

ECON 41: STATISTICS FOR ECONOMISTS - Summer 2017 Session A

Department of Economics, UCLA

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E-Mails: I will give the lowest priority to E-mail inquiries regarding announcements made in class, and E-mail inquiries that can be answered by reading this syllabus. Please make sure that your full name with proper capitalization and Economics 41 appear in the "Sender" and in the "Subject" lines; I routinely delete suspicious e-mails without opening them.

Lecture: Monday and Wednesday 10:45am-12:50pm, BUNCHE 2209A

Office Hour: Mon and Wed, 9:30-10:30am, Alper Room (BUNCHE 2265).

Description: This course is an introduction to the theory and practice of statistics with an emphasis on its use in economics. It will introduce basic statistical concepts such as random variables, probability distributions, estimation, confidence intervals and hypothesis testing.

Textbook: The textbook for the course is *A Brief Course in Mathematical Statistics* by Elliot A. Tanis and Robert V. Hogg (Prentice Hall).

Course Outline: Maple exercises need not be read or understood.

1. Probability

- a. Basic Concepts
- b. Methods of Enumeration – Only three topics including Sampling with Replacement, Combination, Binomial Coefficients
- c. Conditional Probability
- d. Independent Events
- e. [Skip Section 1.5 Bayes's Theorem]

2. Discrete Distributions

- a. Discrete Probability Distributions – Topics include Mean, Variance, Sample Mean, and Sample Variance
- b. Expectations. [Unbiased estimation and Chebyshev's inequality]

- deferred until after continuous random variables.]
- c. Special Discrete Distributions. Discuss only the definition of Poisson. [Skip relationship between binomial and Poisson. Skip every other distribution in the section.]
- d. Linear Functions of Independent Random Variables. [Law of large numbers discussed later.]
- e. Covariance [Skip the rest of Section 2.6 Multivariate Discrete Distributions]
- 3. Continuous Distributions
 - a. [Skip Section 3.1]
 - b. Continuous Probability Distributions. [No percentile]
 - c. The Normal Distribution [Skip Example 3.4-7]
 - d. (Optional) Estimation in the Continuous Case
 - e. Central Limit Theorem. [Skip every example except Example 3.6-1]
 - f. Approximations for Discrete Distributions. [Skip Example 3.7-5]
- 4. Applications of Statistical Inference
 - a. Chebyshev's Inequality, Law of Large Numbers and Estimation
 - b. Section 3.3. Brief Introduction to chi-square, t- and F-distributions. No other distributions will be discussed.
 - c. Summary of Necessary Theoretical Results.
 - d. Section 4.2. Just discuss confidence intervals using T. Two-sample problems on pp 165-168 optional.
 - e. Confidence Intervals and Tests of Hypotheses
 - f. [Skip the rest of this chapter, i.e., 4.4-4.11]
- 5. [Skip Chapter 5]
- 6. [Skip Chapter 6]

Exams: There will be a mid-term exam on **July 12th, 2017**, and a final exam on **August 2nd, 2017**. Both exams are **in-class**. The midterm will cover everything discussed during **June 26 – July 7** time window. The final exam will cover every topic discussed, including the material covered in the midterm exam.

The exams may be of the multiple choice format, and you may be required to bring a Scantron Form 882-E. In both exams, you are required to bring a

decent calculator that can take square roots. (No device that can store PDF files can be used as a substitute; smart phones and iPad's can be used to view PDF files, so they are not allowed.) If you fail to bring a calculator, or your calculator malfunctions/runs out of battery, you will be asked to take the exam without a calculator.

Evaluation: Your final letter grade will be based on the weighted average of the homework assignments, the midterm exam and the final exam. No other factor will be considered when your letter grades are determined.