

Course Syllabus

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- **Instructor:** Rob Hicks
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- **Term:** Fall 2023
- **E-mail:** rob.hicks@wm.edu
- **Class Time:** TR 5:00-6:20 pm
- **Class Room:** 113 Chancellors Hall

Course Summary

In this course we will explore econometric techniques for testing microeconomic theories at the individual or firm level. With the advent of computers and associated data on economic behavior, the past few decades has seen an explosion of applied economic research using a wide range of techniques for this type of data- termed cross section data and cross section econometrics. In this course, you will learn about these techniques, will learn to be an educated consumer of econometric research, and will apply these techniques to real data. We will also derive many of the properties of the statistical techniques used in this course, but primarily at the end of the course you will

- Understand the strengths and weaknesses of cross section techniques
- Know how to test the validity of modeling assumptions
- Know the proper econometric technique for a wide variety of cross section settings

Topics

We will be covering the following topics this semester. Each of these have an entry at the course's [google classroom](#):

- Introduction to the Course
- Ordinary Least Squares
- Endogeneity and IV Regression
- Panel Data
- Maximum Likelihood Estimation
 - Probit and Logit models
 - Truncation, Censoring, and Sample Selection

If time allows we might cover additional topics.

Important Dates

Item	Date
First day of class	Aug. 31
Mid-Term	Oct. 10
Fall Break	Oct 12-15
Thanksgiving	Nov. 22-26
Last day of this class	Dec. 7
Final Exam	Dec. 14 (7:00 - 10:00pm)

Course Materials

All course materials are available online either here or at the course's google classroom. I will **only** be using blackboard for posting grades and problem set solutions.

- [Syllabus \(this document\)](#).
- [Course Notes](#)
- Presentations, handwritten notes from class, and code at the [Course Google Classroom Site](#)
- Data for Stata exercises found at <https://rlhick.people.wm.edu/econ407/data>

Logistics

- **Office Hours: Wednesday 4:00 - 5:00pm** or by appointment.
- **Asking Questions**
Substantive questions about course material or coding in Stata must be submitted to the Cross Section issue tracker at <https://code.wm.edu/groups/econ/407/-/issues>. Part of Problem Set 1 requires you to file an issue at this site, **so make sure you can log in ASAP**. Do not post proofs or code on the issue tracker that effectively answers an exam or problem set question. Use email for these types of questions.
- **Email Policy**
For other types of questions like setting up meetings, grade questions, logistical issues, etc., I will respond to emails but only if they contain the tag `[ECON407]` in the subject line. If not, the google will likely delete your email. Substantive questions about course material/coding should be posted to the issue tracker as described in the previous bullet point unless you feel that the code or information you provide in the issue tracker will answer the question.
- **Course Teaching Assistant**
This semester I will have a teaching assistant who will work with students on technical issues related to `jupyter lab` and code syntax. The teaching assistant will not answer any substantive questions about class content. You will receive more information on the first day of class.
- **Thanksgiving Week**
As instructed by the Dean, the Monday lecture for the week of Thanksgiving will not require you to be on campus. Instead, you will be watching a recorded lecture with content to be determined as the date nears.
- **Grades**
Your grade will be based on five exercises (1 @ 5% and 4 @ 10% each), a mid-term (25%), a final exam (30%).

- The **problem sets** will consist of a mix of theoretical and practical econometrics and should be considered serious time-consuming undertakings. In each (after the first one), you will be given a dataset and will need to conduct an econometric analysis thinking critically about which technique to employ as well as key tests that should be run. Your document should include clear interpretations of your results, tables with clear variable names, and be well-formatted with code, tables, and writeup combined in a convenient way for showcasing your work using a **jupyter notebook**. You will be responsible for posting to the blackboard assignment a **jupyter notebook** file that **completely** generates your analysis: a flowing narrative containing code, writeup, and results. For any part of the problem sets requiring hand-written math exercises, this content must be incorporated in the **jupyter notebook**. Early on in class, I will demo how **jupyter** works with **stata** and how to include handwritten work in a jupyter notebook file. I will not accept problem set responses that are word documents, pdf's, png images, etc. It must be a **jupyter notebook**.
- The **mid-term** is scheduled for **Oct. 10**. The final exam time is fixed and can't be rescheduled according to university policy. If these exam times don't work for you please drop the course.
- Grades will be awarded based on standard grading scales **after** a curve is applied (if necessary):

Letter	+		-
A	N/A	93-100%	90-92%
B	87-89%	83-86%	80-82%
C	77-79%	73-76%	70-72%
D	67-69%	63-66%	60-62%
F	N/A	0-59%	N/A

For a typical class year, the points required for an "A" in the course **before the curve is applied** is approximately 84-85% of the total available points.

- **Policy on Late Assignments**

- Final Exam: University policy will not allow me to reschedule the final exam ([see the Dean of Students for exceptions](#)).
- Course assignments must be turned in on time. Late work will be accepted for up to two additional days (with Saturday and Sunday counting as 1 day in total) with a letter grade deduction for each late day. After two days, late assignments will not be accepted. See below for some examples:

Due Date	Turned in	Your Grade	Your Grade after Penalty
Tuesday	Thursday	A	C
Thursday	Saturday or Sunday	A	C
Tuesday	Friday	A	F (not accepted)
Thursday	Monday	A	F (not accepted)

- **Turning in your work**

All assignments **must** be submitted via the appropriate assignment in blackboard **by the time stipulated in the blackboard assignment item**.

- **Problem sets** require a **jupyter notebook**
 1. that produces your document. If this file fails to accurately produce the pdf of your dynamic document, there will be an automatic two letter grade reduction.

2. that contains additional materials such as handwritten equations for written work
3. you must organize your work using the notebook template I will distribute to you as the Problem Set.

- **Exams** will be administered in class and will be handwritten not requiring computers.

- **Grade Discrepancies and Grade Questions**

I am happy to discuss questions you have about your grade on class assignments. Any questions you have regarding a potential grade change on an assignment must be cleared up within 1 week of receiving your work back from me. The only exception to this policy is if I made an arithmetic or data entry error in adding your score up and entering it into blackboard. *I will not entertain grade questions at the beginning of or following a class.* These need to be handled in my office.

- **Computing, Computers, and the Class**

We will make extensive use of **Stata** or **R** inside a **jupyter notebook**. For running either **Stata** or **R**, you will use <https://jupyterhub.wm.edu>. Due to licensing restrictions there are only 15 available seats on **jupyterhub**, therefore start assignments early. To avoid capacity constraints on **jupyterhub**, you may want to buy your own copy of Stata (using the Stata Grad Plan at <https://www.stata.com>) and the cost is around \$100. You may need to contact me for some small setup steps to get **jupyter notebook** running on your own PC/Mac if you go this route. Please get things working on your computers ASAP.

I will make some use of the main computer in the classroom for much of what we do together in class. The data for course examples and problem sets will be available on the web for the duration of the course.

- **Acceptable Collaboration and Automatic Plagiarism Scanning**

Finally, I want to define acceptable collaboration. In this course, I want you to think for yourself in applying these techniques. Students have commented that struggling on these problem sets helps in preparing for exams.

Judiciously using some resources from the web and properly citing it, is perfectly within bounds. Copying **.do**, **.ipynb**, or types of work from students in this class or off of the web and treating them as your own work is not acceptable. Receiving assistance at every critical modeling step is also not acceptable. Asking a classmate about clarification of stata syntax (e.g.- I forgot how to ask for robust standard errors, could you help me with that?), is fine. Be aware that all assignments submitted to blackboard are automatically scanned by **Turnitin** and are compared against the assignments for all current and past Cross Section classes as well against information from the web.

Additional Books

I am no longer requiring any books for this class. However, there are two I highly recommend particularly if you plan on attending graduate school in Economics or Political Science. First is Greene's [Econometric Analysis](#). Second is [this one](#) by Wooldridge which is recommended but not required. Both of these books are expensive and you can find older editions at less than half the price.

For your convenience, the table below lists topics we may cover with links to the relevant parts of the two books by Green and Wooldridge. The order of topics in the reading list below does not necessarily reflect the order topics will be covered in class.

Topic	Summary & Notes	Chapters
Introduction	Linear Algebra Intro/ Review	Green Appendix
	Stata Intro/Review	Supplemental Notes
	Review of Regression	Greene 3,4
	Review of Endogeneity	Green 12,13.5,13.5.5
Panel Data	Fixed Effects	Green 9-9.7
	Random Effects	Wooldridge 10
Maximum Likelihood	Intro to Maximum Likelihood	Green 16
Discrete Dependent Variables	Binomial Logit and Probit	Green 23
Truncation & Censoring	Tobit and Heckman	Green 24
Simulation and Bootstrap	Simulating standard errors	TBA
Other MLE models	Multinomial Logit and Probit	
	Negative Binomial and Poisson	Green 25

By Rob Hicks
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