

Statistics for Economists

Lectures: Tue. and Thu., 10:00am – 11:30pm, 1360 East Hall
Instructor: Yoonseok Lee (365C Lorch Hall, 615-0177, yoolee@umich.edu)
Office Hours: Tue. 2:40pm – 4:00pm or by appointment
GSI: Laura Kawano (125 Lorch Hall, lkawano@umich.edu)
(Office Hours TBA)
Discussion Sessions: Fri. 11:00am–12:00pm, 1570 CCL [DIS 002]
Fri. 12:00pm–1:00pm, 1570 CCL [DIS 003]

Course Description

This course provides basic knowledge of probability, statistics and regression analysis for undergraduate economics majors. Upon completion of this course, students can read empirical literature in economics and carry out their own economic data analysis. No prior knowledge of statistics is assumed though basic calculus is required. No credit is granted to those who have completed or are enrolled in ECON 405 or STATS 265, 311, 350, 400, 405, or 412.

In order to give students hands-on experience of economic data analysis, computer-based exercises are integrated as an essential part of the course. If you are already familiar with a statistical software package such as MINITAB, SPSS, STATA, EVIEWS, SAS, RATS, GAUSS, MATLAB, etc., you are welcome to use it. For those who are not yet, the textbook has step-by-step instructions for SPSS, MINITAB and Microsoft Excel. The GSI is familiar with STATA, MATLAB, SPSS and Microsoft Excel, and students also can get help from her.

The GSI will hold weekly office hours and discussion sessions. She will go over problem sets and answer questions about materials covered in the class. The weekly discussion sessions are held in a computer lab and the GSI also demonstrates how to use statistical software packages to conduct econometric analysis, particularly using SPSS. The discussion session starts from the second week of the semester (Jan.11).

The class web page is available at <http://ctools.umich.edu>. Announcements, problem sets and additional course materials will be posted there, so make sure to visit the site frequently. Hard copies of these materials will *not* be distributed.

If you believe you need an accommodation for a disability, please let me know at your earliest convenience. Some aspects of this course may be modified to facilitate your

participation and progress. As soon as you make me aware of your needs, we can work with the Office of Services for Students with Disabilities to help us determine appropriate accommodations. I will treat any information you provide as private and confidential.

Textbooks

The required textbook for the course is:

[MBS] James T. McClave, P. George Benson and Terry Sincich (2008). *Statistics for Business and Economics*, 10th ed., Pearson Prentice Hall.

It is available at Ulrich's Books, Michigan Book and Supply, and the Michigan Union Bookstore. Other books that are recommended, though not required, are:¹

[HT] Hogg, R.V. and E.A. Tanis (2005). *Probability and Statistical Inference*, 7th ed., Prentice-Hall.

[K] Keller, G. (2005). *Statistics for Management and Economics*, 7th ed., Thomson - Brooks/Cole.

[NCT] Newbold, P., W.L. Carlson and B. Throne (2006). *Statistics for Business and Economics*, 6th ed., Prentice-Hall.

[SW] Stock, J.H. and M.W. Watson (2007). *Introduction to Econometrics*, 2nd ed., Addison-Wesley.

[W] Wooldridge, J. (2006). *Introductory Econometrics: A Modern Approach*, 3rd ed., South-Western.

All these books are on reserve at the Shapiro Undergraduate Library. Some parts of [K] will be provided on the class web page.

Organization and Evaluation

Grades will be decided based on weekly problem sets, one midterm and the final. The grading breakdown is as follows:

Problem Sets 30%; Midterm Exam 30%; Final Exam 40%.

The problem sets will be posted on the class web every Friday and they are due on the following Thursday, by the end of the class. No late submission will be accepted. Students are encouraged to form study groups and collaborate with other students to work on problem sets. You have to, however, write up and submit your own

¹[NCT] covers more materials with a similar technical level of [MBS]. [K] is rather concise with a similar coverage. For those who desire more complete treatment (with more mathematics) of the topics covered in the course, [HT] is a good alternative. [SW] and [W] are more about regressions and estimations in depth.

solutions.² The lowest grade of the problem sets will be dropped to calculate the final grade.

The exams are scheduled as follows (in the normal classroom space):

Midterm: 10:00am – 11:30am, Tuesday, March 4 (in class)

Final Exam: 10:30am – 12:30pm, Wednesday, April 23

All exams are closed-book. A basic³ hand-held calculator is allowed in the exams. The final exam will cover materials taught throughout the course, though more emphasis will be put on topics discussed after the midterm. No makeup exams nor early exams will be given for any reason, so please plan your travels smartly. If you miss the midterm due to a *documented* illness or family emergency, the grade will be calculated based on the problem sets and the final exam by adjusting their weights to sum to one. The final exam is required to pass this course.

Course Outline

I. Probability and Statistics

1. Introduction and Descriptive Statistics ([MBS] Ch.2; [K] Ch.4.4)
2. Probability ([MBS] Ch.3, Appendix A)
3. Random Variables and Distribution Theory ([MBS] Ch.4.1, 4.2, 4.5; [K] Ch.7.1 - 7.3)
4. Important Distributions ([MBS] Ch.4.3, 4.6, 4.7)

II. Statistical Inference

1. Sampling Distribution ([MBS] Ch.4.9, 4.10, 4.11)
2. Point Estimation ([MBS] Ch.5.1 - 5.5)
3. Interval Estimation ([MBS] Ch.5.1 - 5.5 & 7.1 - 7.5)
4. Hypothesis Testing ([MBS] Ch.6.1 - 6.5 & 7.1 - 7.5)

III. Regression Analysis

1. Simple Regression ([MBS] Ch.10)
2. Multiple Regression ([MBS] Ch.11)

²A word of advice: when you write the solution, provide the major steps of your calculation as you are taking exams. It is a good training for organizing and explaining your idea. When you are taking the midterm and the final exam, you will not be able to get the full credit if you simply write down the final answers without providing details.

³Calculators that perform functions beyond basic math (+, -, ×, ÷, and $\sqrt{\quad}$) will *not* be allowed.