

AEB 7572 Econometric Methods II - Spring 2019
SYLLABUS
University of Florida
Food and Resource Economics Department

Instructor:

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Office Hours: Wednesdays 1:30 PM- 2:30 PM, or by appointment.

Class Meeting Times:

Tuesdays 1:55-2:45 PM (McCarty A #2186)

Thursdays 1:55-3:50 PM (McCarty A #2186)

Course Description and Objectives:

The course is designed for first-year Ph.D. students in food and resource economics department and graduate students from other majors who want to advance their econometrics knowledge. The course aims to provide a theoretical foundation for applied research in economics and related fields. The focus of the course will be on the specification and estimation of linear models, with particular attention to different estimators (including Least Squares, Maximum Likelihood, and Generalized Method of Moments), their finite sample and asymptotic properties, and hypothesis testing. Some advanced topics such as Nonlinear Estimation, Introduction to Time Series and Panel Data will also be discussed as time permits. The prerequisite is AEB 7571 - Econometrics I (or, "Mathematical Statistics") in FRE, or its equivalent elsewhere.

Course Website:

Information related to the course, including announcements, homework assignments, and other course materials will be available through UF's Canvas "E-learning" system (<http://lss.at.ufl.edu/>).

Materials:

The primary text for the class is W.H. Greene's *Econometric Analysis* (8th Edition, by Pearson).

Other textbooks worth consulting (but not required!):

1. Hayashi, F. (2000) *Econometrics*, MIT Press.
2. Davidson and MacKinnon's *Econometric Theory and Methods* by Oxford U. Press.
3. Ruud, P. (2000) *An Introduction to Classical Econometric Theory*, Oxford University Press.
4. Wooldridge, J. (2010) *Econometric Analysis of Cross-Section and Panel Data*, MIT Press.
5. Kennedy, P.A. (2008) *A Guide to Econometrics*, Wiley (excellent as a less-technical supplement to the required text).
6. Bruce Hansen's online (and free!) Econometrics text:
<http://www.ssc.wisc.edu/~bhansen/econometrics/Econometrics.pdf>

Policies:

- *Teaching Philosophy:* I want our section to be a friendly environment, where everyone is allowed to make mistakes and ask any questions they may have without feeling shy about doing so.

- *Grading:*

Homework Assignments 20%

Test 1 25%

February 19 Tuesday, in class

Test 2	25%	April 19, 2018 in class
Final Poster Project	30%	On February 7th, Thursday you will submit a short (1 to 2 pages) outline describing your topic, methods, and data. Poster presentation session is scheduled for April 19th Friday in MCCB. Electronic copies of posters and the software code accompanying empirical results are due on April 23rd, Tuesday (in class).

Weighted averages of scores will be converted to a final course grade according to the following scale:

A	93 - 100	4.00	C	72 - 74	2.00
A-	87 - 92	3.67	C-	69 - 71	1.67
B+	84 - 86	3.33	D+	65 - 68	1.33
B	81 - 83	3.00	D	60 - 64	1.00
B-	78 - 80	2.67	D-	56 - 59	0.67
C+	75 - 77	2.33	E	<56	0.00

- *Attendance:* Please, review relevant sections in the textbook before coming to class. If you miss a lecture, make sure you get the lecture notes from a classmate. Please be punctual.
- *Cell Phones/ Tablets / Laptops:* Please refrain from using tablets/phones etc. during lectures.
- *Assignments:* The only way to learn this material is to practice. I will regularly assign homework problems and discuss examples in class to encourage applying the theoretical material; but the more problems you can work on your own, the better. I do encourage you working in groups if this suits you; however, make sure that the final write-up of your own homework is done on your own (carbon-copying the software code or write-up of assignments may be considered as plagiarism).

Problem sets will be turned in at the beginning of the lecture on the day they are due. Late submissions will not be accepted, unless an extraordinary circumstance warrants it (these circumstances need to be communicated to me BEFORE the due date).

Some problems will require working with data. You'll be free to use any software supporting matrix programming (SAS/IML, GAUSS, MATLAB, R, Python etc.), but I will only provide support for SAS/IML. It is essential to actually code up the matrix algebra involved in many of the estimators you learn in this class. Whichever software you choose to use, you must provide all the code and the key output supporting your homework assignments.

- *Exams/make up:* No Make-up exam will be given for the exams except for well-documented extraordinary circumstances (court appearance, surgery, etc.). You need to communicate these circumstances to me well BEFORE the exam date. In all other cases, you will receive zero credit for the missed exam.
- *Software:* I will use SAS/IML for the empirical exercises. SAS/IML is the matrix programming module in SAS software. Using a matrix programming language is essential for this course as it reinforces

our understanding of the underlying theory. Although some familiarity with statistical software is useful, you do not need to have prior experience with SAS/IML; I will be providing necessary tutorials to get you started.

There are multiple options to use academic version of SAS as illustrated here: http://www.sas.com/en_us/offers/14q1/122603-sas-for-academia/overview.html I personally recommend obtaining *Educational Analytical Suite* home-use license through the Help Desk at the Hub #132, and downloading on your PC (especially if you plan to continue using it for your research). Another option is to use the same version through the [UF Apps](#) . SAS version 9.4 is also installed on computers in the FRE graduate computer lab.

- *Final Poster Project:* This is an applied econometrics research project. A poster is very brief version of a complete, written research paper. Follow the guidelines below to prepare your term project:
 - Your poster must be 36inch (H)x 48inch(W), and must have the following section headings:
 - Introduction:** Give some background, describe the problem and tell the audience why it is an interesting one.
 - Model:** The economic and/or econometric model behind your research question.
 - Methods and Data:** Describe the econometric method you use and your data.
 - Findings:** This section should only have graphs, charts, and tables with minimal text.
 - Discussion:** What are your conclusions from the findings?
 - The problem at hand must be empirical, using real data. You can either extend a research paper written by someone else, or carry out an original analysis that adds an econometric component to a research question (or, this may be a preliminary work for your dissertation, second year paper etc).
 - The project must be distinct from other class projects you might have assigned, and it must be feasible so that it can be completed by the due date in April.
 - Due to limited time, I recommend that you focus on a narrow topic with a single research question and use data to which you already have access (consider data sources that are open to public or available through the UF Library such as USDA, BLA, BEA, Federal Reserve Bank, World Bank, NBER etc).
 - You do not have to go beyond basic econometric methods that we will discuss in the course. The main purpose of the project is to give you an overall experience in designing empirical research and using econometric methods appropriate for answering your particular research question. That being said, if you feel particularly motivated, you are more than welcome to use econometric methods/tests that we have not covered in class.
 - Do not use a class/homework data set verbatim. One of our objectives with this term project is having you organize the acquisition and cleaning of data. You may, however, take a classic data set from a seminal paper and update it with additional observations and/or variables.
 - To find an interesting topic for your project, I suggest getting in touch with faculty members working in the areas you find interesting. This is also an excellent time to identify a potential advisor, if you don't have one yet. Scanning recent empirical journals and working papers (e.g. Journal of Applied Econometrics, American Journal of Agricultural Economics, IDEAS, AgEcon Search, the NBER working paper series, etc) is another good way of finding an interesting research question.
 - Examples of acceptable forms of contribution for the term project, besides starting an original work, includes extending a data set previously used (e.g., more observations, different industries, countries, regions), adding/testing alternative variables, conducting different specification tests, or using alternative conceptual/theoretical frameworks.
 - About a month into the semester (see the exact date on page 2), you will submit a one- to two-page outline of your proposed topic with brief descriptions of the *research question*, the *econometric methods* you will employ, and the *data* you will use (data size, type, variables, source, availability etc.). The purpose of this first proposal is for me to determine the feasibility of your project. If you

are going to extend analysis from another paper, please attach a copy of the original paper to your outline. You must get my approval before finalizing your research topics.

- You must write your own code for the analysis and send it to me at the end of the semester along with main output supporting the results you have on the poster. Unlike your homework assignments, the poster research can be done using any software of your choice (canned or not!).
- I highly recommend that you to use Power Point for making your poster. A poster is essentially a single large PPT slide (A PPT slide can be as big as 56inchx56 inch). Here is a good set of tips for designing your poster in Power Point: http://www.aaea.org/UserFiles/file/Poster_Powerpoint_AgEcon_Search.pdf
- You will need to print your poster for the poster event at the end of the semester. UF has a printing facility in the HUB 224 for large format printing.
- Easiest way to design a poster is to use a template. You may use any template as long as dimension are 36x48 inches. Here is a sample 36x48 inch template from UF Help Desk : http://helpdesk.ufl.edu/wp-content/uploads/2012/11/Poster_Template_36X48.pptx

Tentative Course Outline

1. The Multiple Regression Model

Least Squares (LS) and the Gauss-Markov Theorem
Sampling distributions induced by normality and tests of linear restrictions
Inverting test statistics to obtain confidence regions
Specification analysis, the algebra of ellipsoids, and the value of information
The method of maximum likelihood (ML) and the Likelihood Principle

2. Asymptotic Approximations to Sampling Distributions

Convergence concepts (in probability and in distribution)
Asymptotic properties of LS and ML

3. The bootstrap

4. Nonspherical Disturbances

Generalized Least Squares (GLS) and the Feasible GLS - asymptotic properties
Heteroskedasticity
Serial correlation

5. Endogeneity

Errors in variables
Instrumental variables and endogeneity testing
Full information estimation (3SLS and FIML)
Generalized Method of Moments
Simultaneity and the systems of equations

6. Nonlinear Regression Models

Nonlinear Least Squares Estimator
Large Sample Properties of the Nonlinear Least Squares Estimator
Hypothesis Testing and Parametric Restrictions
The case of Structural Breaks

7. Introduction to Time Series Econometrics (as time allows)

Stationarity, and ARIMA processes
Unit Roots
Cointegration

Disclaimer:

The syllabus is a general plan for the course; deviations may be necessary. I hold the right to make changes to this syllabus anytime during the semester as circumstances warrant

UF POLICIES AND GUIDELINES

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor as early as possible in the semester.

Course Evaluation

Students are expected to complete online course evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, students will be notified of the specific times they are open.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. If you have any questions or concerns, please consult with the instructor.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.