Math for Economists: Probability Theory
EC 730
Fall 1997

Professor Bruce Hansen
Tuesday-Thursday 10:30 a.m.

This course is designed for first-year Economics Ph.D. students. The fundamentals of probability theory are covered. This course is followed by Econometrics I in the spring semester, where the fundamentals of statistical theory are covered.

Assignments: There will be class assignments approximately every second week. Late assignments will not be accepted as written answers will be passed out. You may work together on the assignments, although I strongly recommend that you try to answer every question on your own first, as this is the best way to learn the material.

Warning: It is against departmental (and professional) policy to "cheat" on assignments by copying answers provided by advanced students.

If you have questions, you are welcome to come to my office. I hold office hours on Thursday afternoons, 1:30 to 3:30. If this time is inconvenient, other times can be arranged as well. You may also contact me by telephone (552-3678) or e-mail (bruce.hansen@bc.edu)

Exams: There will be one final exam.

Grading: assignments: 20%; final: 80%.

Textbook: (Available in the Bookstore)

Probability and Statistical Inference, 4th Ed., by Robert Hogg and Elliot Tanis (1993)

Alternative Textbooks:

The material covered in this course is quite standard, and can be found in a number of good textbooks. Some students may find it helpful to read alternative sources. Four texts which cover similar material include:

A Course in Econometrics, by Arthur Goldberger (1991)
Statistical Methods in Econometrics, by Ramu Ramanathan (1993).
Introduction to Statistics and Econometrics, by Takeshi Amemiya (1994).
An Introduction to Econometric Theory, by A. Ronald Gallant (1997).

Course Outline

1. **Basic Probability**

   Hogg and Tanis, Ch. 2

   Amemiya, Ch. 2
   Ramanathan, Ch. 2

2. **Univariate Distributions**

   Hogg and Tanis, Ch. 3, 4

   Goldberger, Ch. 2, 3
   Amemiya, Ch. 3, 4
   Ramanathan, Ch. 3, 4

3. **Multivariate Distributions**

   Hogg and Tanis, Ch. 5.1

   Goldberger, Ch. 4, 5, 6
   Amemiya, Ch. 3, 4
   Ramanathan, Ch. 5

4. **Normal Distribution**

   Hogg and Tanis, Ch. 4.4

   Goldberger, Ch. 7
   Amemiya, Ch. 5

5. **Random Sampling**

   Hogg and Tanis, Ch. 5.2, 5.3, 5.7

   Goldberger, Ch. 8
   Ramanathan, Ch. 6

6. **Asymptotic Theory** (if time)

   Hogg and Tanis, Ch. 5.4, 5.5, 5.6

   Goldberger, Ch. 9

Amemiya, Ch. 6
Ramanathan, Ch. 7