

## Econometrics (21020) – Autumn 2022

**Lecture:** Tuesday & Thursday 3:30-4:50 PM, Saieh Hall 203

**TA Session:** Friday 2:30-3:20 PM, Saieh Hall 203

**Instructor:** Sidharth Sah

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*Office Hours:* Wednesday 9:30 AM-11:30 PM, Zoom:

<https://uchicago.zoom.us/j/4433447031?pwd=b243eDdnVS9adGJTaEdGMmhNRDN5QT09>

**Teaching Assistant:** Sascha Petrov

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*Office Hours:* Wednesday 6:00-7:00 PM, Econ 201

**Course Description:** This course will provide students with an introduction to univariate and multivariate linear regression as well as instrumental variables regression and their uses in econometrics. An emphasis will be placed on the mastery of theoretical concepts related to causal inference and estimation. Students will also apply the techniques they learn to a variety of data sets using statistical software.

**Textbook:** The recommended textbook is Introduction to Econometrics, Fourth Edition by James Stock and Mark Watson. However, the textbook is only for supplementary reading, as I will attempt to keep the lecture material self-contained. Additional recommended, supplemental reading can be found in:

- Mathematical Statistics and Data Analysis (3rd Ed.) by John A. Rice. This book gives a thorough introduction to probability theory and statistical methods. It is an accessible text for upper-level undergraduate students, with an assortment of computational exercises. For anyone seeking to further their knowledge of data analysis, I suggest reading it.
- Introductory Econometrics: A Modern Approach (5th/6th/7th Ed.) by Jeffrey Wooldridge. Wooldridge's book offers a good introduction to probability and statistics with econometric applications. Chapters 1-9 and sections A-E of the appendix are most relevant to this course.

**Grading:** There will be five problem sets, and two exams. They will be weighted as follows:

<b>Component</b>	<b>Weight</b>
Assignments	20%
Midterm	30%
Final	50%

Problem sets may be completed in groups of up to 6 students. If you know who you would like to work with, please let the instructor and TA know as soon as possible. If you want help finding groupmates, please also let the instructor and TA know as soon as possible, and we can sort you into groups. Only one submission is required per group. Late problem sets will be docked 20 points per day that they are late. At the end of the quarter, the lowest problem set grade will be dropped. Some of the problem sets will involve computational components. The TA will provide instruction in the use of R during the TA sessions to help complete these portions of the assignments and solutions will be written in R, but the use of other languages is acceptable, if cleared with the TA before submission.

The midterm will be held during the normal lecture time, and will take an entire class period (tentative date is 11/3). The final will be held during the University finals period, at a time that will be assigned by the registrar. Both exams will be closed book/notes. The final will be comprehensive, covering material from both before and after the midterm.

All grades are final except for correcting obvious grading mistakes, such as points being added up incorrectly or obviously correct answers being marked wrong. Please bring these to the TA's attention as soon as possible. For other cases, please discuss questions with the TA or me during office hours. We will be happy to go through your exam or homework and help explain how you can improve your performance next time. We award partial credit systematically. We therefore cannot revise up one student's grade without implicitly penalizing his or her classmates.

Cheating on any assignment in any way will be dealt with severely. In particular, anyone caught cheating on any exam will fail the course and be reported to the Dean's office for further disciplinary action.

**Course Topics and Schedule:** Below is a tentative schedule of the topics I hope to cover. This is subject to change, depending on timing and the needs of the course. This corresponds roughly to chapters 2-8, 12, 18 and 19 of the Stock and Watson textbook, as well as some additional topics as time permits.

<b>Lecture</b>	<b>Date</b>	<b>Topic</b>
1	9/27	Introduction
2	9/29	Probability Theory
3	10/4	Probability Theory
4	10/6	Statistics
5	10/11	Statistics
6	10/13	Simple Linear Regression
7	10/18	Simple Linear Regression
8	10/20	Simple Linear Regression
9	10/25	Simple Linear Regression
10	10/27	Multiple Linear Regression
11	11/1	Multiple Linear Regression
-	11/3	Midterm
12	11/8	Multiple Linear Regression
13	11/10	Multiple Linear Regression
14	11/15	Instrumental Variables
15	11/17	Instrumental Variables
-	11/22	
-	11/24	
16	11/29	Instrumental Variables
17	12/1	TBD