

University of Texas at Tyler

ECON 4355: Econometrics

Fall 2021

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Time and Place: TuTh 11:00 am - 12:20 pm @ HPR 248

Office Hours: TuTh 9:00 -10:30 am or by appointment

Note: If the situation with COVID worsens we may switch to Online synchronous class meetings and office hours.

Course Description: This course provides an introduction to econometric methods. The course introduces basic tools of regression analysis and hypothesis testing in economics. Students will learn to use software for econometric analysis and utilize it to conduct their own empirical research.

Student Learning Outcomes

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

Grading Policy: The components of the final grade are:

Midterm	20%
Final	20%
Homework	20%
Project (4-steps)	40%

The course will consist of a midterm exam (20%) and a final (20%). The midterm will be held during class time **(Thursday, October 14)**. The final exam date and place are to be determined by the University.

You will also have homework assignments (20%). These will include problems as well as empirical questions that requires the use of econometrics software. I will use SPSS for in-class demonstrations although I prefer using STATA for my own research. This is because SPSS is available in computer labs.

SPSS is also available for rent if you want to have your own copy. This might be convenient if you can afford, as you need a software that enables you to conduct regression analyses for your homework and term project. If you are already familiar with another software package, feel free to use that (e.g. R, SAS).

Your project will be a research paper that answers a well-defined economic question by using the econometric methods taught in the course (40%). The structure and timeline for the project are as follows:

Step 1 (5%): Come up with an interesting, well-defined economic question that can be answered by regression analyses. The Canvas course page has a sample of student research papers, which may help you find an idea. Obtain your data. An interesting question alone is not enough. Make sure you have the data you need. I encourage you to come and meet me during office hours to discuss your question and data sources. Submit your question and the data set you plan to use before class on **Thursday, September 30**. On this day, each of you will

- present your question and outline research plan
- show and describe your data set

A couple of slides would be enough. State your question, explain why it is important, and what you expect to find. Also show your data, your dependent and independent variables.

Step 2 (5%): Write a literature review. The literature review is an important part of research papers. You learn what has been already done in the literature and what is missing. Published papers also guide you on how to specify your regression equation, which relevant variables you should include in your regression...etc. In this second step, I want you to summarize what has been done in the literature briefly, explain how your question is different from previous studies and how you hope to contribute to the literature. Submit this second part before **Thursday, October 21**. On this day, you will present a draft of your project that includes

- an introduction (your question and motivation),
- literature review
- preliminary results (if available)

8-10 slides should be enough.

Step 3 (20%): Carry out the empirical analysis. Regression results and the discussion of those results should constitute the third section of your paper. Finish your paper by including a conclusion section where you summarize your question, the methods you followed, and the results you got in a couple of paragraphs. Submit your completed project electronically by **Friday, November 19**. This deadline is sharp. No submissions after this date will be accepted. I will try to provide my feedback to you so you can revise your paper and present the polished version in class after the Thanksgiving break. You can submit a revised version of your paper before your presentation to possibly improve your grade.

Step 4 (10%): Prepare a 15-20 minutes presentation of your paper and present it in the class. The last two classes are allocated for student presentations. **(November 30 and December 2)**

I do not like imposing page restrictions, but your paper should not be too short (less than 10 pages: double space, Times New Roman, font size 12) or too long (more than 30 pages). I save your projects for my records, and I may use them as examples for future students (Let me know if you object this).

Grading Scale: I do not have a set grading scale. I will compute your weighted average course score from your scores on the above components. I will assign final letter grades based on your score relative to the distribution of scores in the class. The percentage of students receiving any particular letter grade is not predetermined. All students can get a C or above with the majority receiving an A or a B.

THERE IS NO MAKE-UP EXAM. If you know you will miss an exam because of religious holidays, athletic team requirements...etc., let me know at the beginning of the semester so we can arrange an alternative test date that suits you. If you miss an exam because of an emergency such as medical problems or death of a family, I exempt you from that exam and reweight your final score accordingly. For example, if you miss the midterm, the final exam will make 40% of your final grade. I do this only if you bring an official proof like a doctor's note or a death certificate. If you miss a test without an excuse, you get zero.

Course Structure: I will use Canvas for administrative matters related to the course. Make sure you receive emails sent through Canvas. You may take notes during lectures, but do not audio or videotape lectures.

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 3rd**.

University Policies and Information

- **Withdrawing from Class** - Students you are allowed to [withdraw](#) (drop) from this course through the University's [Withdrawal Portal](#). 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. Make sure to consider the impact withdrawing from this class has on your academic progress as well as the 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.
- **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 are required to 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 lieu 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 course work 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 prior to 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 for a student. 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 complete 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 not been assigned within one year, then the Incomplete will be changed to an F, or to NC if the course was originally taken under the CR/NC grading basis.
- **Grade Appeal Policy:** - UT Tyler's Grade Appeal policy requires the completion of a Grade Appeal form for this action to take place. The grade appeal begins with the instructor of your course. If you do not agree with the decision of the instructor, you may then move your appeal to the department chair/school director for that course. If you are still dissatisfied with the decision of the chair/director, you may move the appeal to the Dean of the College offering that course who has the final decision. Grade appeals must be initiated within sixty (60) days from the date of receiving the final course grade. The Grade Appeal form is found on the [Registrar's Form Library](#).

- **Disability/Accessibility Services:** The University of Texas at Tyler has a continuing commitment to providing reasonable accommodations for students with documented disabilities. Students with disabilities who may need accommodation(s) in order to fully participate in this class are urged to contact the Student Accessibility and Resources Office (SAR) as soon as possible to explore what arrangements need to be made to ensure access. If you have a disability, you are encouraged to visit the [SAR Portal \(https://hood.accessiblelearning.com/UTTyler/\)](https://hood.accessiblelearning.com/UTTyler/) and complete the New Student Application. For more information, please visit the [SAR](#) webpage 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 me 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 me aware of any complications as far in advance as possible. I am willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. Campus resources for military affiliated students are in the [Military and Veterans Success Center \(MVSC\)](#). 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 in protecting your confidential information.
- **COVID Guidance**
 - *Information for Classrooms and Laboratories:* Students are expected to wear face masks covering their nose and mouth in public settings (including classrooms and laboratories). The UT Tyler community of Patriots views adoption of these practices consistent with its [Honor Code](#) and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature should stay at home and notify their faculty. Students are also encouraged to use the [UT Tyler COVID-19 Information and Procedures website](#). This website also provides information about our Vaccination Mobile Clinic. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu.

- **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:** Students who anticipate being absent from class due to a religious holiday are requested to inform the instructor by the second class-meeting of the semester.
- **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

Resources to assist you in this course

- [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)
- Digital Support Toolkit (for supported courses only. Students are automatically enrolled in the toolkit for supported courses)
- 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)
- [TAO Online Support Center](#) (online self-help modules related to mental & emotional health)
- [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.)