AEB 7572 – 101F Econometric Methods II - Spring 2018
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 (Anderson Hall 032)
Thursdays 1:55-3:50 PM (Anderson Hall 032)

Course Description and Objectives:
This course is designed for first-year Economics Ph.D. students and graduate students from other majors who want to advance their econometrics knowledge. The basic methods of modern econometric theory are covered and will provide a foundation for applied research in economics. 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:
The course website will be available through UF's Canvas "E-learning"system (http://lss.at.ufl.edu/). Important information related to the course, including announcements, homework assignments, and miscellaneous course material will be posted on this web site.

Materials:
The primary text for the class is Davidson and MacKinnon's *Econometric Theory and Methods* by Oxford U. Press.

Other textbooks worth consulting (but not required!):
1. Hayashi, F. (2000) *Econometrics*, MIT Press.
2. Greene (2011) *Econometric Analysis*.
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	30%		
Test 1	35%	March 15, 2018 in class	
Test 2	35%	April 19, 2018 in class	

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

A	93	-	100	4.00
A-	87	-	92	3.67
B+	84	-	86	3.33
B	81	-	83	3.00
B-	78	-	80	2.67
C+	75	-	77	2.33
C	72	-	74	2.00
C-	69	-	71	1.67
D+	65	-	68	1.33
D	60	-	64	1.00
D-	56	-	59	0.67
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 when turning in a problem set that the final write-up 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. The reason that I limit software options is because these will force you to actually code up the matrix algebra involved in many of our estimators. 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:* We 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* through the Help Desk at the Hub or the UF Bookstore for a small fee. The annual renewal licenses after initial purchase are free for UF students (For details, see https://software.ufl.edu/agreements/sas/student/) SAS version 9.4 is also available on computers in the FRE graduate computer lab.

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

Grades and Grade Points
Information on current policies for assigning grade points, see
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Academic Honesty, Software Use, Campus Helping Resources, Services for Students with Disabilities

Academic Honesty
In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students. **The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.**
On all work submitted for credit by students at the university, the following pledge is either required or implied:
"On my honor, I have neither given nor received unauthorized aid in doing this assignment."

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office. *(Source: 2012-2013 Undergraduate Catalog)* It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by 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.

Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,* **www.counseling.ufl.edu/cwc/**
     Counseling Services
     Groups and Workshops
     Outreach and Consultation
     Self-Help Library
     Training Programs
     Community Provider Database

- *Career Resource Center,* First Floor JWRU, 392-1601, **www.crc.ufl.edu/**

Services for Students with Disabilities
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.
-0001 Reid Hall, 352-392-8565, **www.dso.ufl.edu/drc/**