

DEPARTMENT OF ECONOMICS  
UNIVERSITY OF MISSOURI-COLUMBIA

**Economics/Public Affairs 9446**  
**Advanced Empirical Methods**

Fall 2025 – Class Meetings Days & Times: Tues/Thurs 9:30-10:45, Strickland Hall 116  
Professor Cory Koedel  
Email: koedelc@missouri.edu  
Office hours: By appointment (I am usually in the office)  
Credit Hours: 3  
Final Exam Date & Time (from the MU registrar): Thursday, December 18, 10 a.m.-12 p.m.

**Objectives**

Overview:

The high-level objective of this course is to provide a comprehensive toolkit for the evaluation of key economic policy questions. The course will cover the most current and relevant empirical techniques and provide context and examples.

Specific objectives:

Objective 1: Differentiate between correlational and causal research. Explain the conditions for causal identification in the contexts of randomized experiments and quasi-experimental settings.

Objective 2: Explain, evaluate, and critique econometric research that employs any of the following methodologies: linear regression models, matching models, fixed effects models, difference-in-differences models, instrumental variables models, and regression discontinuity models.

Objective 3: Clean and organize commonly available research datasets (e.g., data collected by government agencies) to facilitate causal econometric research.

Objective 4: Create and execute causal econometric research designs that employ any of the following methodologies: fixed effects models, difference-in-differences models, instrumental variables models, and regression discontinuity models. Draw proper inferences and policy recommendations from research findings.

<b>Grading:</b>	Assignments:	30 percent
	Midterm Exam:	20 percent
	Final Exam:	25 percent
	Research Paper Proposal:	5 percent
	Research Paper & Presentation:	20 percent

**Assignments:** There will be three empirical assignments over the course of the semester. The assignments will involve the practical application of the empirical tools that you will learn about in the course.

**Exams:** The midterm will be given between weeks 7 and 9 of the semester. The final exam will be given during final exam week at the university-specified time.

**Papers:** The paper assignment will be discussed during the first week of class. The requirement will be a paper that is between 8 and 15 pages in length.

## **Topics and Reading List (Rough Guide)**

### **Methodological Overview**

*Mostly Harmless Econometrics: An Empiricist's Companion*, Joshua D. Angrist and Jörn-Steffen Pischke, 2009. Princeton University Press.

*(This book will be a useful reference for the entire course. Chapters 1-5 will be most relevant)*

### **Social Experiments**

Cullen, Julie Berry, Brian A. Jacob, and Steven D. Levitt, (2006) "The Effect of School Choice on Participants: Evidence from Randomized Lotteries," *Econometrica*.

### **Selection on Observables**

Clotfelter, C.T., H.F. Ladd and J.L. Vigdor, (2006). "Teacher-Student Matching and the Assessment of Teacher Effectiveness." *Journal of Human Resources* v.41 n.4 pp.778-820.

### **Fixed Effects**

Jeffrey M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, (2010). Chapter 10.

Blau, David M (1999). "The Effect of Income on Child Development," *The Review of Economics and Statistics*.

Ashenfelter, Orley and Alan Krueger (1994). "Estimates of the Economic Return to Schooling from a New Sample of Twins," *American Economic Review*.

Babcock, Philip (2010). "Real Costs of Nominal Grade Inflation? New Evidence from Student Course Evaluations," *Economic Inquiry* 48(4).

Aaronson, Daniel, Lisa Barrow and William Sander (2007). "Teachers and Student Achievement in the Chicago Public High Schools," *Journal of Labor Economics*.

### **Difference-in-Differences**

Card, David and Alan B. Krueger (1994). "Minimum Wages and Employment - A Case Study of the Fast Food Industry in New Jersey and Pennsylvania", *American Economic Review* 84:4, September.

Butcher, Kristin F., Patrick J. McEwan, and Akila Weerapana (2014). The Effects of an Anti-grade-Inflation Policy at Wellesley College. *Journal of Economic Perspectives* 28(3), 189-204.

Doleac, Jennifer L., and Benjamin Hansen (2020). The Unintended Consequences of "Ban the Box: Statistical Discrimination and Employment Outcomes When Criminal Histories are Hidden." *Journal of Labor Economics* 38(2), 321-374.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan (2004). How Much Should We Trust Difference-in-Differences Estimation. *Quarterly Journal of Economics* 119(1), 249-275.

### **Regression Discontinuity**

Cattaneo, M.D., Idrobo, N., and Titiunik, Rocio (2019). A Practical Introduction to Regression Discontinuity Designs: Foundations. Available at: <https://arxiv.org/abs/1911.09511>.  
[material from this article will be covered selectively]

Koedel, Cory, and NaYoung Hwang. (2024) Helping or Hurting: The Effects of Retention in the Third Grade on Student Outcomes. *Educational Evaluation and Policy Analysis*.

Bowblis, John R., and Austin C. Smith. (2021). Occupational Licensing of Social Services and Nursing Home Quality: A Regression Discontinuity Approach. *Industrial and Labor Relations Review* 74(1), 199-223.

### **Instrumental Variables**

Jeffrey M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, (2010). Chapter 5.

Murray, Michael P. (2006). Avoiding Invalid Instruments and Coping with Weak Instruments, *Journal of Economic Perspectives*

Parente, Paulo M.D.C. and J.M.C. Santos Silva, (2012). A Cautionary Note on Tests of Overidentifying Restrictions. *Economics Letters*, 115(2), 314-317.

Levitt, Steven D. (1997). Using Electoral Cycles in Policy Hiring to Estimate the Effect of Police on Crime, *American Economic Review*

Angrist, Joshua and Alan B. Krueger (1991). "Does Compulsory School Attendance Affect Schooling?" *Quarterly Journal of Economics*, 106, 979-1014.

## **ADMINISTRATIVE MATTERS**

### **ACADEMIC INTEGRITY**

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor or the [Office of Academic Integrity](#).

Students are expected to adhere to this honor pledge on all graded work whether or not they are explicitly asked in advance to do so: "I strive to uphold the University values of respect, responsibility, discovery, and excellence. On my honor, I pledge that I have neither given nor received unauthorized assistance on this work."

### **ACADEMIC INQUIRY, COURSE DISCUSSION, AND PRIVACY**

When students record something that happens in a course (a lecture, class discussions, meetings, etc.) it has an impact on the rights of the people captured in that recording. For example, the instructor and the University may have rights to the intellectual property contained in that recording. At the same time, another student who may have been recorded has the right to privacy. In order to protect these rights, MU employs a policy (called "[Executive Order No. 38](#)") to govern both situations you may encounter while taking a course – when an instructor allows recordings and when they do not.

In this class, students may make audio or video recordings of course activity unless specifically prohibited by the faculty member. However, the redistribution of audio or video recordings of statements or comments from the course to individuals who are not students in the course is prohibited without the express permission of the faculty member and of any students who are recorded.

Students who violate this policy are subject to discipline in accordance with provisions of [section 200.020](#) of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.

### **FERPA**

The [Family Educational Rights and Privacy Act](#) (FERPA) of 1974 is a federal law designed to protect the privacy of educational records; to establish the rights of students to inspect and review their education records; and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. The law applies to any individual who is or has been in attendance at an institution *and* regarding whom the institution maintains educational records. Once students have matriculated to the University of Missouri, i.e. enrolled

in course work, FERPA rights transfer to the student, regardless of the student's age.

Students can enable certain individuals to have access to their education records by signing a [FERPA waiver](#). The consent must specify records to be disclosed, state the purpose of the disclosure and identify the party or class of parties to whom the disclosure must be made.

### **INTELLECTUAL PLURALISM**

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the departmental chair or divisional director, the [Office of Academic Integrity](#), or the [MU Equity Office](#).

### **MENTAL HEALTH**

The University of Missouri is committed to supporting student well-being through an integrated network of care, with a wide range of services to help students succeed. The MU Counseling Center offers professional mental health care and can help you find the best approach to treatment based on your needs. Call to make an appointment at 573-882-6601. Any student in crisis may call or go to the MU Counseling Center between 8:00-5:00 M-F. After hours phone support is available at 573-882-6601.

Visit our website at <https://wellbeing.missouri.edu/> to take an online mental health screening, find out about workshops and resources that can help you thrive, or learn how to support a friend.

### **NETIQUETTE**

Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Our differences, some of which are outlined in the University's nondiscrimination statement, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambiance.

### **RELIGIOUS HOLIDAYS & ACCOMMODATIONS**

Many religious faiths are represented in the student body. The University of Missouri does not restrict student free exercise of religion, unless 1) the restriction is in the form of a rule of general applicability and does not discriminate against religion or among religions; and 2) it can be demonstrated that the application of the restriction is essential to furthering a compelling university interest and is not unduly restrictive considering the relevant circumstance. The policy of the University attempts to strike a reasonable balance between accommodating the religious practice of students and meeting academic needs and standards.

Consult IDE's [Guide to Religions](#) for the form that can be used to notify an instructor of an absence associated with religious practice. Students are expected to notify their instructor(s) by

completing and submitting this form in a manner that is consistent with the procedure outlined in the university's policy on student religious accommodation. Providing false information regarding sincerely held religious practice is a violation of the university's Standard of Conduct and will not be tolerated.

### **NONDISCRIMINATION POLICY (PROHIBITED DISCRIMINATION)**

The University of Missouri does not discriminate on the basis of race, color, national origin, ancestry, religion, sex\* (including gender), pregnancy, sexual orientation, gender identity, gender expression, age, disability, protected veteran status, and any other status protected by applicable state or federal law. Discrimination includes any form of unequal treatment such as denial of opportunities, harassment, and violence. \*Sex discrimination includes rape, sexual assault, sexual harassment, unwanted touching, stalking, dating/domestic violence, stalking, and sexual exploitation. Retaliation for making or supporting a report of discrimination or harassment is also prohibited.

If you experience discrimination or sexual violence, you are encouraged (but not required) to report the incident to the MU Office of Institutional Equity. Learn more about your rights and options at [equity.missouri.edu](http://equity.missouri.edu) or call 573-882-3880. You also may make an anonymous report online.

If you are a survivor, or someone concerned about a survivor, and need immediate information on what to do, see [RSVP Resources page](#). Both the [Office of Institutional Equity](#) and the [RSVP Center](#) can provide assistance to students who need help with academics, housing, or other issues.

In the event that you choose to write or speak about having experienced any of these forms of prohibited discrimination or harassment, Mizzou policies require that, as your instructor, I share this information with the MU Office of Institutional Equity. They will contact you to offer information about resources, as well as your rights and options as a member of our campus community.

### **STUDENTS WITH DISABILITIES**

The goal of the University of Missouri is to ensure an inclusive learning environment for all students. [The University of Missouri Disability Center](#) provides services and accommodations for students to participate fully in the learning experience and to experience equitable evaluation of their performance. Students (including online students) with a documented disability can contact the Disability Center to establish an [Accommodation Plan](#). Documented disabilities include *hearing, vision, mobility, learning and attention, psychological health, and physical health*. Students' accommodations are implemented with the input of students to maximize the learning experiences. The MU Disability Center keeps information about a student's disability confidential.

Please notify me of your eligibility for accommodations as soon as possible. Additionally, if there are aspects of the course that present as barriers, such as inaccessible course content (e.g., learning assessments, PowerPoints, non-captioned videos, images, tables, PDFs) or if you need an immediate accommodation due to an injury, please contact me or the Disability Center as soon as possible.

#### **STATEMENT FOR FACE-TO-FACE COURSES**

This course is listed in the course catalog as a face-to-face course. The instructional activities planned for this course are designed for face-to-face interactions with your classmates and instructors. These activities often do not translate well over online video platforms. Because of this, it is up to instructor discretion whether asynchronous instruction or recordings of class activities are an appropriate substitute for regular classroom attendance. For specifics regarding excused absences or disabilities accommodations, please see the relevant section of this syllabus.

#### **STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE**

AI tools, including generative AI, may be used in this class, and may be required for specific assignments. All AI tools should be used within ethical guidelines and with proper attribution. Failure to follow ethical guidelines may constitute an academic integrity violation under university rules.