ECON 5810 – Econometric Models I
Fall 2020 Syllabus
Department of Economics, The University of Toledo

Class Time:	T 2:30 pm - 3:50 pm, R 2:30 pm - 4:50 pm
Classroom:	Off campus remote learning, synchronous
Course website:	`https://blackboard.utdl.edu`
Instructor:	Dr. James Bland
	University Hall 4140-D
	James.Bland@UToledo.edu
	`https://sites.google.com/site/jamesbland/home`
Office hours:	Weekdays 9-4pm online, by appointment

This document was last updated on August 11, 2020

1 SPECIAL COURSE EXPECTATIONS DURING COVID-19

This class is listed as a synchronous online class. As such, we will be meeting via WebEx at the scheduled class times. I will use a combination of webcam, whiteboard, screen-sharing, and a document camera to deliver the material. I will record all content during class, and post it to Blackboard.

If my childcare constraints change, I may switch some classes to asynchronous learning.

Classes will involve discussions, and require participation. To fully participate in class, you will therefore need a computer with reliable internet access and a microphone. A webcam is encouraged, but not needed. All software software used in this course will be either freely available, or accessible through the UToledo virtual lab.

I am available for office hours during the times listed above, but due to childcare constraints, I will need to make an appointment with you. If you would like to book in a meeting, please just send me an email.

Below is the UToledo Syllabus language specific to COVID-19, but not specific to this course.

1.1 ATTENDANCE

The University of Toledo has a missed class policy. It is important that students and instructors discuss attendance requirements for the course. Students must perform a daily health assessment, based on based on CDC guidelines, before coming to campus each day, which included taking their temperature. Students who are symptomatic/sick should not come to class and should contact the Main Campus Health Center at 419-530-3451. Absences due to COVID-19 quarantine or isolation requirements are considered excused absences. Students should notify their instructors and these absences may not require written notice.

1.2 FACE COVERINGS

All students must wear face coverings while on campus, except while eating, alone in an enclosed space, or outdoors practicing social distancing. NO students will be permitted in class without a face covering. If you have a medical reason that prevents you from wearing a face covering due to a

health condition deemed high-risk for COVID-19 by the Centers for Disease Control and Prevention (CDC), you should submit a request for an accommodation through the Student Disability Services Office (SDS) by completing the online application. Students will need to provide documentation that verifies their health condition or disability and supports the need for accommodations. If a student is already affiliated with SDS and would like to request additional accommodations due to the impact of COVID-19, should contact their accessibility specialist to discuss their specific needs.

1.3 SOCIAL DISTANCING

Students should practice social distancing inside and outside the classroom please follow signage and pay attention to the seating arrangements. Do not remove stickers or tape from seats and/or tables, this is there to provide guidance on the appropriate classroom capacity based on the recommended 6 feet of social distancing between individuals. Please be conscious of your personal space and respectful of others. Also be cognizant of how you enter and exit the room; always try to maintain at least 6 feet of distance between yourself and others.

1.4 DESKS AND WORK SPACES

Students will need to sanitize their desks and/or work space before class with the University provided sanitizing spray and paper towels their desks.

1.5 SPECIAL NOTES

It's important to note that based on the unpredictability of the COVID-19 virus things can change at any time so please be patience and understanding as we move through the semester. I also ask that you keep me informed of concerns you may have about class, completing course work/assignments timely and/or health concerns related to COVID.

2 Textbooks

2.1 Required

- Bailey, M. A. (2019). *Real econometrics: The right tools to answer important questions.* Oxford University Press.

  We will also be using this text in 4/5820. The 1st and 2nd editions of this book are both suitable for this course and ECON 4/5820.

- Cunningham, S. (2018). Causal inference: The mixtape (v.1.7)

  Available legally and free online here: `https://www.scunning.com/mixtape.html`

- Econometrics Models I-II: Supplementary material

  This is a collection of notes I have produced. This document gets updated frequently, so please make sure you're working off the latest version. The latest version will always be available on GitHub here: `https://github.com/JamesBlandEcon/EconometricsNotes/blob/master/JBlandEconometricsNotes.pdf`

2.2 Additional references

I will not assume that you have a copy of these, but if you are looking for some more reading, these might be a good place to start.

- Wackerly, D., Mendenhall, W., and Scheaffer, R. (2007). *Mathematical statistics with applications*. Nelson Education.

  A great introduction to probability theory and one-parameter estimation. Most of the early material that is not covered in Bailey is coverer here.

- Wooldridge, J. M. (2015). *Introductory econometrics: A modern approach*. Nelson Education.

  The most commonly used text for this material at this level. It is reasonably intuitive and exhaustive.

- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press

  If you do a Ph.D. in Economics, you will probably become acquainted with this

- Koop, G., Poirier, D. J., and Tobias, J. L. (2007). *Bayesian econometric methods*. Cambridge University Press

  When/if I go on a rant about Bayesian econometrics, this is what I'm talking about

3 Course description

This is an advanced undergraduate/first-year graduate course in theoretical and applied econometrics. This course will aim at establishing econometric modeling skills and will emphasize application of econometric methods. The course will cover the estimation, testing, and forecasting econometric models and their use in economic analysis. We will start with the review of the necessary statistical concepts, and advance from simple to multiple linear regression models, their testing and forecasting. You will learn to apply econometric techniques to real-world data using a popular econometrics/statistical package (*Stata*).

4 Learning objectives

1. Acquire econometric skills necessary to model economic data using Ordinary Least Squares. Estimate, test, and forecast from linear regression models.

2. Interpret estimates from linear regression model and make predictions.

3. Learn statistical programming tools in Stata.

4. Understand the assumptions used in the techniques taught in this course, and identify when and why these assumptions may or may not be appropriate for particular applications. Students will demonstrate their knowledge in these areas via problem sets and examinations.

5. Use Monte Carlo techniques to demonstrate concepts learned in class

5 Assessment

5.1 Problem sets

Problem sets will be posted on the class website along with their due dates. These will weigh 65% of your final grade. Problems will include theoretical, practical, and computational questions. Problem sets will have strict due date and time. Late submissions without a legitimate and properly documented reason will receive zero points. You can use economic lab (UH 4150) computers, and the UToledo virtual lab, to complete assignments. The answers to problem set questions should contain your own work; group submissions are not permitted, but discussing problem sets is encouraged. Each problem set shall have equal weight.

5.2 Exams

There will be two non-cumulative exams. These exams will test theoretical, practical and computational econometrics skills. Each written exam will weigh 15% of your final grade.

5.3 Discussion of a problem set question

Each student shall present their solutions of one problem set question to the class. This shall weigh 5% of your final grade.

5.4 Extra credit

Opportunities for extra credit may be available. If they are, they will be available to all students.

5.5 Summary of assessment

Assessment	Weight
Problem sets	65%
Presentation of a problem set solution	5%
Exam 1	15%
Exam 2	15%

5.6 Missed exam and quiz policy

If you miss an exam or a quiz for a legitimate and properly documented reason, you will be excused from that exam and you will be allowed to make up the exam. Otherwise your score for a missed exam or quiz will be recorded as zero. All absences should be communicated to me verbally, in writing, or via e-mail. For the definition of qualifying reasons for absences refer to the UT Missed Class Policy at `http://www.utoledo.edu/facsenate/missed_class_policy.html`.

5.7 Grading scale

	-		+
A	88-91	92-100	N/A
B	76-79	80-83	84-87
C	64-67	68-71	72-75
D	50-54	55-59	60-63
F		<50	

6 Attendance

Your attendance to all classes is strongly encouraged, but not required. However, by missing class you are missing out on the opportunity to reconcile important questions that might appear on the exams. If you miss a class, you are still responsible for any material covered in it. Class attendance is mandatory for the class sessions when an exam is given.

7 Accessibility

If needed, consult the university policy on accessibility and/or see the Office of Accessibility (`http://www.utoledo.edu/utlc/accessibility/`).

8 Academic Honesty

This course requires personal integrity and academic honesty. Academic dishonesty will be enforced according to the University's "Policy statement on Academic Dishonesty" in the current catalog. Read it online at: `http://www.utoledo.edu/dl/students/dishonesty.html`.

9 Tentative course outline

B indicates a chapter in Bailey (2019), S indicates a chapter in the supplementary material, and C indicates a chapter in Cunningham (2018) (page numbers given because chapters are not numbered).

Module	Topic		Reading
1	Introduction	(about two weeks)	
	The Quest for Causality		B01
	Stats in the Wild: Good Data Practices		B02
	Review of some math and probability		S01
	Probability theory and statistics review		C, p23
	Getting Started in *Stata*		S05
1.M	Estimators		S02
2	Ordinary Least Squares	(about five weeks)	
	Bivariate OLS: The Foundation of Econometric Analysis		B03
	Hypothesis Testing and Interval Estimation		B04

	Multivariate OLS	B05
	Dummy Variables	B06
	Transforming Variables, Comparing Variables	B07
	Ordinary Least Squares	S10
	Standard errors	S11.0-11.2
	Properties of regression	C, p35
2.M	Inference	S03
	Inference with Asymptotic assumptions	S04

Written exam 1 about here

3	Panel Data	
	Using Fixed Effects to Fight Endogeneity in Panel Data and Difference-in-Difference Models	B08
	Merging and reshaping data	S08
	Clustered standard errors	S11.3
	Panel Data	C, p245
	Differences-in-Differences	C, p263
3.M	An Introduction to Monte Carlo techniques	S16
	Simulations with OLS	S17
4	Limited dependent variable models (if time permits)	
	Dummy Dependent Variables	B12
4.M	Maximum likelihood	S12

Written exam 2 and computational exam about here