

# Introduction to Econometrics [EC421]

Fall 2019 Syllabus

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	<u>Lecture</u>	<u>Lab</u>
🕒	Tu. & Th., 12–1.20pm	Mo./Tu., 4.00/5.30
📍	<a href="#">Chapman Hall 220</a>	McKenzie 442
👤	Luciana Etcheverry	-
📖	<a href="#">Introduction to Econometrics, 5<sup>th</sup> ed.</a>	
📖	<a href="#">Mastering 'Metrics: The Path from Cause to Effect</a>	
➤	<a href="https://github.com/LuEtcheverry/EC421F19">https://github.com/LuEtcheverry/EC421F19</a>	Our course on Github

<u>Office Hours &amp; Contact</u>			
👤	Luciana Etcheverry	Jenni Putz	Connor Lennon
🕒	We., 2–4pm0	Tu. & Th., 10–11am	Mo., 10–11am & Th. 9–10am
📍	<a href="#">PLC 520</a>	<a href="#">PLC 523</a>	<a href="#">PC 430</a>
✉	<a href="mailto:lucianae@uoregon.edu">lucianae@uoregon.edu</a>	<a href="mailto:jputz@uoregon.edu">jputz@uoregon.edu</a>	<a href="mailto:clennon@uoregon.edu">clennon@uoregon.edu</a>

## Course summary

**Description:** This course aims to prepare economics majors for the demands of real-world applications. Toward this goal, we will examine the assumptions that underly the econometric and statistical models that you learned in Economics 320 (along with Math 243). These models imposed strong assumptions that are often violated in practice. Thus, we will relax these assumptions—replacing them with looser, more palatable assumptions—and derive, build, and estimate the resulting new models. By the end of this course, students should have the ability to statistically examine the bulk of economic issues using econometrics—knowing how to empirically test economic models and knowing the strengths, weaknesses, and assumptions of their chosen route of analysis.

Learning statistical programming is inherent to practicing applied econometrics. Consequently, throughout this course we will also teach the statistical programming language R.

**Prerequisites:** This course requires Economics 320 (Introduction to Econometrics)—we assume you are comfortable with the content in the first six chapters of the Dougherty *Introduction to Econometrics* (ItE) textbook.

## Software and tools

- We will use the statistical programming language **R**.
- We will use **RStudio** to interact with R.

Learning will require time and effort, but it is a powerful and versatile tool that is valued by many employers. Put in the requisite effort and time, and you will be rewarded. The lab in McKenzie has the computing resources ready for you, but if possible, I strongly recommend that you install and on your own computer. I also suggest that you purchase a flash drive to save your programs, data, and working documents. The class network drive (the “R drive”) is also a useful resource available on all university computers.

If you are concerned about learning—or want to learn more/quickly—I suggest that you check out the following free, online resources.

- [DataCamp’s Introduction to R](#) [TeamLeada’s R Bootcamp](#)
- [Computerworld’s Beginner’s guide to R](#)

The folks at RStudio put together a [set of resources](#) (I found the two resources above on their list).

## Labs, homework, and exams

**Lab:** This course includes a lab, which is integral to learning the material in (and passing) this course. Due to space constraints, you must attend the lab for which you registered. The lab includes both general econometrics instruction and computing tips necessary to complete the homework assignments—linking the lecture material to—as well as topics which the lecture may not be cover.

### Problem Sets

- You will **turn in assignments online via Canvas**.
- Assignments will be due approximately every other week.

Feel free to work together on the assignments. Unless explicitly stated, **each student is required to write and submit independent answers**. This means that word-for-word copies will not be accepted and will be viewed as academic dishonesty. If you work with other students, you must list the students in your study group at the top of your assignment. I understand that life gets busy and sometimes unexpected things happen so your lowest score will be dropped. This also means there will be no makeup assignments.

### Late policy

- We will accept assignments **up to 48 hours late**, but we will **subtract 2 percentage points for each hour it is late**.
- For example, you turn in an assignment 12 hours late and would have received 85%. We subtract  $12 \times 2 = 24$  percentage points, meaning you will receive  $85\% - 24\% = 61\%$ .

## Exams

- We will proctor the **in-class midterm on October 31, 2019**.
- We will proctor the **final exam on December 10, 2019 from 08:00am–10:00am**.

Please be aware of these date, as the midterm and final exams will not be rescheduled. **Do not take this course if you already know you cannot take either the midterm or the final exam at the specified time.** There are no retake/make-up exams in this course. If you are absent for the midterm then you may submit a written petition explaining the circumstances surrounding the absence. Only petitions describing situations that are extremely exceptional will be approved. If the petition is approved, then the weight of the midterm will be placed on the final exam. If you miss the final exam you will receive a zero grade on the final.<sup>1</sup>

## Grades

Grades for this class will be assigned based on the following assignments: biweekly homework assignments, one midterm exam, and one final exam. Final grades will be determined based on your rank-ordered position within the class (*i.e.*, the course is curved). You can track your grades for individual assignments on Canvas. The weights for the final grade:

<b>Problem Sets</b>	30%
<b>Midterm</b>	30%
<b>Final Exam</b>	40%

While attendance is voluntary—both for lecture and for lab—we will occasionally have in-class and in-lab quizzes, problems, or opportunities for extra credit. These exercises will go into your *Problem Sets* grade.

## Textbook and other readings

One of the goals of this course is to make you aware of the incredible array of instruction material that is freely available online. I also want to encourage you to be entrepreneurial (key for learning to program).

**Econometrics books:** There are two recommended textbooks for this course.

1. **Mastering 'Metrics: The Path from Cause to Effect** by Angrist and Pischke (**MM**)
2. **Introduction to Econometrics, 5<sup>th</sup> ed.** by Christopher Dougherty (**ItE**)

You may be able to purchase these books at the UO Duckstore (you should already have ItE from EC320). I strongly recommend that you read the assigned readings from the textbooks. Attending class is not a replacement for reading and comprehending the texts—nor will solely reading sufficiently replace class. The course schedule (farther below) contains suggested readings for each topic.

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<sup>1</sup>In the event of a missed final due to a verifiable emergency, the student may be eligible to receive an incomplete in the course. In order to qualify for an incomplete in the course, the student must have take the midterm exam and must, at the time of the missed final exam, have at least a 70% average in the course. In the event that the student fails to satisfy this condition, a missed final exam (even for a valid emergency) will result in the student receiving an F in the course.

**R books:** For learning R, I recommend Garrett Golemund and Hadley Wickham's **R for Data Science**, which is available for free online. Want to go deeper? Check out **Advanced R** (Hadley Wickham, again) and **Data Visualization: A practical introduction** (Kieran Healy)—both books are free online.

## University Policies and Expectations

### Honesty and academic integrity

You must do your own work. Do not claim credit for any work other than your own. Cheating or plagiarizing of any sort on any component of this class will result in a failing grade for the term and a report of the offense to the university. Please acquaint yourself with the **Student Conduct Code**.

### Accessibility

If you have a documented need and would like accommodations in this course, please make arrangements with me during the first week of the term. Please request that the **Accessible Education Center** send me a letter verifying your accommodations.

### Diversity

The University of Oregon is dedicated to the principles of equal opportunity and freedom from unfair discrimination for all members of the university community and an acceptance of true diversity as an affirmation of individual identity within a welcoming community. All of us associated with the course—you included—are expected to value each class member's experiences and contributions and to communicate disagreements respectfully. For additional assistance and resources, you are encouraged to contact the following campus services:

- Office of Equity and Inclusion: 541-346-3175 | [oied.uoregon.edu](http://oied.uoregon.edu)
- Center on Diversity and Community: 541-346-3212 | [codac.uoregon.edu](http://codac.uoregon.edu)
- Bias Response Team: 541-346-1134 | [brt@uoregon.edu](mailto:brt@uoregon.edu) | [bias.uoregon.edu](http://bias.uoregon.edu)

### Sexual Violence and Survivor Support

The UO is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and gender-based stalking. If you or someone you know has experienced or experiences gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), know that you are not alone. UO has staff members trained to support survivors in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

Please be aware that all UO employees are required reporters. This means that if you tell me about a situation, I may have to report the information to my supervisor or the Office of Affirmative Action and Equal Opportunity. Although I have to report the situation, you will still have options about how your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone confidentially, you can call 541-346-SAFE, UO's 24-hour hotline, to be connected to a confidential counselor to discuss your options. You can also visit the SAFE website at [safe.uoregon.edu](http://safe.uoregon.edu).

## Tentative course outline

The next page presents the current plan for the course outline and associated textbook reading assignments. We will occasionally assign papers for you to read for class, lab, or your homework assignments. I will post these papers on Canvas. As the title of this section suggests, the timing and topics on this schedule may change.

### Tentative course schedule

<b>Class</b>	<b>Date</b>	<b>Topics</b>	<b>Suggested readings</b>
01	10/01	Introduction & Review	ItE 1-6
02	10/03	Review	ItE 1-6; MM 2
03	10/08	Review	ItE 1-6; MM 2
04	10/10	Heteroskedasticity	ItE 7
05	10/15	Heteroskedasticity	ItE 7
06	10/17	Consistency (and Inconsistency)	ItE pp. 68-75
07	10/22	Time Series	ItE 11
08	10/24	Time Series	ItE 11
09	10/29	Midterm Review	ItE 12
10	10/31	<b>In-Class Midterm</b>	
10	11/05	Autocorrelation	ItE 12
12	11/07	Autocorrelation & Nonstationarity	ItE 12 & 13
13	11/12	Causality	MM 1
14	11/14	Instrumental Variables	ItE 9; MM 3
15	11/19	Instrumental Variables	ItE 9; MM 3
16	11/21	Panel Data Methods	ItE 14; MM 5
17	11/26	Panel Data Methods	ItE 14; MM 5
18	11/28	<i>Thanksgiving, No class</i>	
19	12/03	Difference in differences	MM 5
20	12/05	Final Review	TBA
	12/10	<b>Final Exam, 8:00 am, In-Class</b>	