

**Economics 3271**

Intro to Applied Econometric Practice  
Spring 2024

**MWF 11:00-11:50**

Middlebush Hall 132

**Instructor:**

Sarah Parsons

Senior Research Analyst

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**Instructor Office Hours:**

Tue 9:00-10:00; Wed 1:00-2:00; or by appointment  
Zoom/In-Person

**COURSE DESCRIPTION**

This course provides an introduction to applied econometrics and research methods and inquiry. We will focus on developing the intuition behind regression analysis and the interpretation of regression models to answer research questions. Students will gain experience and proficiency in managing data in Microsoft Excel and Stata (statistical software package, see additional details below). We will also produce original quantitative research using multivariate regression analysis and provide substantive interpretations of model results.

**GOALS OF THE COURSE**

- Understand how to read and interpret statistical output in academic journal articles that utilize statistical methods
- Determine if statistical results presented in a research study use appropriate methods that support causal inference
- Prepare data for analysis by cleaning, formatting, and merging observations
- Understand assumptions of regression models and perform model diagnostics to detect violations of assumptions
- Estimate results from simple and multivariate regression, including transformations (e.g. logarithms, polynomial terms) and dummy variables
- Interpret model results to generate and test hypotheses
- Create meaningful tables to display statistical output
- Effectively communicate quantitative research in written and spoken formats

**COURSE ATTENDANCE**

In-person attendance for class sessions is strongly encouraged and class sessions will generally not be live-streamed via Zoom. If there are any unscheduled class cancellations (weather, etc.), I will post a Panopto recording of the lecture for asynchronous viewing.

**REQUIRED MATERIALS AND TECHNOLOGIES**

**Stata software**

- Stata/BE is available for purchase for students at \$48 for a 6-month license. Other pricing options are available. You are **strongly encouraged** to purchase and install the software. Visit <https://www.stata.com/order/new/edu/gradplans/student-pricing/> to purchase Stata on your own (not through the bookstore).
- Stata must be installed on a laptop (recommended, if possible) or desktop computer, not tablet or iPad.
- Stata is also available via the University's "software anywhere" system (<http://doit.missouri.edu/services/software/software-anywhere>), but this is not recommended due to frequent lags and technical issues.

## iClicker

This class will use iClicker questions, which will be used to track attendance. Students must use iClicker Student on a smartphone, laptop, or tablet during class sessions. This is free for University of Missouri students. If you have not yet downloaded/used iClicker, please visit <https://student.iclicker.com> and follow the sign-up steps. More details are provided in the class notes on the first day of class.

## Readings

Assigned readings will include sections from Lewis-Beck: *Applied regression: An introduction*, Angrist & Pischke: *Mastering Metrics: The path from cause to effect*, and selected journal articles. All readings will be made available on the course Canvas site.

## GRADES

Your course grade will be based on five homework assignments and two case studies, which each have two components to submit. The case studies are an in-depth written projects in which you will explore your own research question and interpret and communicate your findings. There will be a check-in for each case study, which are additional preliminary assignments designed to help you explore the data set and structure your analysis. For one case study, you will also give an oral in-class presentation outlining your research question, data, analysis, and findings.

	Date (due by 11:55pm on the due date for Canvas submissions)	Points
<b>Homework:</b> five problem sets; <u>the lowest score is dropped</u> . Each assignment is worth 25 points.	February 5 February 16 March 20 April 5 April 15	100
<b>Case study check-ins:</b> assignments to help you prepare your written case study. Each check-in is worth 25 points.	February 23 April 22	50

<b>Case studies:</b> two written projects exploring data and conducting analysis to answer a research question. Each case study is worth 35 points.	March 4 May 1	70
<b>Case study presentation:</b> for one case study, students will give an in-class presentation.	Weeks of March 6 and April 26	30
<b>Total</b>		250

### NOTES ABOUT ASSIGNMENTS AND GRADES

- Follow-up questions about grades must be communicated within 7 days after the assignment is returned.

#### *Tentative Grading Scale:*

	A:	93% – 100.0%	A-:	90% – 92.9%	
B+:	87% – 89.9%	B:	83% – 86.9%	B-:	80% – 82.9%
C+:	77% – 79.9%	C:	73% – 76.9%	C-:	70% – 72.9%
D:	60% – 69.9%	F:	< 60%		

- Any student reaching the relevant threshold will receive the listed grade. However, the grade cut-offs **\*may be revised downwards\*** based on the overall grade distribution in the course.
- LATE WORK POLICY: late work is generally not accepted unless prior arrangements have been made with me.
- EXTRA CREDIT OPPORTUNITIES: there are two opportunities to earn extra credit points for the class.
  - ATTENDANCE: I will take daily attendance through iClicker participation. Students who attend at least 70% of class sessions (28 class periods out of a possible 40, excluding the add/drop period) will be awarded 10 extra credit points. *This builds in leeway for sickness/schedule conflicts/late course enrollment/etc. and will be strictly enforced.*
  - COURSE EVALUATION: in the last weeks of the semester, I will invite you to fill out anonymous course evaluations. If 70% of students in the class complete the evaluation, I will award everyone 5 extra credit points.

### 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.”

### **ACCOMMODATION OF 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.

### **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](#).

### **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.

## **NONDISCRIMINATION POLICY**

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 for Civil Rights & Title IX. Learn more about your rights and options at [civilrights.missouri.edu](http://civilrights.missouri.edu) or call 573-882-3880. You also may make an anonymous report online.

Students may also contact the Relationship and Sexual Violence Prevention (RSVP) Center, a confidential resource, for advocacy and other support related to rape or power-based personal violence at [rsvp@missouri.edu](mailto:rsvp@missouri.edu) or 573-882-6638, or go to [rsvp.missouri.edu](http://rsvp.missouri.edu).

Both the [Office for Civil Rights & Title IX](#) and the [RSVP Center](#) can provide assistance to students who need help with academics, housing, or other issues.

## **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. Connect to TAO, a mental health portal that teaches skills and strategies to help you maintain good mental health and well-being. Log in with your Mizzou e-mail to unlock all the tools available through TAO at no cost to you.

### **LAST DATE OF ATTENDANCE AND IMPACT ON FINANCIAL AID**

Federal regulations for financial aid require the student financial aid office to document the attendance of students who have received federal financial aid if they do not successfully complete any courses during the term. As a result, the last day of attendance (or activity) for any student receiving an F, U, or FN in this course will be recorded in the grade roster and reported to the financial aid office. **Based on the last day of attendance, students may be required to repay a portion of their financial aid award for the semester.**

A student's last day of attendance (or activity) is the last day on which a student participates in an academically-related activity at the University. These include:

- Attendance in class, lab, or an instructor's office hours
- The completion of an assignment or examination
- An appointment with a professor or e-mail correspondence regarding course material

Please note that discussing a course withdrawal or notifying the instructor of an absence in class does not constitute participation for financial aid purposes. Moreover, any office hour visits or email correspondence must be related to the course material.

### **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.

## Course Schedule

*Please note that some changes to this syllabus and following course schedule may occur throughout the semester. The instructor reserves the right to alter point values, due dates or other details as necessary. Students will be informed of all changes.*

Date	Topics	Assigned reading	Turn in (due by 11:55pm, unless otherwise noted)
Wednesday January 17, 2024	Introduction		
Friday January 19, 2024	Overview of the research process	Angrist & Pischke, intro Wooldridge, 19.1-19.4	
Monday January 22, 2024	Simple regression	Lewis-Beck, pp. 9-25	
Wednesday January 24, 2024	Simple regression, cont.	A&P, pp. 45-52	
Friday January 26, 2024	Simple regression, cont.	Tatem et al. (2004). Momentous sprint at the 2156 Olympics.	
Monday January 29, 2024	Stata practice—getting started in Stata		
Wednesday January 31, 2024	Stata practice—data wrangling		
Friday February 2, 2024	Multiple regression		
Monday February 5, 2024	Multiple regression, cont.	Hamermesh & Parker (2008). Beauty in the classroom	Homework 1
Wednesday February 7, 2024	Multiple regression, cont.		
Friday February 9, 2024	Stata practice—Multiple regression		
Monday February 12, 2024	Multiple regression, cont.		
Wednesday February 14, 2024	Dummy variables	Lewis-Beck, pp. 66-71	
Friday February 16, 2024	Dummy variables	Ha et al. (2019). Legal access to alcohol and academic performance.	Homework 2
Monday February 19, 2024	Construct validity and external validity		
Wednesday February 21, 2024	Construct validity and external validity		
Friday February 23, 2024	Stata practice—dummy variables		Case Study 1 check-in
Monday February 26, 2024	Logs	Lewis-Beck, pp. 66-71	
Wednesday February 28, 2024	Logs		
Friday March 1, 2024	Stata practice—Logs		
Monday March 4, 2024	Communicating research findings effectively	Hwang et al. (2021). A familiar face: student-teacher rematches and student achievement	Case Study 1
Wednesday March 6, 2024	Case Study Presentations		
Friday March 8, 2024	Case Study Presentations		
Monday March 11, 2024	Case Study Presentations		
Wednesday March 13, 2024	Interaction terms		
Friday March 15, 2024	NO CLASS—INSTRUCTOR OUT OF TOWN		
Monday March 18, 2024	Interaction terms	Lewis-Beck, pp. 56-63	
Wednesday March 20, 2024	Interaction terms		Homework 3
Friday March 22, 2024	TBD		
Monday March 25, 2024	NO CLASS—SPRING BREAK		
Wednesday March 27, 2024			
Friday March 29, 2024			
Monday April 1, 2024	Stata practice—Interaction terms		

Wednesday April 3, 2024	Multicollinearity		
Friday April 5, 2024	Heteroskedasticity		Homework 4
Monday April 8, 2024	Heteroskedasticity		
Wednesday April 10, 2024	Linear probability model	Yamagishi (2020). School bullying is positively associated with support for redistribution.	
Friday April 12, 2024	Logit and Probit models		
Monday April 15, 2024	Stata practice—discrete outcome models		Homework 5
Wednesday April 17, 2024	Normality and measurement error	A&P, pp. 59-67	
Friday April 19, 2024	Considerations for causal inference		
Monday April 22, 2024	Stata practice—measurement error and causal inference		Case Study 2 check-in
Wednesday April 24, 2024	Wrap-up		
Friday April 26, 2024	Case Study Presentations		
Monday April 29, 2024	Case Study Presentations		
Wednesday May 1, 2024	Case Study Presentations		Case Study 2