

## *Course Syllabus*

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### **ECON 6306.501: APPLIED ECONOMETRICS Fall 2016**

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**Office Hours:** Tuesdays 5:45pm – 6:45 and by appointment.

**TA : Aoyu Hou** GR 2.816, axh153230@utdallas.edu.

**Office Hours:** Monday 5:45pm – 6:45 in office. Wednesday 3:00pm – 5:00 Econ Lab. Saturday lab hours as shown in syllabus; and by appointment.

**Econ Lab** – A lab (GR 3.416 – Galveston Room) will be staffed by economic graduate students from **3pm – 7pm Monday through Thursday**. General economic help will be available there. However they (except when Aoyu is there) will not be trained to help with specific problem set questions for our class and so should not be asked how to do or interpret specific problem set questions. Save those for Aoyu or me.

**Home Page for Course is on eLearning.**

**Computer Note:** Our class will be using a computer program (Stata) available in the EPPS computer labs (GR 3.206, GR 3.402, and GR 3.602). *You must have a Campus id and password to use these computers.* You will also have the option of purchasing the program for personal use, which is highly recommended! You may have a background in a different programming language, for example R or SAS. I encourage you to replicate the Stata results with these programs for yourself, but they will *not* be supported in this class.

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#### **Course Pre-requisites, Co-requisites, and/or Other Restrictions**

*(including required prior knowledge or skills)*

I assume you have had college-level statistics through at least simple linear regression, basic calculus and a general understanding of computer use. We will not be using linear algebra or calculus beyond basic derivatives, though I may demonstrate some techniques using these that will not be required. The first part of the course will review the basic regression model, along with hypothesis testing, before we continue into more advanced material.

In addition, it is assumed students have taken the principles of economics courses and, preferably, intermediate theory courses. Many, but not all, students will likely also have taken an econometrics course. This course will reinforce an earlier course and extend it.

The appendices to the textbook have material I will review as we need it, though occasionally I reference this material in the schedule. I strongly suggest you do a quick review of what is there at the beginning of the semester so that you can independently study concepts that are less familiar as you come to them in the course.

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## Course Description

The subject of econometrics deals with the measurement of economic relationships. We will develop in class, using economic theory, statistics, and mathematics, techniques that can be used to estimate economic relationships. A major focus will be on how a researcher can confront a theory with data and draw some type of conclusion. The techniques that we use are widely used in economics, management, political science, sociology and psychology, among others.

The core of the course will be the study of regression analysis. This method seeks to determine the influence of one or more variables on a variable of interest. We will start with a review of the theory behind regression, the interpretation of the estimated parameters, and the testing of hypotheses about the parameters. Then we will proceed to studying how to handle violations of the underlying assumptions.

This is both a theoretical and applied course. Let me emphasize, though, that this is a masters-level course and the emphasis is on “applied.” If you are really interested in the theoretical underpinnings then you should consider the PhD-level econometrics sequence. This course requires *a significant amount of time* spent on the computer.

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## Student Learning Objectives/Outcomes

- Introduce the statistical technique of regression analysis.
- Analyze the assumptions, strengths and weaknesses of the classical linear model.
- Use regression analysis to test hypotheses about economic behavior, with examples drawn from economics and other disciplines.
- Gain a working knowledge of Stata.

## Required Textbooks and Materials

### Textbooks:

**Principles of Econometrics, 4<sup>th</sup> ed.** Hill, Griffiths, and Lim, 2011.

Make sure you check the course web site for the Errata file corresponding to your edition. Also, answers to starred problems in the textbook are available on our web site.

**Using Stata for Principles of Econometrics, 4<sup>th</sup> ed.** Adkins and Hill, 2011.

This manual is immensely helpful and I will assume you have access to it.

The required textbooks are available at both the On- and Off-campus bookstores. You may also use the eBook edition of the textbook, but this will require you to have access to it during exams – see below with exams. You may use the international versions of the textbook. However all references will be to the U.S. 4<sup>th</sup> edition and page numbers and problems likely *will not correspond* to the international version – you are responsible for the correct 4<sup>th</sup> edition material!

**Data:** The course web site has the data that accompanies the textbook as well as Stata programs used in the text. Other data and programs will be placed there during the semester.

**Other:** The Stata statistical package will be introduced and utilized for data organization, estimation, hypothesis testing and assignments. Students will be expected to master basic Stata statistical and programming commands. Stata will be available in the computer lab, but there is the option of purchasing the software if the student chooses. Information about purchasing is on the course web site and will be discussed in class. It is highly recommended that at least the student version of Stata be purchased.

**Advice for succeeding in this course:**

- Print off Stata .do files that are posted on web site and bring to class to annotate! This will be explained in class.
- Most of the time class material will be presented with PowerPoint. You should print them off ahead of time and take notes on them as needed.
- Go through the textbook problems that are starred for which you have answers posted on the web site.
- Go through the Stata Handbook. If you have questions about Stata commands you should (a) search the Stata program's help and/or (b) Google the command. There is a tremendous amount of support for Stata online, including Stata's own YouTube channel. Take advantage of it!

## Assignments & Academic Calendar

### Tentative Reading Assignment Schedule – Fall 2016 Applied Econometrics (ECON 6306 – Beron)

Readings are from the Hill, Griffiths and Lim 4<sup>th</sup> ed. text and are listed (Textbook) for when they are supposed to **have been** read. In addition you should *review* the accompanying sections from the Stata handbook prior to class, and then *practice* the Stata code after class. Exam and problem set dates are also listed below. Assume even if it doesn't say it that preceding each date's topic is the word "Continued" from the previous class as many will span more than one class.

Please note that the schedule skips around the textbook quite a lot. This is due to my own view that certain topics go together in a different order than presented. So be careful in reviewing what is supposed to be read.

This is an ambitious schedule and so if, and when, we get behind **the dates for exams and problem sets will not change** unless the university has been closed. I will change the material covered in the problem set or exam to accommodate where we are in lecture, so plan your semester accordingly.

Also note the series of optional Saturday lab sessions (from 10 – 11:30) scheduled prior to problem set due dates should you have questions. New material will not be taught during them and they are only if you have specific questions that need to be answered.

#### August

- 23 Textbook: Introduction and Chapter 1, pp. 1 – 9; Chapter 2, pp. 40 – 56, 74-75, and Appendices 2A and 2B. Also review the Probability Primer, pp. 17-34 and pp. 639-640 (note, this reading is a review of what you should have previously had and we won't go through in class).

Handbook: Chapter 1, 2.1 – 2.5, 2.7.

- 30 Continued and Chapter 2, pp. 56 – 68; Chapter 5, pp. 168 – 180. In addition, read textbook pp. 135 – 139 and pp. 198 – 199, and 4B. Also review Appendices 2C and 2D.

Handbook: Chapter 4.2. Chapter 5.1 – 5.3, 5.8. NOTE, from now on I will assume you will read the corresponding handbook sections without my indicating to.

#### **Problem Set 1 Given**

#### September

- 6 Continued and Chapter 3; and Chapter 4, pp. 131 – 135; and Chapter 5, pp. 180 – 189.

- 10 (Sat) Optional lab session 10:00 – 11:30 (GR 3.206)
- 13 Continued and Chapter 2 pp. 68 – 74; Chapter 4, pp. 139 – 157.  
**Problem Set 1 Due**  
**Problem Set 2 Given**
- 20 Chapter 5 pp. 189 – 198 (you will not be required to know the Delta method) and Chapter 7, pp. 258 – 264.
- 24 (Sat) Optional lab session 10:00 – 11:30 (GR 3.206)
- 27 Continued and Chapter 6, pp. 222 – 228; 233 – 243; (and cursory review of 243 – 246)  
**Problem Set 2 Due (bring an extra copy of answers to class)**

#### October

- 4 Exam 1
- 11 Chapter 7 pp. 264 – 273, and 275 – 281.
- 18 Chapter 8, pp. 298 – 313, 315 – 319.  
**Problem Set 3 Given**
- 25 Chapter 9, pp. 335 – 378; Appendix 9C.
- 29 (Sat) Optional lab session 10:00 – 11:30 (GR 3.206)

#### November

- 1 Chapter 10.  
**Problem Set 3 Due**
- 8 Chapter 11 and Chapter 12 (omit pp. 490 – 492).  
**Problem Set 4 Given**
- 15 Continued and Chapter 7, pp. 273 – 275; Chapter 16, 585 – 599; browse pp. 719 – 723.
- 19 (Sat) Optional lab session 10:00 – 11:30 (GR 3.206)
- 22 Fall Break
- 29 Continued and Chapter 15, pp. 538 – 560.  
**Problem Set 4 Due (bring an extra copy of answers to class)**

#### December

- 6 **Exam 2**
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## Grading Policy

The grade for the course will be based on four problem sets (12% each) and two exams (26% each). You may work on the problem sets together, unless a question states otherwise, but all answers turned in *must* be written up independently. The answers to the starred questions in the textbook are available online, and these may help prepare you for some of the problem set questions. The problem sets must be legible and only one side of a sheet of paper may be used in writing up answers.

Exams will be a combination of closed book and open book/open notes (but don't assume this makes them easy!). Note that no laptops, tablets, or cell phones will be allowed during exams and no sharing of textbooks or notes. You should bring a calculator with the ability to take logs and exponentials as well as powers to the  $n^{\text{th}}$  degree. If you are using an eBook then you are at the mercy of the availability of Internet during the exam. Also, if you are using an eBook you will be moved to a specific location in the classroom during the exam.

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## Course & Instructor Policies

**Make-up exams/Late assignment policy:** Exam dates will not be changed unless the university has been closed; I will adjust material for the exam if we get behind. Make-up exams will only be given in extenuating circumstances with the exam itself likely being more difficult per the additional time and information available. An alternative reweighting of scores may be available depending on the circumstance.

No extra credit assignments will be given and late work will be penalized and not accepted after we have gone through the answers.

**E-mail:** Questions may be sent to Aoyu or me by e-mail throughout the semester. We will usually answer them within two days, though often sooner. For many students this will be the easiest way to get timely answers to questions. Additionally, whenever clarifications need to be made in material I will use e-mail to distribute the information, so you should check your e-mail periodically. A couple of important email rules:

- If you want me to read your e-mail, **it must include ECON 6306 in the subject header**. Otherwise it may well end up as automatically deleted spam.
- The University requires all official e-mail to go to your **UT Dallas address**. You may then forward them to some other address.

## Decorum during class:

- **No cell phones on during class and no text messaging – first time a warning, second and you lose points.**
- **No computer use other than for class-related activities** – when I walk around the room I don't expect to see e-mail, games, social network sites, etc.
- **No recording devices** are to be used in class and **no taking of photos** in class.

*These descriptions and timelines are subject to change at the discretion of the Professor.*

The full set of University policies can be found at <http://go.utdallas.edu/syllabus-policies>