Statistics 6201

Mathematical Statistics I

Fall 2012 - Section 11

6:10-8:40 R 1957 E B17

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	Call 202-994-6625 to be let in the building

COURSE OBJECTIVE

The STAT 6201-2 course sequence presents techniques and basic results of probability and mathematical statistics at a rigorous and advanced calculus level.

In STAT 6201 we develop the probabilistic tools and language of mathematical statistics. The course presents probabilistic models for and properties of random variables, common probability distributions, and large sample results.

LEARNING OUTCOMES

As a result of completing this course, students will be able to:

1. Make probabilistic arguments.
2. Formulate probabilistic models for science, engineering, economics, public policy and many other areas of application.
3. Have a global overview of the interplay between probability and statistics.

BLACKBOARD REGISTRATION

All students are required to register for the course in Blackboard, the GWU web-based instructional resource. Course information and materials, including notes, grades, and details about course assignments and exams will be posted there periodically. It is the student's responsibility to check the Stat 214 Blackboard website frequently for up-to-date information about assignments. Once enrolled in the course, you should automatically be registered on Blackboard. Log into the course website at:
https://blackboard.gwu.edu/webapps/portal/frameset.jsp

COURSE OUTLINE

We shall cover most, but not all of the material in chapters 1 through 5 of Casella & Berger.

1. *Probability Theory*: axiomatic foundations, conditional probability, random variables, probability distributions.
2. *Transformations and Expectations*: functions of random variables, expected values, moment generating functions.
3. *Families of Distributions*: discrete and continuous distributions, exponential family, location and scale family.
4. *Random Vectors*: joint, marginal and conditional distributions, hierarchical and mixture models, covariances.
5. *Sampling Distributions and Convergence*: random samples, sums of random variables, convergence concepts.

TEXTBOOK

Required text: Casella G. and Berger R. L. (2002). *Statistical Inference, 2nd Edition*. Duxbury Advanced Series. (ISBN: 0534243126)
Recommended: *Introduction to Mathematical Statistics,* by Robert V. Hogg, Joseph McKean, and Allen T Craig, 7th Edition (ISBN: 9780321795434).

PREREQUISITES

Students taking the course must have completed three semesters of calculus and had some exposure to basic probability and statistics.

GRADING

The course grade will be based on homework, quizzes, a midterm exam and a final as follows: **Homework 35%, Midterm 30%, Final 35%**

- **HOMEWORK: There will be approximately 10 homework assignments.** Late assignments will not be accepted for any reason, medical or otherwise. Homework assignments that are collected and graded should be treated as **individual and not collective efforts.**
- **MIDTERM EXAM:** The midterm exam is tentatively scheduled for October 4. The exam will be given during class time.
- **FINAL EXAM:** The final exam will be a comprehensive exam. This 2-hour exam is tentatively scheduled for December 6 (last class).

In class examinations will be closed book and closed notes. Students will be permitted to bring one 8 1/2 by 11 inch sheet of notes (both sides) to the midterm exam and two to the final exam. The final exam will be cumulative, but weighted towards the material covered after the midterm. You may bring calculators to all exams, in addition to scratch paper.

No Make-up exams: Except for medical reasons (with proper documentation), there will be no make-up exams. NB: If you miss an exam, you fail it.

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

SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM

DISABILITY SUPPORT SERVICES (DSS)

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: http://gwired.gwu.edu/dss/

UNIVERSITY COUNSELING CENTER (UCC) **202-994-5300**

The University Counseling Center (UCC) 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

http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices

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 at a predetermined rendezvous location.