



Econ 4650-001: Principles of Econometrics

Instructor: Hyeon Kim
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(Old Law Library)
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Course Webpage: [on Canvas](#)
Class: M. W. 6 - 7:30 pm, BEH S 115
Office Hours: M. W. 5 - 6 pm or by appointment

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 to understand empirical economic analyses and to carry out such an analysis using the statistical software *R*. Topics include random variable(s), probability, (sampling) distribution, statistical inference, simple linear regression, multiple regression, nonlinear regression, and so on.

Credit hours: 3

Prerequisite(s): This course has two prerequisites Econ 3620 (Mathematics for Economists) and Econ 3640 (Probability and Statistical Inference for Economists). If you didn't 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.

Optional Text(s):

- **(SW)** Stock, James H. and Watson, Mark W. (2015). *Introduction to Econometrics*. 3rd edition update, Pearson, Boston.
- **(Wooldridge)** Wooldridge, Jeffrey M. *Introductory Econometrics: A Modern Approach*, any editions.
- **(Studenmund)** Studenmund, A. H. *Using Econometrics: A Practical Guide*, 4th edition or later.
- **(Metrics)** Angrist, Joshua David, and Pischke, Jorn-Steffen (2015). *Mastering Metrics: The Path from Cause to Effect*, Princeton University Press, New Jersey.
- **(Intro_R)** Venables, W. N., Smith, D. M., and the R Core Team (2017) *An Introduction to R: Version 3.4.1*, www.r-project.org (on Canvas)
- **(Dummies)** De Vries, Andrie and Meys, Joris (2015). *R for Dummies*, 2nd edition, Jon Wiley & Sons, Inc., New Jersey. (access to ebook via the Marriott lib.)
- **(Book)** Davies, Tilman M. (2016). *The Book of R: A First Course in Statistics and Programming*, No Starch Press, San Francisco. (access to ebook via the Marriott lib.)
- **(RBook)** Crawley, Michael J. (2013). *The R Book*, 2nd edition, Jon Wiley & Sons, Inc., New Jersey. (access to ebook via the Marriott lib.)

Course Objectives: At the completion of this course, a successful student will be able to:

- have a basic theoretical and conceptual understanding of econometric model such as multivariate regression analysis.
- to some extent, understand and interpret empirical economic analysis.
- execute an empirical analysis using the statistical software *R*.

Teaching and Learning Methods: This class will be operated by a combination of lectures (including computer lab for *R* program), assignments, exams, and project. For successful completion of this course, class attendance will be an integral part of this course and reviewing class materials, solving practice questions and completing assignments will be helpful for your understanding.

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, assignments, exams, and a short project. The official course grade will be based on the sum of points you have made on each part.

- **Participation (15%):** We're supposed to have **16 classes** excluding holidays, exam days and the first two weeks (May. 23rd: 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 **2 classes without penalty** but any further absences will result in point deductions. In addition **more than 8 absences will lead to zero points**.
- **Assignments (35%):** There will be five 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 course outline and schedule for dates of assignments.
- **Exams (35%):** There will be two in-class exams, midterm (15 points) and final exam (20 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:

- Tentative grading scale is: A range ≥ 90 ; B range ≥ 75 ; C range ≥ 60 ; D range ≥ 50 .
- It might be adjusted based on class performance.
- For instance, the following distribution was used for the Spring 2018 semester.

≥ 92.0	A	72.0 - 77.9	B-	50.0 - 54.9	D+
89.0 - 91.9	A-	66.0 - 71.9	C+	45.0 - 49.9	D
84.0 - 88.9	B+	60.0 - 65.9	C	40.0 - 44.9	D-
78.0 - 83.9	B	55.0 - 59.9	C-	<40.0	E

Course Policies:

- You are not allowed to use cell phones and computers in class unless instructed to do so.
- Important information will be announced via Canvas. You will need check your email address linked to CANVAS. Usually, I will reply to emails/Canvas messages within 24 hours.
- Assignments and exams will be graded within 24 hours of the date they are submitted or taken.

- No makeup exams will be given unless absence is due to a documented medical/family emergency or a previously approved excused absence.
- No late submission of assignments will be accepted without an agreed prior extension from the instructor.
- For the assignments, discussion amongst students (groups) is encouraged, but when in doubt, direct your questions to the instructor.
- The Mark "I (incomplete) will be given only for work incomplete because of circumstances beyond the student's control such as medical reasons or family emergency. An "I" should be used in a way that will permit a student to retake the course without paying tuition.

Academic Policies:

- **Faculty and Student Responsibilities:** All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the [Student Handbook](#). Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.
- In particular, you should be mindful of the [Academic misconduct](#) defined in the Academic Policies such as cheating, misrepresenting one's work, plagiarism, inappropriately collaborating, fabrication and so on. **Cheating on the exams** (or other forms of academic dishonesty) may lead to failure of class (or expulsion from the class). For the assignments, discussion amongst students (groups) is encouraged but **copies and exact duplicates are unacceptable**. If you are found responsible for misconduct (e.g. offering and accepting solutions from others), all involved parties will be penalized.
- **Wellness statement:** Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.
- **Addressing Sexual Misconduct:** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veterans status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS)
- **The Americans with Disabilities Act:** 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 this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 801-581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

- **Student Names & Personal Pronouns statement:** Class rosters are provided to the instructor with the students legal name as well as Preferred first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise me of any name or pronoun changes (and update CIS) so I can help create a learning environment in which you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your UIDcard, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email bpeacock@sa.utah.edu to schedule a time to drop by. The LGBT Resource Center hours are M-F 8am-5pm, and 8am-6pm on Tuesdays.

Tentative Course Outline and Schedule¹

Week	Topic	Reading Assignment	Note
01 (05/14, 16)	Introduction to the Course	Syllabus	
	Economics Questions and Data	SW Ch.1	
	R and RStudio Basics	Metrics (Intro)	
	Review of Probability and Statistics	SW Chs. 2 & 3	
02 (05/21, 23)	Review of Probability and Statistics	SW Chs. 2 & 3	05/28 Memorial Day A1
03 (05/30)	R Basic Programming	Wooldridge Appendices	
04 (06/04, 06)	Simple Linear Regression	SW Ch. 4	
05 (06/11, 13)	Simple Linear Regression	SW Chs. 4 & 5	A2
06 (06/18, 20)	Hypothesis Tests and Confidence Intervals		
07 (06/25, 27)	Midterm	SW Ch. 6	
	Multiple Linear Regression		
08 (07/02)	Multiple Linear Regression	SW Ch. 6	07/04 Independence Day
09 (07/09,11)	Multiple Linear Regression	SW Chs. 6 & 7	A3
	Hypothesis Tests and Confidence Intervals		
10 (07/16, 18)	Nonlinear Regression	SW Ch. 8	
11 (07/23, 25)	Nonlinear Regression	SW Ch. 8	A4
	Project Q & A		
12 (07/30, 08/01)	Review / Final Exam		

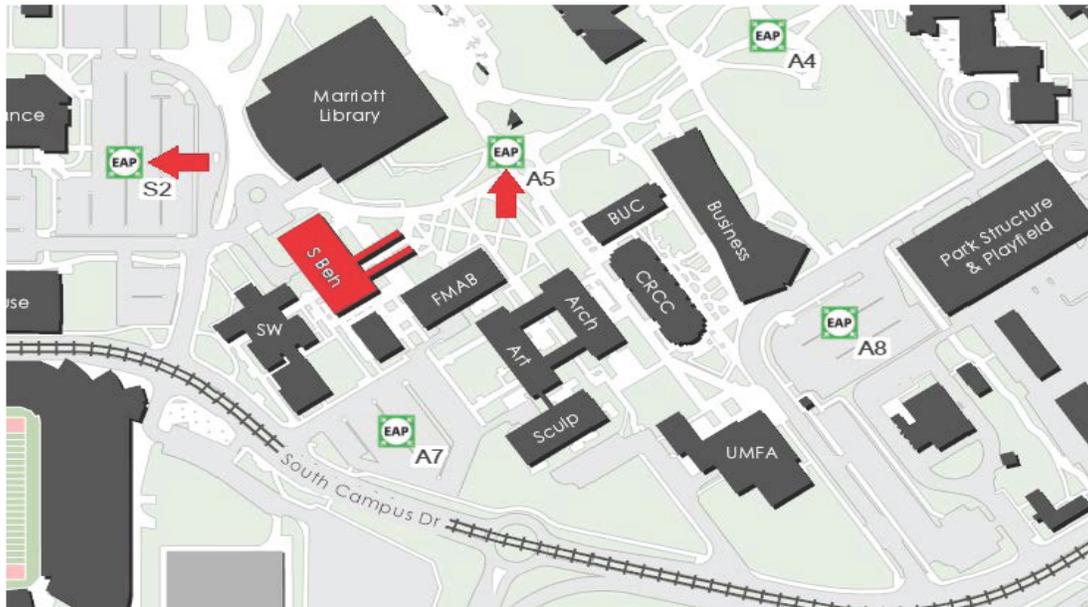
Assignment	Chapter(s)	Points	(Due) Date	Assignment	Chapter(s)	Points	(Due) Date
1	2 & 3	9	06/01	2	4 & 5	8	06/22
3	6 & 7	10	07/13	4	8	8	07/27
Exam	Chapter(s)	Points	Date	Exam	Chapter(s)	Points	Date
Midterm	2, 3, 4, & 5	15	06/25	Final	6, 7, & 8	20	08/01
Project		15	08/03				

Important Dates:

- Wednesday, May 23rd: Last day to add, drop, audit, and elect CR/NC
- Friday, June 22nd: Last day to withdraw from classes

¹I 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 aler.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.