Econ 4650-001: Principles of Econometrics

Instructor: Hyeon Kim
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Course Webpage: on Canvas
Class: M. W. 11:50 am - 1:10 pm, M LIB 1160
Office Hours: W. 1:20-3:20 pm (Study Room 1750B)

Course Description: Econometrics is based on the development of statistical techniques for estimating economic relationship, testing economic theories, and evaluating and implementing government policy and business decisions focusing on the problems inherent in collecting and analyzing non-experimental economic data. The general application of econometrics includes the forecasting of important macroeconomic variables - interest rates, inflation rates, and gross domestic product (GDP) -, the cause-and-effect of many socio-economic phenomena such as the effect of education attainment on wage rate and the effect of income on the environment, and so on. This course will study the statistical foundations and methodology of measuring causal effects of socio-economic phenomena in which we will cover the statistical tools needed to understand empirical economic analysis and to plan and carry out such an analysis using the statistical software R. Topics include statistical inference, simple linear regression, multiple regression, nonlinear regression, instrumental variables, panel data analysis, etc.

Prerequisite(s): This course has two prerequisites Econ 3620 (Mathematics for Economists) and Econ 3640 (Probability and Statistical Inference for Economists). If you didnt take these classes or equivalent before, you are not eligible for taking this course. If you believe you took similar equivalent courses before, please let me know as soon as possible, indicating which courses you have taken.

Required Text(s): (SW) *Introduction to Econometrics*, 3rd edition update (2014).
Author(s): James H. Stock and Mark W. Watson; **ISBN-13:** 978-0133486872
Note: I recommend you rent or buy the book from www.amazon.com or campus bookstore; the 3rd and 2nd editions will be available too.

Optional Text(s):

- **(Wooldridge)** *Introductory Econometrics - A Modern Approach* by Jeffrey M. Wooldridge, any editions.
- **(Studenmund)** *Using Econometrics: A Practical Guide* by A. H. Studenmund, 4th edition or later.
- **(Metrics)** *Mastering Metrics: The Path from Cause to Effect* (2015) by J. D. Angrist and J-S. Pischke.
- **(Intro_R)** *An Introduction to R: Version 3.2.1* (2015) by W. N. Venables, D. M. Smith and the R Core Team (on Canvas)
- **(Dummies)** *R for Dummies*, 2nd ed. (2015) by de Vries, Andrie, Meys, Joris and Meys, Joris (access to ebook via the Marriott lib.)
- **(R in Action)** *R in Action: Data Analysis and Graphics with R*, 2nd ed. (2015) by Robert I. Kabacoff (access to ebook via the Marriott lib.)
- **(RBook)** *The R Book*, 2nd ed. (2013) by Michael J. Crawley (access to ebook via the Marriott lib.)

Course Objectives: Students who successfully complete this course should have a basic theoretical and conceptual understanding of econometric model such as multivariate regression analysis, to some extent, be able to understand and interpret empirical economic analysis, and execute such an analysis using the statistical software R.

Software: It is required to use statistical software R for assignments and detailed instructions about R will be posted on Canvas.

Grading Assessment: The course grade will be based on participation, quizzes, assignments, exams, and a short project. The official course grade will be based on the sum of the grade you have made on each part. **Tentative grading scale: A range $\geq$ 90; B range $\geq$ 75; C range $\geq$ 60; D range $\geq$ 50** (it is tentative and thus might be adjusted based on class performance).

- **Participation (15%):** We're supposed to have **23 classes** excluding exam days and the first two weeks (Sep. 1st: last day to add and drop classes) during this semester and attendance is expected and will be taken each class. You are allowed to miss **3** classes without penalty but any further absences will result in point deductions. In addition **more than 10 absences will lead to zero points**.
- **Quizzes (10%):** There will be four in-class quizzes and it will mainly cover the review of probability, statistics and simple linear regression.
- **Assignments (25%):** There will be four assignments and each assignment will be based either on theoretical (or conceptual) questions or on practical application of R program, or both. Please see the schedule below for dates of assignments.
- **Exams (35%):** There will be three in-class exams, two midterms (10 points each) and one final exam (15 points). Detailed instructions will be posted later on Canvas.
- **Project (15%):** There will be a short project that applies theoretical and computational techniques with real data set. Detailed instructions will be posted later on Canvas.

Letter Grade Distribution (e.g. Summer 2017 semester):

>= 92.00	A	71.00 - 75.99	B-	50.00 - 54.99	D+
87.00 - 91.99	A-	65.00 - 70.99	C+	45.00 - 49.99	D
82.00 - 86.99	B+	60.00 - 64.99	C	40.00 - 44.99	D-
76.00 - 81.99	B	55.00 - 59.99	C-	<40.00	E

Course Policies:

- Cell phones and computers are not allowed to use in class unless instructed to do so.
- No makeup quizzes or exams will be given. Quizzes are closed book and notes but exams are allowed to use a cheat sheet.
- No late submission of assignment and project will be allowed.
- Academic misconduct such as cheating on exams (or other forms of academic dishonesty) may lead to failure of class (or expulsion from the class). In particular, for assignments, students are expected to work independently. **Offering** and **accepting** solutions from others is an act of **plagiarism**, which is a serious offense and **all involved parties will be penalized** according to the Academic Policies: Rights & Responsibilities of Students (Student Code/ Misconduct) (for further reference click here). Discussion amongst students is encouraged, but when in doubt, direct your questions to the instructor.

- Incomplete will be given only for compelling reasons such as illness or family emergency.
- The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.

Tentative Course Outline[1]

Week	Topic	Reading Assignment	Note
01 (08/21, 23)	Introduction to the Course Economics Questions and Data R and Rstuido Basics	Syllabus SW Ch.1; Metrics (Intro)	
02 (08/28, 30)	Review of Probability and Statistics R Basics	SW Chs. 2 & 3 Wooldridge Appendices	09/04 Labor Day Q1; Q2
03 (09/06)			
04 (09/11, 13)			
05 (09/18, 20)	**1st Midterm**		
06 (09/25, 27)	Simple Linear Regression Hypothesis Tests and Confidence Intervals	SW Chs. 4 & 5	Q3
07 (10/02, 04)			
08 (10/09, 11)	**No Class**		Fall Break
09 (10/16, 18)	Simple Linear Regression Hypothesis Tests and Confidence Intervals	SW Chs. 4 & 5	
10 (10/23, 25)	**2nd Midterm**		Q4; A1
11 (10/30, 11/01)	Multiple Linear Regression Hypothesis Tests and Confidence Intervals	SW Chs. 6 & 7	A2; A3
12 (11/06, 08)			
13 (11/13, 15)			
14 (11/20, 22)	Nonlinear Regression Assessing Studies Project	SW Chs. 8 & 9	A4
15 (11/27, 29)			
16 (12/04, 06)			
17 (12/13)	**Final Exam (10:30 am - 12:30 pm)**		

Quiz	Chapter(s)	Points	(Due) Date	Quiz	Chapter(s)	Points	(Due) Date
1	2 & 3	2	09/06	3	4 & 5	3	10/02
2		2	09/13	4		3	10/18
Assignment	**Chapter(s)**	**Points**	**(Due) Date**	**Assignment**	**Chapter(s)**	**Points**	**(Due) Date**
1	4 & 5	5	10/23	3	6 & 7	7	11/16
2	6 & 7	7	11/09	4	8	6	11/30
Exam	**Chapter(s)**	**Points**	**(Due) Date**	**Exam**	**Chapter(s)**	**Points**	**(Due) Date**
1st Mid	2 & 3	10	09/18 or 20	2nd Mid	4 & 5	10	10/23 or 25
Final	6, 7 & 8	15	12/13	Project		15	12/11

Important Dates:

- Friday, September 1st: Last day to add, drop, audit, and elect CR/NC
- Friday, October 20 th: Last day to withdraw from classes

[1] I reserve the right to make such alterations to this tentative schedule as circumstances may warrant.

CSBS EMERGENCY ACTION PLAN

BUILDING EVACUATION

EAP (Emergency Assembly Point) – When you receive a notification to evacuate the building either by campus text alert system or by building fire alarm, please follow your instructor in an orderly fashion to the EAP marked on the map below. Once everyone is at the EAP, you will receive further instructions from Emergency Management personnel. You can also look up the EAP for any building you may be in on campus at http://emergencymanagement.utah.edu/eap.

CAMPUS RESOURCES

U Heads Up App: There's an app for that. Download the app on your smartphone at alert.utah.edu/headsup to access the following resources:

- **Emergency Response Guide:** Provides instructions on how to handle any type of emergency, such as earthquake, utility failure, fire, active shooter, etc. Flip charts with this information are also available around campus.
- **See Something, Say Something:** Report unsafe or hazardous conditions on campus. If you see a life threatening or emergency situation, please call 911!

Safety Escorts: For students who are on campus at night or past business hours and would like an escort to your car, please call 801-585-2677. You can call 24/7 and a security officer will be sent to walk with you or give you a ride to your desired on-campus location.

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