


# Econ 474: Econometrics of Policy Evaluation


University of Illinois at Urbana-Champaign  
College of Liberal Arts & Sciences  
Department of Economics

Spring 2022


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 TBA

 MW 09:30-10:50 am

 [Econ 474 Website](#)

 317 DKH

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## Course Description

This course will introduce you to modern applied econometric methods. Topics include but are not limited to randomized trials, regression, differences-in-differences, instrumental variables, and regression-discontinuity designs. Along with classes, lab sessions expose students to programming tools for causal inference. By the end of the semester, you will know how to approach empirical problems and answer your own causal research questions using R.

## Materials

### Required Reading

You must be willing to spend time reading and thinking about the material. Lecture notes, journal articles, and R codes will be posted on the course webpage.

### Additional Reading

There is no required textbook. However, the classes will be based on some chapters of the following books, book chapters and papers whose reading is recommended.

Angrist, J. D. and J. Pischke (2014). *Mastering metrics: The path from cause to effect*. Princeton University Press. **(highly recommended)**

Cunningham, S. (2021). *Causal Inference*. Yale University Press. [[link](#)]

Huntington-Klein, N. (2021). *The Effect: An Introduction to Research Design and Causality*. Chapman and Hall. [[link](#)]

Imai, K. (2018). *Quantitative social science: an introduction*. Princeton University Press.

Kohavi, Ron, Diane Tang, and Ya Xu (2020). *Trustworthy online controlled experiments: A practical guide to A/B testing*. Cambridge University Press.

## Required Materials

Students must have access to a computer where they are able to install the most up-to-date versions of R and RStudio. Previous knowledge with programming language is helpful but not required.

## Campuswire

Campuswire is used heavily to give you an opportunity to ask questions about course content. Special consideration will be given to students at the end of the semester for providing consistent high quality responses to their classmates - this is particularly true for those interested in Extra Credit.

Find our class signup link [here](#) (the password is 0353).

## Prerequisites

Students must have completed a course on intermediate microeconomics (Econ 302) and regression analysis (Econ 203). Introduction to applied econometrics (Econ 471) is recommended but not required.

## Evaluation

### Grade determination

Grades will be determined as follows:

Task	Weight
Homework (5 assignments)	40%
Midterm Exam	20%
Lab Quiz	20%
Final Group Project	20%
Attendance, participation, and extra assignments	Up to 5% (Extra Credit)

### Homework

Homework should be completed and submitted online through Moodle. **Late assignments will receive a daily penalty of 5 points**, and you can submit your late assignment up to 4 days after the original deadline. After that, assignments will receive no credit. You are required to submit two files: .rmd and .pdf. Points might be taken due to lack of organization in your report (no more than 5%).

Students are encouraged to work together on homework. **However, sharing, copying, or providing any part of a homework solution or code is an infraction of the University rules on Academic Integrity.**

### Midterm Exam and Lab Quiz

The exams must be done during regular class time. Details TBA.

### Final Project

There will be a Final Group Project. Details TBA.

## Conflict and Missed Exams

Students must present a letter from the Dean Office justifying their absence, otherwise, they will get zero on the missed exam. In the event that a student misses the Midterm Exam, its weight will be redistributed to the other class tasks. **There are no make-up exams.**

The following cutoffs will be used for the letter grades:

A	B	C	D	F
A+ = 97% - 100%	B+ = 87% - 89.99%	C+ = 77% - 79.99%	D+ = 67% - 69.99%	F = <59.99%
A = 93% - 96.99%	B = 83% - 86.99%	C = 73% - 76.99%	D = 63% - 66.99%	
A- = 90% - 92.99%	B- = 80% - 82.99%	C- = 70% - 72.99%	D- = 60% - 62.99%	

## Predicted Outline

Class readings are subject to change, contingent on mitigating circumstances and the progress we make as a class. **Students are encouraged to attend all lectures and check the course website for updates.**

### Week 01, 01/17 - 01/19: Syllabus Day and Intro to R/Rmarkdown & Causal Questions

- Intro to Econ 474
- Using R & Rmarkdown
- Introduction to Causal Questions
- **Homework #0 (not graded)**
- **No class on 01/17**

### Week 02, 01/24 - 01/26: Randomized Trials

- Rubin Causal Model
- RAND Health Insurance Experiment
- A/B testing in practice
- Inference Review

Reading: Angrist and Pischke (2014) ch. 1

### Week 03, 01/31 - 02/02: Regression

- OLS review
- Regression and Causality
- Fixing standard errors

Readings: Angrist and Pischke (2014) ch. 2 & Huntington-Klein (2021) ch. 13

### **Week 04, 02/07 - 02/09: Matching and Subclassification**

- Subclassification
- Exact and Approximate Matching
- NSW job training program
- A Taste of Machine Learning
- **Homework 1 due 02/07**

Reading: Cunningham (2021) ch. 5 & Huntington-Klein (2021) ch. 13

### **Week 05, 02/14 - 02/16: Instrumental Variables I**

- IV and Causality
- Wald Estimator
- Compulsory School Attendance and Earnings
- IV Estimation

### **Week 06, 02/21 - 02/23: Instrumental Variables II**

- Children and Their Parents' Labor Supply
- IV in Randomized Trials
- LATE

Reading: Angrist and Pischke (2014) ch. 3

### **Week 07, 02/28 - 03/02: Midterm Week**

- **Homework 2 due 02/28**
- **Midterm Exam 03/02**

### **Week 08, 03/07 - 03/09: Fixed Effects**

- Midterm Reflections
- Panel data overview
- Identifying Assumptions & Estimation

Readings: Cunningham (2021) ch. 8 & Huntington-Klein (2021) ch. 16

### **Week 09, 03/14 - 03/16: Spring Break**

### **Week 10, 03/21 - 03/23: Difference-in-Differences I**

- The Mississippi Experiment
- Identifying Assumptions
- John Snow's Cholera Hypothesis
- What is behind DiD?

### **Week 11, 03/28 - 03/30: Difference-in-Differences II**

- DiD Estimation Method
- Minimum Legal Drinking Age and Mortality Rates
- Self-Defense Laws and Violence
- DiD Robustness checks
- **Homework 3 due 03/21**

Reading: Angrist and Pischke (2014) ch. 5

### **Week 12, 04/04 - 04/06: Synthetic Control Method**

- Comparative case studies
- Synthetic Control Estimation
- The Economic Cost of the 1990 German Reunification
- Placebo Studies

Reading: Cunningham (2021) ch. 10

### **Week 13, 04/11 - 04/13: Lab Quiz Week**

- **Homework 4 due 04/04**
- **Lab Quiz 04/06**

### **Week 14, 04/18 - 04/20: Regression Discontinuity I**

- Lab Quiz Reflections
- Sharp RD Design
- Minimum Legal Drinking Age and Mortality Rates

### **Week 15, 04/25 - 04/27: Regression Discontinuity II**

- Fuzzy RD Design
- Class size and School Achievement
- **Homework 5 due 04/25**

Reading: Angrist and Pischke (2014) ch. 4

### **Week 16, 05/02 - 05/04: Final Project Week**

- Final Project Guidelines
- **Final Group Project due 05/13**

## Academic Assistance

Students are encouraged to utilize the many resources we have throughout campus to assist with academics. We recommend that you seek them out starting early in the semester, not just in times of academic need, in order to develop good study habits and submit work which represents your full academic potential.

Many resources may be located on the Economics Website, including information about the Economics Tutoring Center and other tutoring centers: [economics.illinois.edu/academics/academic-student-support/academic-resources](http://economics.illinois.edu/academics/academic-student-support/academic-resources)

## Academic Integrity

According to the Student Code, “It is the responsibility of each student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions”. Please know that it is my responsibility as an instructor to uphold the academic integrity policy of the University.

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policies. Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity. Read the full Student Code at the following URL: [studentcode.illinois.edu/](http://studentcode.illinois.edu/)

## Students with Disabilities

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TTY), e-mail ([disability@illinois.edu](mailto:disability@illinois.edu)) or visit [www.disability.illinois.edu](http://www.disability.illinois.edu).

## Emergency Response Recommendations

Emergency response recommendations can be found [here](#). I encourage you to review this website and the campus building floor plans website within the first 10 days of class [police.illinois.edu](http://police.illinois.edu).

## Family Educational Rights and Privacy Act (FERPA)

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See [registrar.illinois.edu/ferpa](http://registrar.illinois.edu/ferpa) for more information on FERPA. Student information and records will not be released to anyone other than the student, unless the student has provided written approval or as required by law. More information may be found here: [studentcode.illinois.edu](http://studentcode.illinois.edu).

## Sexual Misconduct Reporting Obligation

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University’s Title IX and

Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: [www.wecare.illinois.edu/resources/students/#confidential](http://www.wecare.illinois.edu/resources/students/#confidential). Other information about resources and reporting is available here: [wecare.illinois.edu](http://wecare.illinois.edu).

## Student Support

The Counseling Center: [counselingcenter.illinois.edu](http://counselingcenter.illinois.edu) The Counseling Center is committed to providing a range of services intended to help students develop improved coping skills in order to address emotional, interpersonal, and academic concerns. Please visit their website to find valuable resources and services.

Counseling Center contact: 217-333-3704

Location: Room 206, Student Services Building 610 East John Street, Champaign, IL

Appointment: Scheduled for same day, recommend calling at 7:50 a.m.

McKinley Mental Health: [mckinley.illinois.edu/medical-services/mental-health](http://mckinley.illinois.edu/medical-services/mental-health) The Mental Health Clinic at McKinley provides evaluations, consultations, and recommendations for subsequent treatment for a variety of emotional and behavioral difficulties. Short-term individual psychotherapy and medication treatments are provided when indicated. McKinley's staff of mental health professionals includes licensed psychiatrists, psychologists, a clinical nurse specialist and clinical social workers.

McKinley Mental Health contact: 217-333-2701

Location: 3rd Floor McKinley Health Center 1109 South Lincoln, Urbana, IL

Hours: 8:00 am - 5:00 pm, Monday through Friday. Appointment: Scheduled in advance.

Emergency Dean: [odos.illinois.edu/community-of-care/emergency-dean](http://odos.illinois.edu/community-of-care/emergency-dean). The Emergency Dean may be reached at (217) 333-0050 and supports students who are experiencing an emergency situation after 5:00 pm, in which an immediate University response is needed and which cannot wait until the next business day. The Emergency Dean is not a substitute for trained emergency personnel such as 911, Police or Fire. If you are experiencing a life-threatening emergency, call 911. For emergencies that occur during business hours (Monday-Friday, 8:30 am-5:00 pm), students should call the Student Assistance Center at (217) 333-0050.

## Academic Dates and Deadlines

Students should make note of important academic dates for making changes to their courses (add, drop, credit/no-credit, grade replacement, etc.). [registrar.illinois.edu/academic-calendars](http://registrar.illinois.edu/academic-calendars) Please check with your academic department regarding specific procedures and policies.