SYLLABUS

PUBLIC POLICY 608
APPLIED MULTIVARIATE REGRESSION
SPRING 2023

INSTRUCTOR

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Pronouns: he/him/his
Office hours: Tuesdays, 3 – 4 pm, or by appointment

All office hours are virtual (Zoom Meeting ID: 945 503 3539).

LEARNING OBJECTIVES

This course introduces the practical application of widely used basic multivariate regression techniques. The objectives for the course are that, by the end the course, students (a) are able to implement multiple linear regression and estimate basic time series, panel data, and limited dependent variable models; (b) have gained experience in using these techniques through hands-on exercises; (c) are able to read and interpret journal articles that employ multivariate regression; and (d) have conducted an original regression analysis of real-world data.

COURSE MATERIALS

1. Wooldridge, Jeffrey M. (2020). *Introductory Econometrics: A Modern Approach*. Boston, MA: Cengage. Seventh Edition.
2. Stata/MP 17: Students are expected to have Stata installed on a computer and should have access to this computer during class. Free download for UMBC graduate students at: https://wiki.umbc.edu/display/faq/Software.
3. Blackboard: Problem sets, datasets, lecture slides, journal articles, and other course materials will be posted on the course page in Blackboard.

COURSE REQUIREMENTS

1. **Problem sets (6 x 7 points each; lowest score will be dropped):** Problem sets will guide students through multivariate regression exercises.
2. **Take-home midterm exam (30 points):** The exam will test mastery of theory and execution of multivariate regression techniques.
3. **Final project (35 points):** An original regression analysis of real-world data in an area of interest selected by the student to demonstrate mastery of course concepts and ability to communicate results in writing.

PROBLEM SET RULES

Due dates for problem sets are listed in the table at the end of this syllabus. Problem sets are always due at the beginning of class. If you miss the deadline for submitting your problem set, you may submit your problem set late but the grade for that problem set will be marked down:

- 25% for being even a second late
- 25% for each successive day that the problem set is late

up to 4 days late, at which point the grade on the problem set will be zero. In addition, your lowest problem set grade will be dropped when calculating the final grade for the course.

Students are encouraged to work on problem sets collaboratively, under the following ground rules:

1. You must write a note on your problem set listing the names of all people you collaborated with or got help from (e.g., "I worked with Jane and Will").
2. Collaboration means discussing the problems together. However, the actual writing must be done individually. Each collaborator must hand in their own problem set; you cannot hand in a single set as the work of several people.
3. When collaborating, every student must work on every problem. You may not divide the problems up among yourselves.

ACADEMIC INTEGRITY

Academic integrity is an important value at UMBC. By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. These principles and policies apply in both face-to-face and online classes. Resources for students about academic integrity at UMBC are available at
https://academicconduct.umbc.edu/resources-for-students/.

COVID-19 SAFETY PROTOCOLS AND COMPLIANCE

Students should comply with the university's current COVID-19 guidance and regulations, which can be found on the Retriever Ready: COVID-19 Response website: https://covid19.umbc.edu.

The current masking requirement is listed here: https://covid19.umbc.edu/masks.

TRAUMA-INFORMED PEDAGOGY

Diminished mental health can interfere with optimal academic performance. The source of symptoms might be related to your course work; if so, please speak with me. However, problems with other parts of your life can also contribute to decreased academic performance. UMBC provides cost-free and confidential mental health services through Retriever Integrated Health to help you manage personal challenges that threaten your personal or academic well-being. Remember, getting help is a smart and courageous thing to do—for yourself and for those who care about you. Retriever Integrated Health is located in The Center for Well-Being (between Chesapeake and Susquehanna Halls). Phone: 410-455-2542. Hours: Monday-Friday 8:30am-5:00pm.

ACCESSIBILITY AND DISABILITY ACCOMMODATIONS, GUIDANCE, AND RESOURCES

Accommodations for students with disabilities are provided for all students with a qualified disability under the Americans with Disabilities Act (ADA & ADAAA) and Section 504 of the Rehabilitation Act who request and are eligible for accommodations. The Office of Student Disability Services (SDS) is the UMBC

department designated to coordinate accommodations that creates equal access for students when barriers to participation exist in University courses, programs, or activities.

If you have a documented disability and need to request academic accommodations in your courses, please refer to the SDS website at https://sds.umbc.edu for registration information and office procedures.

SDS email: disAbility@umbc.edu

SDS phone: 410-455-2459

If you will be using SDS approved accommodations in this class, please contact the instructor to discuss implementation of the accommodations. During remote instruction requirements due to COVID, communication and flexibility will be essential for success.

SEXUAL ASSAULT, SEXUAL HARASSMENT, AND GENDER BASED VIOLENCE AND DISCRIMINATION

UMBC Policy and Federal law (Title IX) prohibit discrimination and harassment on the basis of sex, sexual orientation, and gender identity in University programs and activities. Any student who is impacted by sexual harassment, sexual assault, domestic violence, dating violence, stalking, sexual exploitation, gender discrimination, pregnancy discrimination, gender-based harassment or retaliation should contact the University's Title IX Coordinator to make a report and/or access support and resources:

Jackie Moran, Title IX Coordinator and Interim Director

410-455-1717 (direct line), jmoran5@umbc.edu

You can access support and resources even if you do not want to take any further action. You will not be forced to file a formal complaint or police report. Please be aware that the University may take action on its own if essential to protect the safety of the community.

If you are interested in or thinking about making a report, please use the Online Reporting/Referral Form. Please note that, if you report anonymously, the University's ability to respond will be limited.

Notice that Faculty are Responsible Employees with Mandatory Reporting Obligations:

All faculty members are considered *Responsible Employees*, per UMBC's Policy on Sexual Misconduct, Sexual Harassment, and Gender Discrimination. Faculty are therefore required to report any/ all available information regarding conduct falling under the Policy and violations of the Policy to the Title IX Coordinator, even if a student discloses an experience that occurred before attending UMBC and/or an incident that only involves people not affiliated with UMBC. Reports are required regardless of the amount of detail provided and even in instances where support has already been offered or received.

While faculty members want encourage you to share information related to your life experiences through discussion and written work, students should understand that faculty are required to report *past and present* sexual assault, domestic and interpersonal violence, stalking, and gender discrimination that is shared with them to the Title IX Coordinator so that the University can inform students of their rights, resources and support. While you are encouraged to do so, you are not obligated to respond to outreach conducted as a result of a report to the Title IX Coordinator.

If you need to speak with someone in confidence, who does not have an obligation to report to the Title IX Coordinator, UMBC has a number of Confidential Resources available to support you:

- Retriever Integrated Health (Main Campus): 410-455-2472 [Monday – Friday; 8:30 a.m. – 5 p.m.] / After-Hours Support 410-455-3230

- Center for Counseling and Consultation (Shady Grove Campus): 301-738-6273 (Messages checked hourly) Online Appointment Request Form
- Pastoral Counseling via Interfaith Center: 410-455-3657; interfaith@umbc.edu [7 days a week; Fall and Spring 7 a.m. – 11 p.m.; Summer and Winter 8 a.m. – 8 p.m.]

Other Resources:

- Women's Center (for students of all genders): 410-455-2714; womenscenter@umbc.edu. [Monday – Thursday 10:00am-5:30pm and Friday 10:00am-4pm]
- Shady Grove Student Resources, Maryland Resources, National Resources.

Child Abuse and Neglect:

Please note that Maryland law and UMBC policy require that faculty report all disclosures or suspicions of child abuse or neglect to the Department of Social Services and/or the police even if the person who experienced the abuse or neglect is now over 18.

Lauren's Promise:

I promise to (a) listen and believe you if someone is threatening you; (b) represent a safe haven for sharing incidents of sexual assault, domestic violence, or stalking; (c) change campus culture that responds poorly to dating violence and stalking.

DISCLAIMER

This syllabus may need to be updated throughout the semester for many reasons. Policies, deadlines, and assignments may change. I will clearly communicate all such changes to you and the most up-to-date syllabus will always be posted on Blackboard.

COURSE SCHEDULE, READINGS, & DUE DATES

Week #	Date	Topics	Readings	Due
1	February 1	Theories of socioeconomic processes and statistical models; the structure of socioeconomic data; introduction to causality		
2	February 8	The simple regression model; deriving and interpreting OLS estimates for simple regression	• W, Chapter 1 (all) • W, Chapter 2: Sections 1 – 4	
3	February 15	Goodness-of-fit; nonlinearities in simple regression; statistical properties of OLS; binary explanatory variables	• W, Chapter 2: Sections 5 – 7 • Hertenstein et al. (2009)	***Problem Set #1***
4	February 22	**NO CLASS – WATCH RECORDED LECTURES**		
		The multiple regression model; deriving and interpreting OLS estimates for multiple regression; including irrelevant variables and omitting relevant variables	• W, Chapter 3: Sections 1 – 2	
5	March 1	Sampling distributions of OLS estimators; testing hypotheses about a single population parameter	• W, Chapter 3: Sections 3 – 5 • W, Chapter 4: Sections 1 – 3 • Ashenfelter (2008)	***Problem Set #2***
6	March 8	Testing hypotheses about more than one population parameter; testing multiple linear restrictions; models with logarithmic functional forms and quadratics	• W, Chapter 4: Sections 4 – 7 • W, Chapter 6: Sections 2 – 3	***Problem Set #3***
7	March 15	**NO CLASS – TAKE-HOME MIDTERM**		
8	March 22	**SPRING BREAK**		
9	March 29	Goodness-of-fit and selection of regressors; models with interaction terms	• W, Chapter 7: Sections 1 – 4 • W, Chapter 8: Sections 1 – 3 • W, Chapter 9: Sections 1 – 5 • Ferraro et al. (2011)	

10	April 5	Heteroskedasticity; time series regression models; trends and seasonality	• W, Chapter 10: Sections 1, 2, 5 • W, Chapter 13: Sections 1 – 2 • Williams (2022)	*Problem Set #4*
11	April 12	Pooled cross sections; panel data and the fixed effects model	• W, Chapter 13: Sections 3 – 5 • W, Chapter 14: Section 1	
12	April 19	Policy analysis with panel data	• Papke (1994) • Card & Krueger (1993)	*Problem Set #5*
13	April 26	Instrumental variables and two stage least squares	• W, Chapter 15: Sections 1 – 3 • Black et al. (2015)	*Problem Set #6*
14	May 3	**WORKSHOP FOR FINAL PROJECTS**		*Final Project presentation*
15	May 10	Limited dependent variables; the linear probability model; the logit, probit, and Tobit models	• W, Chapter 7: Section 5 • W, Chapter 17: Sections 1 – 3 • Bertrand & Mullainathan (2004)	*Final Project report*