Econ 770 Introduction to Econometric Theory

Probability, Expectations, Asymptotics, and Introduction to Inference

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Lectures: Mon & Wed 11:00-12:15.

Office Hours: Mon & Wed 14:00-15:00.

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Course Outline

The course will cover an introduction to statistics and econometrics. The course will loosely follow Casella and Berger, *Statistical Inference*, 2nd ed, Chapters 2 through 7 (though most of chapters 3 and 6 and sections 5.6.2, 5.6.3 will not be covered). There are many good textbooks that cover the same material, such as *Introduction to Econometrics and Statistics*, by T. Amemiya, *Introduction to Mathematical Statistic* by Hogg, Craig, and McKean, and *Introduction to the Mathematical and Statistical Foundations of Econometrics* by H.J. Bierens. I will also supply you with, or direct you to, lecture notes that you may find useful as supplementary reading.

Website

Course website: To be created on Sakai shortly.

Schedule (preliminary)

- Introduction and some elementary probability and distribution theory for scalar random variables. (Casella and Berger, Chapter 2). Including: Transformation of a random variable. Expected value. Moment generating function and characteristic function of a random variables.

- Distribution theory for random vectors & properties of random samples. (Casella and Berger, Chapters 4)

- Asymptotics with a Review of Matrix Algebra (Casella and Berger, Chapter 5.1-5.5 and 5.6.1)

- Introduction to Hypothesis Testing and Methods for Inference: Methods of Moments and Maximum Likelihood. (Casella and Berger Chapter 7 and lecture notes).

Problem Sets

A number of homework assignments will be given during the course. You may discuss and exchange ideas about how to solve the assignments, but each student must turn in her own work.

Some assignments will require the use of computer software such as Matlab, Gauss, R, Ox. Matlab is quite popular in Economics/Econometrics/Finance, while R is popular in Statistics. You can obtain Matlab inexpensively from UNC; R is shareware and therefore free online; and Ox can be obtained for free for academic use.

Grading Policy

Grades will be based on: homework assignments (25%); an midterm exam (25%) and a final exam (50%).

Subject to Revision

This is the first time I am teaching this course at UNC. I have taught the same course at Stanford GSB, Stanford Econ, and at the European University Institute, but will be fine-tuning how much time we devote to each topic as we proceed with the semester. You feedback throughout the semester will be highly appreciated.