

Tentative Syllabus

**ECON 318 Introduction to Econometrics Sec. 26136 Fall 2017**  
**Tue, Thu 10:00-11:50, Room: KAP 146**

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**Instructor:** Yu-Wei Hsieh, Office: KAP 312, Email: yuwei.hsieh@usc.edu.

**TA:**

**Who Should Take this Course:** This course is designed for students who seek academic challenge and solid training in analytical skills. We will emphasize both the theoretical foundation of econometrics and statistical software, to prepare you the quantitative skills for competitive master/docotoral programs, as well as jobs like consulting. One should expect heavy workload, as you can see from the required readings. Familiar with calculus is strongly recommend. Knowledge in linear algebra and programming are not required. There will be an exam in the 3rd week.

**Course Objectives:** This course aims at introducing econometric models and empirical techniques that are useful to conduct economic research with data. The main course objectives are to help you to learn the following skills

- Manage and analyze various types of economic data
- Understand and apply proper econometric models to answer economic questions
- Know how to use statistical software R to produce professional, beautiful graphs and statistical analysis for your clients, boss and co-workers.
- Deeper understanding of statistics theory for advanced courses and graduate school

**Textbook:**

- Theory:
  - Introductory Econometrics: A Modern Approach 6th Edition.
  - Instructor’s lecture notes (available at blackboard)
- Software
  - R for Data Science <http://r4ds.had.co.nz/>
  - Using R for Introductory Econometrics <http://www.urfie.net/>
  - R for Beginners by Emmanuel Paradis, available at [ftp://cran.r-project.org/pub/R/doc/contrib/Paradis-rdebuts\\_en.pdf](ftp://cran.r-project.org/pub/R/doc/contrib/Paradis-rdebuts_en.pdf)
  - Cookbook for R <http://www.cookbook-r.com/>

### Supplementary Readings:

1. R Graphics Cookbook: Practical Recipes for Visualizing Data by Winston Chang
2. Naked Statistics: Stripping the Dread from the Data by Charles Wheelan
3. Show Me the Numbers: Designing Tables and Graphs to Enlighten by Stephen Few

**Prerequisites:**\*ECON 317 (Introduction to Statistics for Economists), calculus, basic knowledge in economics (say, demand/supply curve, Cobb-Douglas production function), confidence interval, p-value.

### Course Outline:

1. 8/22 Sampling Distribution
2. 8/24 Law of Large Number and Central Limit Theorem
3. 8/29 HW-1 Due, Hypothesis Testing
4. 8/31 Conditional Expectation

5. 9/5 HW-2 Due and Review Session
6. **9/7 Midterm 1**  
*9/11 Last day to drop a class without a mark of W*

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7. 9/12 Population Regression; 9/14 Sample Regression Function and OLS
8. 9/19 and 9/21 Statistical Properties of OLS Estimator.
9. 9/26 HW-3 Due; Multiple Regression and  $R^2$
10. 9/28 Introduction of R
11. 10/3 and 10/5. R Graphs and RMarkdown
12. 10/10 HW-4 Due; Data Manipulation in R
13. 10/12 Regression Analysis in R
14. 10/17 Dummy Variable
15. 10/19 Multicollinearity
16. 10/24 HW-5 Due
17. 10/26 Monte Carlo Simulation
18. 10/31 Halloween and creepy office hour for midterm Q&A
19. **11/2 Midterm 2**

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20. 11/7&9 Instrumental Variable
21. 11/14&16 Panel Data
22. 11/21 HW-6 Due; Final Project Workshop or Discrete Choice Regression
23. 11/23 Thanksgiving (No Class)
24. 11/28&30 Final Project Presentation

25. 12/4 HW-7 Due. Due date of the final report TBA

**Software:** R

**Grading:**

1. Exam 1 10%
2. Exam 2 30%
3. Homework 35%
4. Group Project 25%

**Homework Policy:** There are about 7 sets of individual homework assignments. Homework should be turned in at the beginning of the lecture. As there are 4 econometrics sessions, please print your name, TA's name and my name clearly. Hard copy is required: don't email me and TA your homework. No late homework will be accepted. Exception: You have doctor's notice or whatever reasonable excuse with a valid proof. It is your responsibility to inform me or TA in advance if you cannot turn in the homework on time.

**Claiming Grading Mistakes/Missing Grade:** We will have a strict policy on claiming grading mistakes and missing homework grade. If you have any problem regarding your homework grade, you should contact the TA **within 7 business day** after we return the graded homework. After that period no more change will be made on your grade.

For the midterm exam you can only pick it up in class, and discuss any grading problem with the instructor in class. Please understand there are always some dishonest students who try to change the exam sheet and claim 30 points grading mistake, and we shall have a mechanism to deter such behavior. Thank you very much for your cooperation.