

University of Texas at Tyler
ECON 4355: Econometrics
Fall 2023

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Time and Place*: TuTh 11:00 am - 12:20 pm, COB 207

Office Hours: TuTh 12:30 pm – 2:00 pm or by appointment

* We might shift to online synchronous classes temporarily if I or a considerable number of students fall ill due to COVID, flu, etc. Since we have a small class size (currently 5), two students being sick is bad enough.

Course Description: This course offers an introduction to econometric methods. It covers the fundamentals of regression analysis and hypothesis testing in economics. Students will learn econometric analysis software and apply it to conduct their own independent empirical research.

Student Learning Outcomes

1) Explain the basics of simple and multivariate regression analyses.
2) Interpret results from regressions and test hypotheses.
3) Use a statistical package for statistical and regression analyses.
4) Plan and carry out a simple empirical research project.
5) Write an empirical research paper.

Grading Policy: The components of the final grade are:

Exam 1	20%	(Tuesday, October 3)
Exam 2	20%	(Tuesday, November 28)
Homework	20%	
Research Project	40%	

The course will include two in-class exams, each contributing 20% to your final grade, as indicated on the specified dates. Additionally, there will be homework assignments accounting for 20% of your grade. These will include problems as well as data questions that require the use of econometrics software. You will learn and use R, an open-source software environment freely available. Research projects and presentations will constitute 40% of your total grade. The structure and timeline for the project are as follows:

Empirical Research Projects Outline and Timeline

Steps	Description	Due date and content	Weight
<p>1. Come up with a well-defined research question.</p>	<p>Clearly state your question. Having an interesting question is a starting point, but it's insufficient on its own. Think about variables you may need to answer your question and ensure your ability to access the necessary data. I strongly encourage you to visit me during office hours to talk about your question and potential data sources.</p>	<p>Present your question and the specific data set/source you intend to use in class on Thursday, September 21st, and submit it on Canvas by the end of the day.</p>	<p>5%</p>
<p>2. Conduct and write a literature review.</p>	<p>Research what has been already done in the literature and what else can be done. Published papers also guide you on how to specify your regression equation, and which relevant variables you should include in your regression.</p>	<p>Present what has been done in the literature briefly, explain how your question is different from previous studies, and what results you expect to find in class on Thursday, October 19th. Submit a preliminary draft of your paper on Canvas. Your draft should include an introduction that states your question and motivation, a literature review covering the most relevant papers (no more than 20 or less than 5), your empirical model, and expected results.</p>	<p>10%</p>

<p>3. Conduct your regression analysis and prepare your final draft.</p>	<p>Use R to run your regression model(s) using the data you obtained (or collected).</p>	<p>Add your empirical analysis to your draft and make it final. Devote a section to data. Explain your independent and dependent variables (also refer to the sources of data). Make a table of summary statistics for all the variables. Make another section for the results. Present your results in a table (See example papers posted on Canvas). Explain your findings and discuss if they are compatible with your expectation or hypothesis. Provide possible explanations if your findings are not intuitive. Conclude by summarizing your research questions and findings. Submit your paper on Sunday, November 26.</p>	<p>20%</p>
<p>4. Present your paper</p>	<p>Prepare slides for your project.</p>	<p>Present your slides during the last class meeting on Thursday, November 30th</p>	<p>5%</p>

Important Note: The university has implemented a new policy regarding individuals involved in research, which also includes undergraduate students. Previously, students were only obligated to undergo training if their research involved human subjects (e.g., conducting surveys). However, under the revised policy, anyone engaged in any form of research (even utilizing observational data) is now required to complete basic training. Given that you are undertaking research projects in econometrics, you must complete this training. You can find detailed instructions for Responsible Conduct for Research (RCR) training on Canvas. Please finish this at your earliest convenience and share your completion certificate with me.

Grading Scale: I do not have a predetermined grading scale. Instead, I will calculate your weighted average course score using the scores from the components mentioned above. Final letter grades will be assigned based on your score in relation to the overall score distribution in the class. The distribution of letter grades among students is not predefined. Every student has the potential to earn a grade of C or higher, with the majority likely achieving an A or a B.

THERE IS NO MAKE-UP EXAM. If you anticipate missing an exam due to religious holidays, athletic team commitments, or other reasons, please inform me at the beginning of the semester. We can then work together to schedule an alternative test date that accommodates your situation. In case of an unforeseen emergency, such as medical issues or a family member's passing, I will grant an exemption for that exam and adjust your final score accordingly. For instance, if you miss one exam, the other exam will account for 40% of your final grade. This accommodation applies solely if you provide official documentation, such as a doctor's note or a death certificate. Without a valid excuse, missing a test will result in a zero score.

Course Structure: I will use Canvas for administrative matters related to the course. Make sure you receive emails sent through Canvas.

Textbook (recommended, not required): Introductory Econometrics: A Modern Approach by Jeffrey M. Wooldridge, 7th edition. The library has some copies if you want to use the textbook.

Course Outline: (topics near the end to be covered as time permits; “W”=Wooldridge)

1. Introduction (W 1)

- a. What is econometrics?
- b. Types of economic data
- c. Causality vs. correlation

2. The Simple Regression Model (W 2.1-2.5)

- a. Model and assumptions
- b. Ordinary least square (OLS) estimator
- c. Goodness-of-fit and R-squared
- d. Non-linear (logarithmic) transformations

3. The Multiple Regression Model (W 3)

- a. How do the simple regression results extend?
- b. Omitted variables bias
- c. Multicollinearity
- d. Gauss-Markov theorem: efficiency of OLS

4. Statistical Inference (“finite sample”) for OLS (W 4)

- a. Confidence intervals
- b. Single parameter tests: “t-test”
- c. Two-side vs. one-sided test
- d. P-values
- e. Multiple restriction tests: “F-test”

5. Asymptotic (“large sample”) Theory for OLS (W 5.1-5.2. skip the LM statistic in 5.2)

6. Additional Issues in Regression Analysis

- a. Binary variables (W 7.1-7.4, 7.6)
- b. Interaction variables and polynomials (W 6.2)
- c. Heteroskedasticity (W 8.1-8.3, skip LM test in 8.2, skip White test in 8.3)

7. Panel Data (W 13, 14.1, 14.3)

- a. Pooled cross sections
- b. Fixed effects

Note: The Census date (last day to drop without W) is **Friday, September 1st**.

University Policies and Information

- **Withdrawing from Class** - Students, you are allowed to [withdraw](#) (drop) from this course through the [Withdrawal Portal](#). Withdrawing from classes can impact Financial Aid, Scholarships, Veteran Benefits, Exemptions, Waivers, International Student Status, housing, and degree progress. Please read this page, speak with your instructors, consider your options, and speak with your instructor. UT Tyler faculty and staff are here for our students and often can provide additional support options or student assistance. Please read the implications for withdrawing from a course and the instructions on using the Withdrawal portal on the [Registrar's Withdrawal page](#).

Texas law prohibits students who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at other 2-year or 4-year Texas public colleges and universities. Consider the impact withdrawing from this class has on your academic progress and other areas, such as financial implications. We encourage you to consult your advisor(s) and financial aid for additional guidance. CAUTION #1: Withdrawing before census day does not mean you get a full refund. Please see the [Tuition and Fee Refund Schedule](#). CAUTION #2: All international students must check with the [Office of International Programs](#) before withdrawing. All international students are required to enroll full-time for fall and spring terms. CAUTION #3: All UT Tyler Athletes must check with the Athletic Academic Coordinator before withdrawing from a course. CAUTION #4: All veterans or military-affiliated students should consult with the [Military and Veterans Success Center](#).

- **Final Exam Policy**: Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the Dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members must maintain student final examination papers for a minimum of three months following the examination date.
- **Incomplete Grade Policy**: If a student, because of extenuating circumstances, is unable to complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in place of a grade only when all of the following conditions are met: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all coursework or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor, and (c) the student presents these reasons before the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average. The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to meet all of the work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has yet to be assigned within one year, then the Incomplete will be changed to an F, or NC. If the course was initially taken under the CR/NC grading basis, this may adversely affect the student's academic standing.
- **Grade Appeal Policy**: - Disputes regarding grades must be initiated within sixty (60) days from the date of receiving the final course grade by filing a Grade Appeal Form with the instructor who assigned the grade; this is separate from the Application for Appeal form submitted to the Student Appeals Committee, which does not rule on grade disputes as described in this policy. If the student is not satisfied with the decision, the student may appeal in writing to the Chairperson of the department from which the grade was issued. In situations where there is an allegation of capricious grading, discrimination, or unlawful actions, appeals may go beyond the Chairperson

to the Dean of the college from which the grade was issued, with that decision being final. The Grade Appeal form is found in the [Registrar's Form Library](#).

- **Disability/Accessibility Services:** In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA), the University of Texas at Tyler offers accommodations to students with learning, physical, and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with the Assistant Director Student Accessibility and Resources/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <https://www.uttyler.edu/disability-services>, the SAR office located in the University Center, # 3150, or call 903.566.7079."
- **Military Affiliated Students:** UT Tyler honors the service and sacrifices of our military-affiliated students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with your faculty member if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make your faculty member aware of any complications as far in advance as possible. Your faculty member is willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. The [Military and Veterans Success Center \(MVSC\)](#) has campus resources for military-affiliated students. The MVSC can be reached at MVSC@uttyler.edu or via phone at 903.565.5972.
- **Academic Honesty and Academic Misconduct:** The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do." Therefore, we enforce the [Student Conduct and Discipline policy](#) in the Student Manual Of Operating Procedures (Section 8).
- **FERPA** - UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in [University Policy 5.2.3](#). The course instructor will follow all requirements to protect your confidential information.
- **Absence for Official University Events or Activities:** This course follows the practices related to approved absences as noted by the Student Manual of Operating Procedures ([Sec. 1 -501](#)).
- **Absence for Religious Holidays:** This course follows the practices related to [Excused Absences for Religious Holy Days as noted in the Catalog](#).
- **Campus Carry:** We respect the right and privacy of students who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>.

Student Resources

- [UT Tyler Student Accessibility and Resource \(SAR\) Office](#) (provides needed accommodations to students with document needs related to access and learning)
- [UT Tyler Writing Center](#)
- [The Mathematics Learning Center](#)

- [UT Tyler PASS Tutoring Center](#)
- [UT Tyler Supplemental Instruction](#)
- [Upswing \(24/7 online tutoring\) - covers nearly all undergraduate course areas](#)
- [Robert Muntz Library](#) and [Library Liaison](#)
- [Canvas 101](#) (learn to use Canvas, proctoring, Unicheck, and other software)
- LIB 422 -- Computer Lab where students can take a proctored exam
- [The Career Success Center](#)
- [UT Tyler Testing Center](#)
- [Office of Research & Scholarship Design and Data Analysis Lab](#)

Resources available to UT Tyler Students

- [UT Tyler Counseling Center](#) (available to all students)
- [My SSP App](#) (24/7 access to Student Support Program counseling through phone or chat and online wellness resources available in a variety of languages)
- [Student Assistance and Advocacy Center](#)
- [Military and Veterans Success Center](#) (supports for all of our military-affiliated students)
- [UT Tyler Patriot Food Pantry](#)
- [UT Tyler Financial Aid and Scholarships](#)
- [UT Tyler Registrar's Office](#)
- [Office of International Programs](#)
- [Title IX Reporting](#)
- [Patriots Engage](#) (available to all students. Get engaged at UT Tyler.)