

# ECON 300: Regression Analysis

**Instructor:** Dr. Alexander Taylor

**Office:** Room 122, Schroeder School of Business Building

**Office Hours:** MW 3-5pm, TTh 1-3pm, or by appointment

**Email:** [at154@evansville.edu](mailto:at154@evansville.edu)

Fall 2024

**Class Time & Location:** 2-2:50pm (MWF) — Schroeder Family Building 173

**Prerequisites:** QM 227, MATH 466, or another course in principles of statistics.

## Schroeder School of Business Mission Statement

*We prepare undergraduate students in a liberal arts framework to become globally aware business professionals. We are distinctive in experiential learning, career support, and a complementary mix of faculty who pursue their passions through scholarly and professional activities in and out of the classroom.*

## 1 Course Information

### Course Description

Second course in applied statistics for students in economics and other social sciences, business administration, mathematics, or natural sciences. Topics include simple and multiple regression analysis, extensions of the classical regression model, and problems associated with forecasting. Assigned work exposes students to problems from a wide range of applications. This course includes introduction to econometric software and experiments involving a variety of real world data sets.

### Credit Hour Policy Statement

This class meets the federal credit hour policy of 1 hour of class with an expected 2 hours of additional student work outside of class each week for approximately 15 weeks for each hour of credit, or a total of 45-75 total hours for each credit.

### Course Learning Outcomes

Upon completion of the course, students will be able to:

1. Evaluate the assumptions of the classical regression model.
2. Analyze and interpret econometric data using simple and multiple regression techniques.
3. Critically assess econometric models and improve them through appropriate specification and data selection.
4. Address issues related to heteroskedasticity and autocorrelation in regression analysis.
5. Apply regression analysis to time-series data and understand the implications of such data structures.
6. Implement basic regression techniques using R.

## Required Materials

There is one required textbook for this course, which is available for purchase at the bookstore and online:

- *Introductory Econometrics: A Modern Approach* by Wooldridge (7th Edition)

All readings should be completed **before class**. Any additional readings will be announced in class and posted to Blackboard.

## Required Electronic Devices

This class will introduce you to the R programming language and the Integrated Development Environment (IDE) RStudio. You will need access to a computer to complete in-class exercises and assignments. If you do not have access to a device, please let me know as soon as possible.

## Honor Code

All students at the University of Evansville agree to the University honor code:

**I will neither give nor receive unauthorized aid, nor will I tolerate an environment that condones the use of unauthorized aid.**

I expect each of you to abide by this code. All students suspected of violations will be reported.

## Artificial Intelligence, ChatGPT, and Similar Tools

I'm as excited/nervous about our emergent AI overlords as anyone. However, AI tools are most effective when combined with pre-existing human expertise. Given that you're here to develop this expertise, the use of AI tools like ChatGPT and others to complete any graded work is strictly prohibited. These tools are not a substitute for your own learning, understanding, and engagement with the material. If you have questions about the use of a particular tool, please ask me.

## Communication Policy

While I will communicate major announcements in class, it is your responsibility to periodically check your UE email and the course Blackboard page for announcements and other important information. **You must use your UE email account for all communications. I will not respond to emails from non-UE accounts.** I will respond to emails within 24 hours, except on weekends. If you have not received a response within 24 hours, please follow up.

I also expect you to use basic email etiquette appropriate for a professional environment. This includes using a clear subject line, addressing me by name, and signing your emails with your name. Please no text-speak or emojis, though I will allow "lol"s, "haha"s, and crying laughing emojis when I make a particularly witty comment.

## Office Hours

My formal office hours are **3-5pm on Monday & Wednesday** and **1-3pm on Tuesday & Thursday**. Unless otherwise communicated they will be held in my office, Room 122 in the Schroeder School of Business Building. I am also available to meet virtually or in-person outside these hours by appointment. These hours may vary week-to-week, but I will be most available on Tuesdays and Thursdays. Please **email me** and we can figure out a time to meet. **NOTE:** As stated above, you must use your UE email account for all communications.

## 2 University Policies

### Disability Accommodations

The University of Evansville is committed to providing an accessible and supportive environment for students with disabilities. It is the policy and practice of the University of Evansville to make reasonable accommodations for students with properly documented disabilities. Students should contact Disability Services at 812-488-2663 to seek services or accommodations for disabilities. Written notification to faculty from Disability Services is required for academic accommodations.

For more information, visit: <https://www.evansville.edu/counseling/disability/index.cfm>

### Institutional Equity and Title IX

UE is committed to fostering an atmosphere free from harassment and creating an inclusive campus for all members of the University community regardless of their sex, sexual orientation, gender identity, race, religion, ethnicity, country of origin, ability, or veteran status. All Faculty members are considered Responsible Employees and required to report instances of discrimination, harassment, or sexual violence to the Office of Institutional Equity.

You may also choose to speak to a Confidential Resource about your experience. Confidential Resources at the University include:

- Counseling Services: 812-488-2663, [counselingservices@evansville.edu](mailto:counselingservices@evansville.edu)
- Crayton E. and Ellen Mann Health Center: 812-488-2033, [healthcenter@evansville.edu](mailto:healthcenter@evansville.edu)
- Spiritual Formation Coordinator: 812-488-5265, [spiritualformation@evansville.edu](mailto:spiritualformation@evansville.edu)

If you or someone you know has been harassed, assaulted, or discriminated against you can find the appropriate resources by contacting the Assistant Director of Institutional Equity and Title IX Coordinator:

- Email: [titleix@evansville.edu](mailto:titleix@evansville.edu)
- Phone: 812-488-5261

For more information, visit: <https://www.evansville.edu/offices/titleix/policy.cfm>

### Non-Discrimination Statement

The University of Evansville expects all members of its community to treat each other with respect and civility. Harassing behaviors directed towards any member of our community will not be tolerated. As part of its commitment to non-discrimination, the University specifically prohibits harassment based on any other characteristics set forth in its nondiscrimination statement as follows: including race, color, gender, gender identity and expression, sexual orientation, creed or religion, national origin, age, disability, veteran status and all federally protected groups/classes. Any form of harassment undermines the mission of the University and negatively impacts the University community as a whole. For more information contact the [Center for Inclusive Excellence](#).

### Campus Safety

All members of the UE community are automatically enrolled in the Ace Alerts Emergency Alert System. When the system is activated, emergency notification information is sent in the following manner: calls to campus IP phones, text messages, emails, campus housing speaker system, active threat sirens (non-weather related), digital signage, and AlertUS desktop on campus-owned computers.

**To contact the Office of Public Safety:**

- **Emergencies:** 812-488-6911
- **Non-Emergencies:** 812-488-2051

## **Complaints, Grievances, and Appeals**

The University of Evansville seeks to resolve all student concerns in a timely and effective manner through policies and processes documented in the University [Course Catalog](#) and [Student Handbook](#).

## **3 Student Resources**

Access the links below to connect with departments and resources that are here to support all UE students.

### **Academic Services**

Contact the Center for Academic Advising to connect with academic support services including supplemental instruction, tutoring, and time management and study skills help.

### **Blackboard Guides**

Blackboard is the University of Evansville's course management system for online courses. Guides on using Blackboard can be found within [MyUE](#).

### **Writing Center**

The Writing Center provides access to writing resources, appointments for one-on-one writing help, and assistance with any stage of the writing process.

### **Counseling Services**

Counseling Services provides general, short-term counseling that assists students in identifying barriers and setting goals while improving coping strategies to achieve personal and academic goals.

### **University Libraries**

Conduct research, access resources, and contact librarians for any research related help.

## 4 Grading

The grade breakdown for this course is:

- Midterm Exam: 20%
- Final Exam: 30%
- Assignments: 20%
- Semester Project: 20%
- Participation: 10%

Grade	Percent
A+	$\geq 97\%$
A	93 - 96
A-	90 - 92
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	77 - 79
C	73 - 76
C-	70 - 72
D	60 - 69
F	$\leq 59$

### Late Policy

Assignments are due at the beginning of class on the given due date. Late assignments will be penalized 10% per day, up to a maximum of 3 days. After 3 days, the assignment will not be accepted. Exceptions will only be made for documented medical emergencies or other extenuating circumstances.

### Grade Components

#### Midterm Exam – 20%

There will be one midterm exam, tentatively scheduled for **Friday, October 11**. It will take approximately 50 minutes. The exam will cover material from the beginning of the semester up to the exam.

#### Final Exam – 30%

The final exam will be comprehensive, and is scheduled for:

- **Monday, December 9 @ 2pm**

It will take approximately 2 hours. The final will cover material from the entire semester.

#### Assignments – 20%

There will be approximately 5 assignments throughout the semester. They will be announced in class and released on Blackboard. Assignments will always be released at least one week before the due date.

#### Semester Project – 20%

As part of the course, you will draft a short paper demonstrating your understanding of regression analysis and its applications by analyzing a real dataset in R. The project will be due on the last day of class, **Wednesday, December 4**. More details to come after the midterm.

#### Participation – 10%

While you will not be graded on attendance, you are responsible for demonstrating your engagement with the class. I encourage all students to speak up every week and comment on or ask questions about course content. This class will be a space for respectful and open discussion, and any person not participating civilly and in good faith will be asked to leave.

That being said, there are many ways to participate in the course beyond speaking in class. You can ask questions after class or during office hours, or participate in some other way that is meaningful to you and demonstrates your engagement with the course. If you have any concerns about participation, let me know.

## 5 Schedule (*subject to change*)

\* **Indicates a required reading.** Visit the [Registrar's website](#) for the full University schedule.

*Week 1: Welcome to Regression Analysis*  
(Aug 21–23)

- Course and Syllabus Overview
- Ch. 1\*

*Week 2: Math & Probability Refresher*  
(Aug 26–30)

- Appendices A–B\*

**Sep 2: Labor Day, No Class**

*Week 3: Fundamentals of Mathematical Statistics*  
(Sep 4–6)

- Appendix C\*

*Week 4: Simple Linear Regression*  
(Sep 9–13)

- Ch. 2\*

*Week 5: Multiple Linear Regression*  
(Sep 16–20)

- Ch. 3\*

*Week 6: Inference*  
(Sep 23–27)

- Ch. 4\*

*Week 7: Further Issues of Multiple Regression*  
(Sep 30–Oct 4)

- Ch. 6\*

*Week 8: Catch-Up and Review*  
(Oct 7–9)

**Oct 11: Midterm Exam**

**Oct 14: Fall Break, No Class**

*Week 9: Regression with Qualitative Information & Binary Variables*  
(Oct 16–18)

- Ch. 7\*

*Week 10: Heteroskedasticity*  
(Oct 21–25)

- Ch. 8\*

*Week 11: Specification & Data Issues*  
(Oct 28–Nov 1)

- Ch. 9\*

*Week 12: Regression Analysis with Time Series Data*  
(Nov 4–8)

- Ch. 10\*

*Week 13: Autocorrelation*  
(Nov 11–15)

- Ch. 12\*

*Week 14: Conceptual Introduction to DAGs and Causal Methods*  
(Nov 18–22)

**Nov 25: Semester Project Work Day**

**Nov 27–29 Thanksgiving Break, No Class**

*Week 15: Project Wrap-Up & Review*  
(Dec 2–4)

**Dec 4: Final Day of Class**

**Dec 5: Reading Day**

***Final Exam: Monday, December 9 @ 2pm***