

**University of Maryland**  
**Masters in Applied Economics**  
**ECON 672 - Program Analysis and Evaluation**  
*Winter 2025/26*  
Syllabus (Version 12/02/2025)

Instructor: Dr Monir Zaman (through January 20<sup>th</sup>)  
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Office Hours: Saturdays 5 PM to 6 PM, by appointment only via Zoom

Instructor: Dr Ye Zhang (after January 20<sup>th</sup>)  
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Office Hours: Fridays 2 PM to 3 PM, by appointment only via Zoom

TA: Wantian Huang  
Office Hours: 5.30pm-6.30 PM Tuesdays via Zoom  
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**Lectures**

Each week there will be one in-person class meeting on Wednesday. In-person courses in the DC version of this program meet from 6:45-9:30. This is because parking in the neighborhood becomes easier at 6:30 PM on weeknights. There will be a 15-minute break at some point around the middle of the class meeting.

The course needs to meet 12 times from 12/3/2025 to 2/18/2026. But there will be no meetings between Wednesday 12/24 and Thursday 1/1 (winter break). Unfortunately, this leaves just 10 Wednesdays for 12 meetings. So, two 2 non-Wednesday meetings will be held through Zoom online. The tentative dates and times for the 2 non-Wednesday meetings have been given in the detailed schedule in the later part of the syllabus, but, these will be confirmed again in the regular class meeting.

Monir will schedule one non-Wednesday meeting some time prior to 1/21.  
Ye will schedule one non-Wednesday meeting some time between 1/21 and 2/18.

That way each of the instructors has one non-standard meeting, and 6 meetings overall.

### **Location**

1400 16th St NW, suite140, Washington, DC 20036

**All students are required to take proctored mid-term (Wed. 1/14) and final exam (Wed. 2/18).**

These exams will be administered in our Washington, DC classroom suite at 1400 16th St, NW.

**Course description:** The objective of this course is to learn the tools that are used to evaluate the effectiveness of public policies. A tremendous amount of money is spent on program evaluations, and they are difficult to conduct successfully. We will discuss the economics and econometrics of program evaluation, focusing on both experimental and non-experimental methods used for causal inference. You will learn how to distinguish high from low quality evaluations. We will examine published evaluation research with the intent of showing how research does or does not lead to clear conclusions regarding program performance.

**Course objectives:** Our program has 7 general learning outcomes for students:

- 1. Ability to understand, evaluate and analyze economic data**
- 2: Ability to understand and interpret statistical evidence from economic data**
- 3: Ability to apply empirical evidence to assessing economic arguments**
- 4: Ability to apply macroeconomic theories to policy discussions
- 5: Ability to apply microeconomic theories to policy discussions**
- 6: Ability to communicate economic ideas to a broader audience**
- 7: Ability to evaluate the effectiveness of policy programs using sound economic techniques**

The learning outcomes that pertain to this course are: *1, 2, 3, 5, 6, 7*

More specifically, students will:

- Learn the basics of the economics and econometrics of program evaluation, with a focus on hands-on implementation of econometric methods using actual data. This will include an emphasis on applied econometric skills using Stata.
- Critically review the evaluation literature via written comments, formal discussant presentations and general class discussion of published evaluation research with the aim of showing how the process of knowledge creation through research does or does not lead to clear conclusions regarding program effects
- Critically evaluate how research is presented in the public domain (e.g., media) to be a better consumer of reported findings
- Learn the basics of how the evaluation industry functions and how evaluations affect and are affected by policy.

## **Approach in the Course**

This course is designed to build both a strong theoretical foundation in program evaluation and the practical skills needed to implement evaluation methods in real-world contexts. Each session integrates three complementary components:

1. Conceptual discussions of core evaluation frameworks and identification strategies
2. Hands-on empirical exercises using real data and statistical software
3. Case-based applications that illustrate how evaluation methods are used in policy and practice

This blended approach ensures that students not only understand the logic behind rigorous impact evaluation but also develop the ability to critically assess existing studies and design and execute high-quality evaluations themselves.

To further strengthen the practice-oriented aspect of the course, two experienced evaluation professionals will join us as guest speakers. Their insights and examples will help students connect theoretical tools with the realities of evaluation work in the field.

## **Guest Speakers**

Two invited guest speakers—both active practitioners—will lead one-hour online sessions followed by Q&A. These sessions will be scheduled during the middle portion of the course. The exact session times of the guest speakers will be confirmed in the class sessions as well.

- Aidan Coville, Senior Evaluation Specialist, World Bank
- Shirley Yan, Research Lead, Noora Health

Monir will arrange the online session for the guest speakers before 20<sup>th</sup> January 2026. Since both the speakers (Aidan in South Africa and Shirley in India) are based in abroad and different time zone, we need to accommodate them through non-Wednesday session at their mutual convenience time. The tentative day of their sessions have

## **Course Contents:**

This course provides a comprehensive overview of established methods in program evaluation while also introducing students to the latest developments in causal inference. We begin with a rigorous foundation in the potential outcomes framework and graphical models of causality, setting the stage for a broad exploration of contemporary research designs.

We first examine identification and estimation strategies for classical randomized experiments, including brief discussions of extensions beyond the standard designs. The course then shifts to observational methods, which constitute the core of the curriculum. We start with selection-on-observables approaches, covering regression, matching, and weighting techniques, followed by sensitivity analyses and methods for partial identification using bounds.

Next, we turn to causal inference with time-varying data. We introduce the traditional two-period difference-in-differences (DiD) design before expanding to modern generalizations involving multiple time periods, treatment-effect heterogeneity, staggered adoption, and non-absorbing treatments. The course continues with instrumental variables (IV), approached primarily through the potential outcomes framework, with brief reference to the classical structural perspective. We then cover regression discontinuity designs (RDD), focusing on continuity-based identification and local polynomial estimation.

The course also incorporates recent advances in machine learning–based evaluation methods. Throughout the term, examples are drawn from across the social sciences, and each class includes a close reading and discussion of an applied empirical paper.

### **Course materials:**

Official text: Angrist, Joshua D., & Jörn-Steffen Pischke. (2025). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, NJ: Princeton University Press. ISBN 978-0691120348.

This is the main required text for this class.

Additional text: Cunningham, Scott. 2021. *Causal Inference: The Mixtape*. Yale University Press.

### **Required Additional Reading Materials**

To supplement the core text, I will incorporate selected chapters from practical manuals and handbooks to bridge the gap between theory and practice.

#### **World Bank Latest Manuals**

“Glewwe, Paul; Todd, Petra. 2022. Impact Evaluation in International Development: Theory, Methods and Practice. © World Bank. <http://hdl.handle.net/10986/37152> License: [CC BY 3.0 IGO](#).”

URI: <https://hdl.handle.net/10986/37152>

“Gertler, Paul J.; Martinez, Sebastian; Premand, Patrick; Rawlings, Laura B.; Vermeersch, Christel M. J.. 2016. Impact Evaluation in Practice, Second Edition. © World Bank. <http://hdl.handle.net/10986/25030> License: [CC BY 3.0 IGO](#).”

URI: <https://hdl.handle.net/10986/25030>

### **Supplementary Readings/Peer Reviewed Articles**

Each week will feature peer-reviewed articles and applied policy papers that illustrate how specific evaluation methods are used across sectors and geographies. These readings will be chosen to reflect diversity in both topics and evaluation techniques. Through these articles, students will develop the ability to critically assess the appropriateness and effectiveness of various methodologies in context.

The research papers for the following week will be provided during the session. The instructor will share the link or paper on the course webpage or in the class presentation.

**Required software:** Stata and EXCEL

### **Grading and assignments (% of grade)**

Weekly online discussions: 10% total

Two Problem sets: 20% total

Midterm exam: 20%

One Individual Empirical Replicating Project: 20%

Final exam: 30%

### **Weekly Online Discussions - 10%**

Every Thursday, a discussion question or topic will be posted on the course ELMS page. The discussion topic will be related to one or more papers. Students are expected to participate actively in the online discussion forum until the following Wednesday, prior to our weekly class meeting. Contributions should reflect thoughtful engagement with the topic, demonstrate understanding of course materials, and respond constructively to peers. Selected themes and insights from the online discussions will be incorporated into our in-class conversations. One student (pre-selected) will present the key points of the discussion/paper in the beginning of the following weekday session.

### **Problem Sets (Two Total) - 20%**

There will be two problem sets, each worth 10% of the final grade. The release dates and due dates for each assignment are provided in the course schedule. All submissions must be uploaded to the ELMS platform by the specified deadlines. Students who have questions or need clarification regarding the problem sets are encouraged to contact the teaching assistant for guidance.

### **Midterm Examination - 20%**

The midterm exam will be administered in person during class on January 14, 2026, and will cover all material taught through Week 5. Students will complete the written portion of the exam on paper. In addition, a short coding component must be submitted separately through the ELMS platform on the same day.

Monir will proctor the midterm exam.

### **Individual Empirical Replication Project - 20%**

Each student will complete an individual empirical replication project, applying causal inference methods to reproduce and analyze results from a published study. Students will present their project findings during the class meetings on February 4, 2026 and February 11, 2026. A written version of the project, along with any associated code, must also be submitted on ELMS by the presentation date.

### **Final Examination — 30%**

The final exam will take place in person on February 18, 2026, and will assess material covered through Week 11. Similar to the midterm, students will complete a written exam on paper and submit accompanying code through ELMS.

Ye will proctor the final examination.

### **Calculation of Final Grades**

All assignments and exams will be graded on a 100-point scale. Final grades will be determined by computing the weighted average of all components according to the percentages listed above. The resulting numerical score will constitute the official course grade.

### **Translation from Numerical Scores to Letter Grades**

At the end of the term, every student will have a numerical course grade between 0 and 100. To ensure that the translation from numerical scores to letter grades accurately reflects student mastery, each question on every assignment must be graded according to the standards described here. This consistency is essential: if a student earns a numerical score that corresponds to a particular letter grade, the level of mastery demonstrated in their work must match the expectations for that grade.

Students who demonstrate clear mastery of the course material will receive A grades. Students who show solid understanding will receive B+ grades. Students who demonstrate only partial understanding will receive B grades. Students who do not demonstrate understanding of the core material will receive B– grades or below. By ensuring that question-level grading aligns with these standards, the numerical-to-letter grade translation remains accurate and fair.

93-100	90-92	80-89	70-79	60-69	50-59	40-49	30-39	20-29	19-10	0-9
A	A-	B+	B	B-	C+	C	C-	D+	D	F

## Tentative Schedule of the Course (subject to change)

Week	Date	Topic	Assignment/Exam
1	12/3/25	Course Introduction	
1	12/3/25	Why evaluate? Preparing for An Evaluation Potential Output Framework	
2	12/10/25	How to Design an Evaluation Experimental Design	Distribution of Problem Set 1
2	12/10/25	Intro to Quasi-Experimental Designs	
3	12/17/25	Selection on Observables	
3	12/17/25	Matching methods/ Guest Speaker Shirley	Shirley will join online
4	<b>Sat.</b> 12/20/25	Synthetic Control	Problem set 1 due Join through online
4	<b>Sat.</b> 12/20/25	Panel Data method/ Guest Speaker	Join through online
5	1/7/26	Difference in Difference method	Distribution of problem set 2
5	1/7/26	Difference in Difference method	
6	1/14/26	Mid-term exam	Cover materials through week 5
6	1/14/26	Mid-term exam	
7	1/21/26	Treatment Effect Heterogeneity	Distribution of empirical projects
7	1/21/26	Instrumental Variable and LATE	Submission of Problem set 2
8	1/24/26 <b>Sat.</b>	Recent Development in Difference in Differences Method	
8	1/24/26 <b>Sat.</b>	Machine Learning methods in Program Evaluation	

9	1/28/26	Regression Discontinuity in Action	
9	1/28/26	Quantile Treatment Effects	
10	2/4/26	How to implement an Impact Evaluation	
10	2/4/26	Empirical Project Presentations	Empirical Project
11	2/11/26	Empirical Project Presentations	Empirical project
11	2/11/26	Course Review	
12	2/18/26	Final Exam in person	Cover all materials
12	2/18/26	Final Exam in person	

*Please note that the sessions in Week 4 and Week 8 are non-Wednesday meetings and will be conducted online via Zoom and confirmed later on. The Zoom link and specific meeting time will be provided in advance of each session.*

## **Standard Policies for the Program and the University of Maryland**

### **Graduate Courses at the University of Maryland**

Policies related to all graduate courses at the University of Maryland are posted on this page of the Graduate School's website: <https://gradschool.umd.edu/faculty-and-staff/course-related-policies> Please familiarize yourself with these policies related to academic integrity, nondiscrimination policy, accessibility, absences and accommodations, grading, academic standing, grievance procedures, and other important policies.

#### **Email**

The University has adopted email as the primary means of communication outside the classroom, and I will use it to inform you of important announcements. The University creates an “@umd.edu” email address for every graduate student. All official UMD communications will be sent to students at their “@umd.edu” email address. You are responsible for reading your @umd.edu email address, including ELMS Announcements I send to the class. You should make sure ELMS Announcements and messages are forwarded to an email address that you check regularly. Failure to check email, errors in forwarding email, and returned email due to “mailbox full” or “user unknown” will not excuse a student from missing announcements or deadlines. I will do my best to respond to email within 24-36 hours. Do not hesitate to follow up. will

## Course Website

Copies of the course syllabus, student's grades, and other relevant links and documents be posted on the course's ELMS website. Students can access the site via [www.elms.umd.edu](http://www.elms.umd.edu). They will need to use their University of Maryland "directory ID" and password.

## Workload

Mastering the material covered in this course requires a significant amount of work outside of class. Students should expect to spend more time outside of class than in class – typically at least twice as much time. In a regular 15-week semester (as in the College Park version of our program): Taking 3 master's-level courses is supposed to approach the time commitment of a full-time job (~36-39 hours per week, so 12-13 hours per week per course). Taking 3 master's-level courses while simultaneously working at a demanding full-time job during the day is not advisable. Students with questions about the workload Page 12 in this program should speak with one of the program directors. The courses in our DC and online programs are 12-week courses that cover all the same material as a traditional semester-long 3-credit course (15 weeks). The compressed schedule makes it possible to complete our degree in just 15 months if you take 2 courses each term. But the compressed schedule also implies an accelerated pace with an average of 25% more work per week in a given course ( $15/12 = 1.25$ ). So maybe about 15 hours of work per week per course. The weekly workload when taking 2 of our DC courses per term is equivalent to the weekly load from 2.5 "normal" 15-week courses - so maybe about 30 hours per week. Students who take 2 courses per quarter in our DC program complete 8 courses per year. So over the course of a year, taking 2 courses per quarter in our DC program is equivalent to 133% of a full-time load ( $8/6 = 1.33$ ).

## Academic Progress

The graduate school requires that students maintain a GPA of at least 3.0. Students whose cumulative GPA falls below 3.0 will be placed on academic probation by the graduate school. Students on academic probation must ask the program's director to petition the graduate school if they want to remain in the program. The petition must include a plan for getting the student's GPA up to at least 3.0. Students who do not live up to their plan can be forced to leave the program without having earned the degree. Note: a grade of "B" corresponds to a GPA of 3.0. A grade of "B-" corresponds to a GPA of 2.7.

## Excused Absences

UMD Grad School policy related to Excused Absences and Accommodations are posted at this website:

<https://academiccatalog.umd.edu/graduate/policies/course-related-policies/#text>

If you miss any class meetings for any reason, it is your responsibility to work with the instructor

to make sure you catch up on the missed material. Instructors routinely facilitate things by posting lecture notes, etc. If you need to miss an exam or other graded course requirement because of illness, injury, or some other emergency: Follow doctor's orders and get documentation. Get in touch with the instructor as soon as you're able—preferably prior to missing the exam or deadline. Communicate with the instructor to make up the course requirement as soon as possible. You are entitled to recover before you make up the course requirement, but you are not entitled to extra days to study beyond the time the doctor's note says you're incapacitated. If you are incapacitated for more than a week or so beyond the end of the term, your grade in the course will be an "Incomplete". In such cases you must negotiate a plan with your instructor for completing the course requirements. Once you make up the course requirement the instructor will change your "I" to the appropriate letter grade.

### School Closings and Delays

Information regarding official University closing and delays can be found on the campus website and the snow phone line: (301) 405-SNOW (405-7669). The program director will also announce cancellation information to the program as an announcement on the program's ELMS site. This will generally be done by 1:00PM on days when weather or other factors are an issue. When classes need to be canceled during the semester, we make every effort to schedule makeup classes.

### UMD Counseling Center

Sometimes students experience academic, personal and/or emotional distress. The UMD Counseling Center in Shoemaker Hall provides free, comprehensive, and confidential counseling/mental health services that promote personal, social, and academic success. All Counseling Center services are completely free for enrolled students. Proactively explore the range of services available at the Counseling Center, including the Counseling Service and Accessibility and Disability Service described at <http://www.counseling.umd.edu/>

### UMD Accessibility and Disability Service

The University of Maryland is committed to creating and maintaining a welcoming and inclusive educational, working, and living environment for people of all abilities. The University of Maryland is also committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the University, or be subjected to discrimination. The Accessibility & Disability Service (ADS) provides reasonable accommodations to qualified individuals to provide equal access to services, programs and activities. ADS cannot assist retroactively, so it is generally best to request accommodations several weeks before the semester begins or as soon as a disability becomes known. Any student who needs

accommodations should contact ADS as soon as possible so that they have sufficient time to make arrangements. For assistance in obtaining an accommodation, contact Accessibility and Disability Service at 301-314-7682, or email them at [adsfrontdesk@umd.edu](mailto:adsfrontdesk@umd.edu). Information about sharing your accommodation letter, discussing accommodation logistics and getting assistance from ADS staff and more can be found on the ADS website.

### Graduate Academic Counselor

The UMD Graduate School also has an academic counselor available to support students who are having difficulty navigating mental health resources on campus, are considering a leave of absence and/or need assistance finding mental health care off campus. The Graduate Academic Counselor also facilitates bi-weekly Graduate Student Circle Sessions which provide an opportunity to learn about resources and connect with other graduate students. Students can learn more about the Graduate Academic Counselor by going to:

<https://gradschool.umd.edu/gradcounselor>

### Course Evaluation

Near the end of the term, you will receive an email inviting you to submit a voluntary and anonymous course evaluation. Your feedback on courses will be very helpful in improving the quality of instruction in our program.

**Building Access:** There is a smartphone app that can be used to enter our building after normal business hours. The program coordinator will provide information about this. We will also provide information about the code for entering the front door of our suite. Please make sure you are receiving the ELMS-Announcements that we send out to the program about these and other important matters.