Economics 41
Statistics for Economists
UCLA, Summer 2018

Syllabus

Instructor: Jeonghwan Kim
Office Hours: Alper Room (Bunche 2265)
            MW 9:30-10:30AM
Email: jdkim87@ucla.edu
Teaching Assistants: TBD
Time & Location: Bunche 1209B MW 10:45AM – 12:50PM
Midterm Exam: 8/22 (In Class)
Final Exam: 9/12 (In Class)

Course 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.

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

Email Questions
Due to the large number of students in the class, I do not guarantee response to emails. (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.
Course Enforced Policies

• There are no make-up exams. Exam dates are indicated on the syllabus. Therefore, if you cannot take an exam on the specified date, you are advised to take the course in a different section.
• You need to bring a valid form of picture ID on scheduled days of exams. You will not be allowed to take the exam without one.
• The use of electronic devices such as cellphones, tablets, and devices that allow you to communicate with others, is strictly banned during exams. You will be reported for cheating if caught using them during exams.
• There are no extra credit assignments available.
• All grades are final when filed by the instructor on the Final Grade Reports

University Policy on Missed Exams:

Any valid medical excuse must have a written documentation of such of an excuse. A student who misses an exam without a valid medical excuse that can be proved will receive a zero.

Disabled Students and Center for Accessible Education

Any student with a pre-existing illness or condition who requests special arrangements must (a) qualify under CAE rules for such special arrangements and (b) must take the exam with CAE. Any such arrangements with CAE must be made the first week of classes. The instructor must be informed of any such arrangement in the first week of classes. For additional information and the qualification conditions of the Center for Accessible Education (CAE), please visit their website at http://www.cae.ucla.edu/

Academic Dishonesty

Any cases of academic dishonesty will be reported to the Office of the Dean of Students. For more details please refer to the Office of the Dean of Students website at http://www.studentgroups.ucla.edu/dos/

Course Outline

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]

**Homework**

Homework problems will be posted in the CCLE website, which is available at the course website. Depending on the class progress, each Wednesday after class, I will send an email announcing which problems should be submitted next Wednesday, so that you have one week for each problem set. Late homework will not be accepted. About 30% of midterm and final questions will be based on the homework problems, though numbers may be changed, so it is important to make sure you understand the homework problems.

**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. The weights given to the homework assignments, midterm and final examinations will be 10%, 40%, and 50%, respectively. The letter grade will be based on a “curve”. Roughly speaking, I will assign 25% students some A’s, 35% students some B’s, and 30% students some C’s. In order to eliminate any ambiguity arising from ties, I will use the precise mathematical algorithm described below:

1. Your homework score will be divided by the maximum possible homework score, and then multiplied by 100. Call it H. Likewise, your midterm score will be divided by the maximum possible midterm score, and then multiplied by 100. Call it M. Your final score will be divided by the maximum possible final score, and then multiplied by 100. Call it F. Your weighted average W is calculated by the formula $W = H \times 0.1 + M \times 0.4 + F \times 0.5$.

2. If $W \leq 40$, you will get F regardless of your class rank.

3. If $W > 40$, your grade will be determined by the algorithm below.

   a. Define your $r$ to be the number of students enrolled in class whose W’s are strictly higher than your own W. More precisely, let $W_1, ..., W_n$ be the weighted averages of all the students in class, where $n$ denotes the number of students enrolled. Define your class rank $R$ by (the number of students who get larger weighted average than you) + 1.

   b. If $R \leq 0.05 \times n$, you will get A+.

   c. If $0.05 \times n < R \leq 0.15 \times n$, you will get A.
d. If $0.15 \times n < R \leq 0.25 \times n$, you will get A-.

e. If $0.25 \times n < R \leq 0.40 \times n$, you will get B+.

f. If $0.40 \times n < R \leq 0.50 \times n$, you will get B.

g. If $0.50 \times n < R \leq 0.60 \times n$, you will get B-.

h. If $0.60 \times n < R \leq 0.70 \times n$, you will get C+.

i. If $0.70 \times n < R \leq 0.80 \times n$, you will get C.

j. If $0.80 \times n < R \leq 0.90 \times n$, you will get C-.

k. If $0.90 \times n < R \leq 0.95 \times n$, you will get D+.

l. If $0.95 \times n < R \leq n$, you will get D.

m. Just to be clear, the symbols $<$ and $\leq$ have completely different mathematical meanings.

Other Rules

Consult the Common Syllabus, which can be found at: