MGTECON 603: Econometrics Methods I
Probability and Statistics

Professor Peter Hansen                                      Fall 2005
Lectures: Mon-Wed: 1:30-3:00 in L104.
Office: Landau Economics Building #229.
Office Hours: Thursday 2:00-3:30.
Email: peter.hansen@stanford.edu.

CA Zhipeng Zhang
Sections: Friday 4:30—6:00 PM in L107.
Office Hours: Tuesday 2:00-3:00 PM (cubicle at South 493H).
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Course Homepage: Coursework.

Course Description: This is the first of a two-course sequence in graduate econometrics.
This course covers basic probability and statistics, and the linear regression model.
You are assumed to have a background in undergraduate calculus, linear algebra, and
probability and statistics. E603 is a required GSB Ph.D. course, so students may have
diverse backgrounds. The supplementary readings have been chosen to provide you with an
opportunity to go beyond the discussions in class, or to fill in background material necessary
for you to fully grasp those parts of the course material that you find relatively demanding.

Other references:

• Amemiya, T. Introduction to Econometrics and Statistics.
• Billingsley, P. Probability and Measure.

Problem Sets, Exam, Grading: There will be approximately ten (10) homework assign-
ments. All problem sets are to be done individually and under the provisions of the Stanford
Honor Code. Problem set must be turned in on time in order to receive full credit.
There will also be a comprehensive final exam. The weights in grading will be 50% on
problem sets and 50% on the final exam.
Course Outline:

**Week 1 (9/26 & 9/28)** Probability Theory
- Casella and Berger: Chapter 1 and 2.1

**Week 2 (10/3 & 10/5)** Transformations and Expected Value, Common Distributions
- Casella and Berger: Chapter 2.2-4, 2.6 and 3.1-3, 3.5-6, 3.8.

**Week 3 (10/10 & 10/12)** Multivariate Random Variables
- Casella and Berger: Chapter 4.1-3

**Week 4 (10/17 & 10/19)** Multivariate Random Variables
- Casella and Berger: Chapter 4.5-7

**Week 5 (10/24 & 10/26)** Random Sample and Matrix Reminder
- Casella and Berger: Chapter 5.

**Week 6 (10/31 & 11/2)** Asymptotic Theory
- Casella and Berger: Chapter 5.

**Week 7 (11/7 & 11/9)** No Classes.

**Week 8 (11/14 & 11/16)** Data Reduction and Point Estimation
- Casella and Berger, Chapter 3.4 and 6.1-6.2.
- Casella and Berger, Chapter 7

**Week 9 (11/21 & 11/23)** No Classes (Thanksgiving week).

**Week 10 (11/28 & 11/30)** Hypothesis Testing and Interval Estimation
- Casella and Berger, Chapter 8 & 9

**Week 11 (12/5 & 12/7)** Regression Analysis
- Casella and Berger, Chapter 11 & 12