Syllabus for Introduction to Econometrics

Zheng Tian

Spring semester, 2017

1 Basic information

Time and location

Odd weeks	Monday	08:00 am – 09:50 am	Buoxue Building (博学楼) 706
	Wednesday	10:00 am – 11:50 am	Buoxue Building (博学楼) 306
Even weeks	Monday	08:00 am – 11:50 am	Buoxue Building (博学楼) 706

Instructor information

Name: Zheng Tian (田峥)
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Office: Angong Building (安工楼) 215
Tel: 83951054

Office hours

Office hours are tentatively scheduled as follows,

Tuesday	9:30 am – 11:30 am
Friday	9:30 am – 11:30 am

You are welcomed to stop by our offices at any other time. But making an appointment by email or phone in advance is highly recommended.

2 Course description

Objectives

This course is an introductory Econometrics course. Econometrics is a subject consisting of "economic tricks" for quantitative analysis, which is an indispensable component of economists' research toolbox. The roles of Econometrics include, but not limited to, quantitatively examining the relationship between various economic variables, giving empirical support to economic theories, making forecasts about economic performance in the future, and evaluating policy impacts, etc. At an introductory level, the goals of this course concern (1) letting students know basic econometric methods and theories, and (2) enabling students to use software, primarily R, to estimate a simple econometric model regarding their own research interests.

Serving for these ends, the contents of this course cover, but not limited to, the single and multiple OLS regression estimation, hypothesis testing, model specification assessment, detection and solutions to problems in regression, for example, heteroskedasticity and multicollinearity, and panel data model. If time permitted, we may also cover such topics as instrumental variable methods, and the Probit and Logit models for a limited dependent variable. Except for the concept of serial correlation, this course will not cover time series econometrics, which is the main topic of the Econometric course in the next semester.

Prerequisite

Principles of Microeconomics and Macroeconomics, Calculus, Introductory Probability and Statistics, and Linear Algebra.

3 Textbooks

Required

Stock, J. and Wastson, M. (2010) *Introduction to Econometrics*, 3rd edition `http://www.amazon.cn/gp/product/B00R7EEEUY/ref=ox_sc_act_title_2?ie=UTF8&psc=1&smid=A1AJ19PSB66TGU`

Recommended

- Jeffery Wooldridge (2012) *Introductory Econometrics*, 5th edition, China edition `http://www.amazon.cn/dp/B00ITGHEYW/ref=pd_bxgy_14_img_2?ie=UTF8&refRID=1HC25MXFFYG5GNPRFDS1`
- Kleiber and Zeileis (2008) *Applied Econometrics with R*

4 Course materials

Lecture notes

Lecture notes will be sent via email and uploaded in Baidu Cloud. The authorized links to lecture notes and other materials will be sent via email when they are uploaded. Hence, you must provide me your valid email addresses for the purposes of communication and distributing course materials.

Please read carefully lecture notes, which are the basis for all assignments and tests in this course.

Book companion materials

There is a companion website for this book, `http://wps.aw.com/aw_stock_ie_3/`, where you can download dataset for exercises, pratical quizzes, and STATA tutorial. You can also download datasets for empirical homework in Baidu Cloud.

5 Course assignments

TODO Homework

- Homework will be assigned every other week. Homework will help you understand fundamental concepts in econometric theories and grasp basic estimation and testing methods through practice and applications.
- Questions of homework will be selected from the end-of-chapter exercises in the textbook of Stock and Watson. I suggest that you read through the chapter(s) covered in the homework before answering questions.
- You can finish your homework by either handwriting or typesetting using word process software, e.g., Microsoft Word, LaTex, and the like. Typesetting is highly recommended.
- Each homework set will be assigned on Tuesdays of odd weeks (except for Homework 1 assigned on Week 2), and **due at 12:00 am on Mondays** of the immediately following week. You have one week to complete each homework set, and I strongly suggest you not wait until the last minute before the due time to complete it.

- You can turn in your homework in class on Mondays or email to me by the due time. Do not forget put your name on your homework.
- Homework will be graded as A, B, C, and D, based on the following rule
  - A: homework is submitted by the due time. Numeric and mathematical answers are correct for all questions with only minor mistakes. Explanations to your answers are convincing with correct use of econometric terminology. English writing is clear and grammatically right. (A = 100 percent points)
  - B: homework is submitted by the due time. Numeric and mathematical answers are correct for most questions. Explanations are sound but may not be totally right. English writing is a little obscure with minor grammatical errors. (B = 85 percent points)
  - C: homework is submitted by the due time. Numeric and mathematical answers are correct for almost half of questions. Explanations may not be right but correctly using related econometric terminology. English writing is just understandable with obvious grammatical errors. (C = 70 percent points)
  - D: homework is submitted by the due time. Numeric and mathematical answers are correct only for a few questions. Explanations are wrong but with some merits. English writing is poor in both understanding and grammar. (D = 60 percent points)
- Homework must be submitted by the due time. A grace period of late submission can be granted by request in advance. If granted, you must turn in your homework two days after the due day. Late submission of homework is subject to downgrading score to a lower level. No submission at all will result in no score on the homework.
- **TODO** Add a policy for group work in homework

Mid-term examination

- The mid-term exam will cover most materials taught from Week 5 to Week 9.
- It is tentatively scheduled on **May 9th, Monday**.
- This will be a closed-book test. But you are allowed to bring a one-sided "cheat sheet", on which you can write down some notes that help you remember some important definitions and formulas. You are allowed to write on **only one side** on the cheat sheet.
- If you miss the mid-term exam, a make-up test can be arranged. You must notify me in advance of your absence with a valid excuse.

Final examination

- The final exam will be comprehensive, covering all being taught throughout the semester.
- The time and location are to be arranged and announced by the university.
- This will also be a closed-book test. But you are still allowed to bring a "cheat sheet" written on **both sides** this time.
- The make-up test will follow the rule of the university.

TODO Add course project description

6 Grade distribution

Assignments	Scores
Homework	20
Course project	10
Midterm exam	30
Final exam	40
total	100

A total of five bonus points will be offered contingent on your performance. The announcement about the chances earning bonus points will be made in the class.

7 Course outline and schedule

Table 1 is the tentative outline and schedule for this course.[1] The schedule is subject to change according to the actual course progress. Chapters referred in the table are in the required textbook. Other related references would be cited in lecture notes.

Table 1: Tentative Course Schedule

Dates	Contents	Due dates
Week 1		
[2017-02-20 Mon]	Syllabus and Introduction (Chapter 1)	
[2017-02-22 Wed]	Review of probability (Chapter 2)	
Week 2		
[2017-02-27 Mon]	Review of statistics (Chapter 3)	
Week 3		
[2017-03-06 Mon]	Continue review of statistics	Homework 1 due
[2017-03-08 Wed]	Review of linear algebra (Appendix 18.1)	
Week 4		
[2017-03-13 Mon]	Introduction to R	
Week 5		
[2017-03-20 Mon]	Single regression: estimation (Chapters 4 and 17)	
[2017-03-22 Wed]	Continue on single regression estimation	
Week 6		
[2017-04-03 Mon]	Single regression: hypothesis tests (chapters 5 and 17)	Homework 2 due
Week 7		
[2017-04-10 Mon]	Continue on single regression hypothesis tests	
[2017-04-12 Wed]	Single regression with R and introduction to R Markdown	
Week 8		
[2017-04-17 Mon]	Multiple regression: estimation (chapters 6 and 18)	Homework 3 due
Week 9		
[2017-04-24 Mon]	Continue on multiple regression estimation	
[2017-04-26 Wed]	Multiple regression: hypothesis tests (chapters 7 and 18)	
Week 10		
[2017-05-01 Mon]	Labor Day break	Homework 4 due
Week 11		
[2017-05-08 Mon]	Mid-term examination	
[2017-05-10 Wed]	Continue on multiple regression hypothesis tests	

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[1] The instructor reserves the right to change this syllabus as time and circumstances dictate. Necessary changes will be announced in class in advance when possible.

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Dates	Contents	Due dates
Week 12		
[2017-05-15 Mon]	Multiple regression with R	Homework 5 due
Week 13		
[2017-05-22 Mon]	Nonlinear regressions (chapter 8)	
[2017-05-24 Wed]	Continue on nonlinear regressions and R	
Week 14		
[2017-05-29 Mon]	Assessing multiple regression (chapter 9)	Homework 6 due
Week 15		
[2017-06-05 Mon]	Continue on assessing multiple regression	
[2017-06-07 Wed]	Regression with panel data (chapter 10)	
Week 16		
[2017-06-12 Mon]	Continue on panel data model and R	Homework 7 due
Week 17		
TBA	Final examination	

8 Policy on academic dishonesty

Academic dishonesty is defined to include but is not limited to the following: plagiarism; cheating and dishonest practices in connection with examinations, papers and projects; forgery, misrepresentation and fraud. Such behavior will not be tolerated and will be handled according to university guidelines.