, e.g., first solve each question independently and then discuss the individual solutions with your group members, or divide the questions among the group members who have to come up with the individual solutions that are later checked by the other group members. Checking your solutions will be an important task this semester, so you may want to try different approaches how to solve a question. *Obvious* mistakes in an answer will lead to a considerable point deduction (similar to the grading in the midterm and in the final and even more in the comprehensive exam several of you are going to take in May). Each group member will obtain the same number of points. Extra credit questions will have to be solved and turned in individually (group work is not permitted for those questions). Depending on the number of groups, only a randomly selected subset of questions may be graded in detail. For all other questions you have turned in that are not graded in detail, you will obtain full points. Detailed solutions to the homework questions will be provided. Based on group performances up to the midterm and individual performances in the midterm, groups will most likely be reordered after the midterm.

5) Software: This course will not focus on any particular mathematical or statistical software package. You can use any statistical package you want for the homework assignments.

6) Midterm: There will be a 3–day take–home midterm exam to be handed out between Friday 10/3/2008 and Friday 10/10/2008 worth a total of 25% (250 points) of your course grade. You can decide yourself when to pick the midterm exam but you have to turn it in within 3 days (72 hours) after you have picked the exam.

7) Final: There will be a 4–day take–home final exam to be handed out between Monday 11/24/2008 and Thursday 12/4/2008 worth a total of 35% (350 points) of your course grade. You can decide yourself when to pick the final exam but you have to turn it in within 4 days (96 hours) after you have picked the exam.
Midterm and final will consist of problems similar to those in the homework assignments. Please note that you are **NOT** allowed to discuss or share any questions or solutions with any of the other students while anyone is still working on these exams nor get any additional help from anyone else other than the instructor.

8) Americans with Disabilities Act: If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center, during the first week of the course. Any requests for special considerations relating to attendance, pedagogy, taking

of examination, etc. must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative formats — large print, audio, diskette or Braille.

Grading System:

Final	35%	350 pts
Midterm	25%	250 pts
Homework	20%	200 pts
Lecture	20%	200 pts
Total	100%	1000 pts

Course grades will be generally comparable (in terms of distribution) with grades assigned in other graduate statistics courses. The above schedule and procedures in this course are subject to change in the event of extenuating circumstances.