# UNIVERSITY OF CALIFORNIA, SAN DIEGO Department of Economics ECON 120A: Probability and Statistics

Prof. C.-M. Kuan 534-8904

Fall 2005 Economics 109

This is the first course of the econometrics sequence for undergraduate students. This course introduces students to basic data analysis, probability concepts, and statistical inferences that are necessary for subsequent econometrics courses, 120B and C. These concepts and methods will also be useful in various applied economics courses. We will focus on both analytic results and statistical computing via a spreadsheet program. The prerequisites for this course are Econ 1 and Math 10 (or Math 20) sequences, though calculus will only be used occasionally.

#### **Readings:**

- 1. Required: Wonnacott, T. H. and R. J. Wonnacott (1990). *Introductory Statistics* for Business and Economics, 4th edition, New York: John Wiley and Sons.
- 2. Supplemental: Lecture notes (will be available on WebCT).

Software: Microsoft Excel (available in the computer lab in Econ 100).

Office Hour: Tuesday 2–4 or by appointment (ckuan@econ.sinica.edu.tw).

TAs:

- 1. Deniz Kebabci (dkebabci@ucsd.edu): Sequoyah 205; Th 9-10, Fri 8-10.
- 2. Seth Pruitt (sjpruitt@ucsd.edu): Economics 123; Mon, Wed 2–3.
- 3. Will Peterman (wbpeterm@ucsd.edu): Sequoyah 228; Tu 10-11, Wed 9:30-11:30.
- 4. Kevin Novan (knovan@ucsd.edu): Sequoyah 238; Mon, Wed 9:30-10:30.

#### **Course Outline**

- 1. Introduction (Chap. 1)
- 2. Basic Data Analysis (Chap. 2):
  - Graphical analysis
  - Descriptive statistics
- 3. Probability Concepts (Chap. 3)
  - Probability and events
  - Conditional probability and Independence
  - Bayes Theorem
- 4. Random Variables (Chap. 4 & 5)
  - Definition and moments
  - Probability distributions
  - Two random variables
  - Function of random variables
- 5. Estimation (Chap. 7)
  - Point estimation
  - Unbiasedness and efficiency
  - Law of large numbers and consistency
- 6. Sampling Distributions (Chap. 6)
  - Moments
  - Exact distribution under normality
  - Central limit theorem and large sample distribution
- 7. Confidence Intervals (Chap. 8)
  - CI based on exact distribution
  - CI based on large sample distribution
- 8. Hypothesis Testing (Chap. 9)
  - Basic concepts

- Exact tests
- Large sample tests

## Homework:

- 1. There will be 6 assignments: To be given on Tuesday and due next Tuesday.
- 2. Homeworks will be graded based on the completeness of your answers.
- 3. Absolutely NO late homework will be accepted.

### Exams:

- 1. Midterm on Nov. 3 (items 1–4 of course outline)
- 2. Final on Dec. 6 (items 5–8 of course outline)
- 3. Exam absence: Absolutely NO make-up exam will be granted without official proofs of absence.

## Grading:

- 1. Distribution: Midterm 40%, Final 50%, Homework 10%.
- 2. Final grade is based on curve.