

EFOP 3472 Causal Inference Syllabus, Fall 2024

Professor Joshua Bleiberg (jbleiber@pitt.edu)

5404 Posvar Hall; Wednesday; 12:00 to 2:40

Appointments and Office Hours: By appointment and via [Calendly](#)

Overview

Many key questions in the field of education are framed causally. Do investments in full-day kindergarten pay off in terms of improved school readiness? Does project-based learning in mathematics and science increase the pipeline of students into STEM-related fields? Does the introduction of a generous merit-based scholarship program improve students' motivation to prepare rigorously for postsecondary education? Despite this causal framing, analytic tools commonly applied to questions such as these allow for statements about relationships but not about causation. For example, we may observe correlational evidence that communities with full-day kindergarten also have higher levels of school readiness. These same communities, however, may also serve children from higher-income families. Given students' backgrounds, their levels of readiness may have been unchanged by participation in full-day kindergarten.

In this course, we will focus on framing research questions with a causal lens and on research designs and analytic techniques that provide the tools for answering these key questions in a causal framework. Specifically, we will learn about research designs for drawing causal inferences, including randomized trials, regression discontinuity, differences-in-differences, instrumental variables, and propensity score and other matching techniques. Our learning will be grounded through the semester in reading scholarly articles in which these techniques are applied to questions in education. Assignments throughout the semester will include preparation for class participation, a concise summary of a selected research article, and a final course project. At the start of the semester, students will be asked to identify an area of focus and potential sources of data for the final course project.

Course Texts and Materials

Required: Murnane, R. J., & Willett, J. B. (2010). *Methods Matter: Improving causal inference in educational and social science research*. Oxford University Press.

All course readings including Methods Matter and academic articles will be posted to the Canvas course site.

Course Dictionary: The course dictionary (see bottom module on the Canvass) is a resource to use when confusing technical terms are used. The language of econometric causal inference is

complicated and dense. Colloquial words have technical meanings. But also words have different definitions in psychometric and econometric statistics. I will do my best to clarify my language whenever possible.

Suggested Books:

*Has free online edition

Angrist, J. D., & Pischke, J. S. (2008). <i>Mostly harmless econometrics: An empiricist's companion</i> . Princeton University Press.
Angrist, J. D., & Pischke, J. S. (2014). <i>Mastering metrics: The path from cause to effect</i> . Princeton University Press.
Imbens, G. W., & Rubin, D. B. (2015). <i>Causal inference in statistics, social, and biomedical sciences</i> . Cambridge University Press.
Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). <i>Experimental and quasi-experimental designs for generalized causal inference</i> . Houghton, Mifflin and Company.
*Cunningham, S., (2021) <i>Causal Inference: the Mixtape</i> .. Yale University Press.
*Huntington-Klein, N. (2022). <i>The Effect</i> . Routledge.

Grading and Student Responsibilities

Assignment	Weight
Class attendance and participation	40%
One-page manuscript review 1	10%
One-page manuscript review 2	10%
Conference Proposal Initial Pitch	2%
Conference Proposal Draft	8%
Conference Proposal Presentation	15%
Conference Proposal Revision	15%

Weekly Readings

Each week, your primary work will be to read selected papers and chapters from *Methods Matter*. You will not be required to prepare explicit responses to detailed lists of questions that will be posted to the course box folder. Class discussion will focus on, but not necessarily be limited to, your answers to these questions.

Class Discussion

Each “regular” class meeting (meaning non-workshop sessions) you will be responsible for reading chapters from the Methods Matters and research articles. We will use Perusall to collaboratively engage with and discuss the weekly readings. Students are expected to engage with the readings by highlighting the text, commenting, and responding to other student questions. I will facilitate the use of Perusall by highlighting text and annotations to spark a broader conversation. I encourage you to think about your interaction with Perusall as closer to a conversation than a discussion board. If you encounter an idea that is confusing then please note that! Commenting with a question mark in areas where you are confusing will allow me to focus my instruction on those areas and will also benefit your peers. Please complete the Perusall tutorial prior to the first meeting of the class if you have not used it previously.

My goal is that our class discussions are a time of deep, collaborative learning. I expect you to be well prepared for each class. Class discussions will be a combination of free-flowing conversation and working through your answers to the prepared questions. To ensure that students are prepared for discussions and to ensure that we hear from everyone in the class, I will call on students *at random* to share their answers to the prepared questions. I recognize that this random calling may induce some degree of stress. Please know that my philosophy regarding these questions is that it is okay to be unsure of the answer, but only after you have really tried and engaged with the course material to answer the questions. **In short, it’s okay not to know; it’s not okay not to have tried.**

My overarching goal is to facilitate a classroom environment that is **psychologically safe**. As my colleague Shannon Wanless (2016) describes, this means that you will feel enabled to take interpersonal risks that will not “result in embarrassment, ridicule or shame” but that will, instead, enable you to “engage, connect, change and learn” together.

Workshops

The course will also include three workshops using STATA, which will be led by the Teaching Assistant. Workshops will focus primarily on implementing the estimation strategies that we explore in class. STATA is made available for [free](#) to all Pitt students. Students do not need to complete any preparation for the workshops. To keep the workload light, assignments (e.g., manuscript review, draft conference proposal) are due on class sessions with a workshop.

One-Page Manuscript Reviews

You will be required to complete two structured manuscript reviews that will be no longer than one page. The manuscript reviews will focus on the components of a review necessary for causal inference. More specifically: the assumptions of the estimation strategy, the comparison used to identify the effect, and any remaining biases. You may work in pairs on the manuscript reviews and submit a single assignment or choose to work on your own.

Conference Proposal

The final assignment for this course will be to write a conference proposal for the Association of Education Finance and Policy (AEFP). AEFP is an ed policy focused conference that prioritizes providing graduate student opportunities to present their research. Four assignments are associated with the conference proposal: (1) initial pitch, (2) proposal draft, (3) presentation, (4) proposal revision. The goal of this assignment is that every student has a conference submission that is ready to submit. Collaboration is increasingly the norm in the scholarly community of researchers who conduct quantitative research. **In conducting this research project, you have the option to collaborate with a partner in the class.**

Grading Scale

Grade	Point Range	Grade	Point Range
A	93-100	C	73-75
A-	90-92	C-	70-72
B+	86-89	D+	67-69
B	83-85	D	64-66
B-	80-82	D-	60-63
C+	76-79	F	Less than 60

A grade of A+ will only be granted in cases of truly exceptional work that considerably exceeds the expectations for each assignment.

Collaboration with Peers

Working with colleagues is the norm in research. All assignments may be completed in collaboration with a peer or peers. There is tremendous value in peer learning and collaboration is permitted with students enrolled in the class. However, seeking help from other PhD students outside of this class, professors, or other skilled programmers is not permitted. If you choose to work with a peer then you are still responsible for your own work and must submit your own assignment. You must also describe the peers that you are working with as a comment in your program.

University Policies

Several university policies are pertinent to this course. As an instructor I am committed to pedagogy that is anti-racist, non-sexist, non-classist, non-heterosexual, non-ableist, and non-gender normative. This includes fostering an environment that is as safe and inclusive as possible. It is my intention to

name and correct as best as possible any actions on my part that fall short of these commitments. If everyone in the class is likewise committed, the work should be more easily facilitated. I am also committed to making the class accessible to anyone wishing to participate.

University COVID Precautions.

The University of Pittsburgh updates its COVID protocols in response to changing conditions. See the latest information at coronavirus.pitt.edu. In this course we will adapt as needed. Please reach out and we'll make it work.

Availability of Instructor

The instructor will respond promptly to all e-mails and you may also request a face-to-face meeting with the instructor. It's my hope to be able to meet with everyone in person at least once this semester. Email for appointment or via [Calendly](#).

Departmental Grievance Procedures

The purpose of grievance procedures is to ensure the rights and responsibilities of faculty and students in their relationships with each other. When a student in the EFOP Department or an EFOP course believes that a faculty member has not met his or her obligations (as an instructor or in another capacity) as described in the [School of Education Academic Integrity Guidelines](#), the student should follow the procedure described in the Guidelines by (1) first trying to resolve the matter with the faculty member directly; (2) then, if needed, attempting to resolve the matter through conversations with Dr. Max Schuster, the associate chair of the Department of Educational Foundations, Organizations, and Policy; (3) if needed, next talking to the academic integrity officer of the school, Assistant Dean Dr. Andrea Zito; and (4) if needed, filing a written statement of charges with the academic integrity officer.

Academic Integrity

Students in this course will be expected to comply with the University of Pittsburgh's Policy on Academic Integrity. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

Disability Services

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both the instructor and Disability Resources and Services (DRS) as early as possible in the term: 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users. DRS will verify your disability and determine reasonable accommodations for these courses.

Statement on Classroom Recording

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

Accessibility

Ensuring an accessible and pleasant experience to all users, regardless of disability, is a key focus of Canvas. The Canvas platform was built using the most modern HTML and CSS technologies, and is committed to W3C's Web Accessibility Initiative and Section 508 [guidelines](#). Read more about [Accessibility within Canvas](#).

Copyright Notice

These materials may be protected by copyright. United States copyright law, 17 USC section 101, et seq., in addition to University policy and procedures, prohibit unauthorized duplication or retransmission of course materials. See [Library of Congress Copyright Office](#) and the [University Copyright Policy](#)

Religious Observances

The observance of religious holidays (activities observed by a religious group of which a student is a member) and cultural practices are an important reflection of diversity. As your instructor, I am committed to providing equivalent educational opportunities to students of all belief systems. At the beginning of the semester, you should review the course requirements to identify foreseeable conflicts with assignments, exams, or other required attendance. If at all possible, please contact me (your course coordinator/s) within the first two weeks of the first class meeting to allow time for us to discuss and make fair and reasonable adjustments to the schedule and/or tasks.

Your Well Being Matters

College/Graduate school can be an exciting and challenging time for students. Taking time to care for yourself and seeking appropriate support can help you achieve your academic and professional

goals. You are encouraged to maintain a healthy lifestyle by eating a balanced diet, exercising regularly, avoiding drugs and alcohol, getting enough sleep, and taking time to relax.

It can be helpful to remember that we all benefit from assistance and guidance at times, and there are many resources available to support your well-being while you are at Pitt. If you or anyone you know experiences overwhelming academic stress, persistent difficult feelings and/or challenging life events, you are strongly encouraged to seek support. In addition to reaching out to friends and loved ones, consider connecting with a faculty member you trust for assistance connecting to helpful resources. The [University Counseling Center](#) is also here for you. You can call 412-648-7930 at any time to connect with a clinician.

If you or someone you know is feeling suicidal, please call the University Counseling Center at any time at 412-648-7930. You can also contact Resolve Crisis Network at 888-796-8226. If the situation is life threatening, call Pitt Police at 412-624-2121 or dial 911.