

Econometrics: A Mathematical Approach
 Professor Orley Ashenfelter
 Preceptor: Lara Shore-Sheppard
 Economics 303, Fall 1994

Prerequisites: Math 201 (Calculus and linear algebra or equivalent)

Texts: Beals, Ralph E. *Statistics for Economists* (Chicago: Rand McNally, 1972), available at Gnomon Copy, 6 Nassau Street.

Pindyck, Robert S. and Rubinfeld, Daniel L. *Econometric Models and Economic Forecasts* (New York: McGraw Hill, 1991), available at U Store.

Hamilton, Lawrence, *Statistics with STATA 3* (Duxbury Press: Belmont, CA, 1993), available at U-store.

Supplementary Texts: (Available in Firestone Reserve Room)

Some other texts that are useful to look at for an alternative exposition of the material are:

- A: Degroot, *Probability and Statistics*
- B: Greene, *Econometrics*
- C: Hogg, *Introduction to Mathematical Statistics*
- D: Intriligator, *Econometric Models, Techniques, & Forecasts*
- E: Kmenta, *Elements of Econometrics*
- F: Maddala, *Introduction to Econometrics*
- G: Schmidt, *Econometrics*
- H: Wonnacott and Wonnacott, *Econometrics*

Organization:

This course teaches you to use econometric methods. The supplementary texts are entirely optional and are included only for those students who want an alternative approach to the same material covered in class and in the two main texts. The most important part of this class is learning how to solve econometric problems. Six problem sets will be assigned; four will involve the use of a computer. We will make use of STATA, which will be available on the PC cluster in McCosh and through the Unix system. The book by Hamilton listed above will be of some considerable help to you in learning to use STATA also. In addition there will be a tutorial devoted to using STATA in class.

Final grades will be weighted 0.25 for the problem sets, 0.25 for the midterm exam, and 0.50 for the final exam.

Schedule of Topics

Problem Set No.	Date	Lecture	Topic:Reading
	9/13	1	1: <u>Introduction & Basic Probability Concepts</u> , Chapters 1 & 2. Beals
1 out	9/15	2	2: <u>Random Variables and Univariate Distributions</u> , Chapter 3. Beals
	9/20	3	3: <u>Mathematics of Expectations</u> , Chapter 4. Beals
1 in, 2 out	9/22	4	4: <u>Multivariate Distributions</u> , Chapter 5, Beals
	9/27	5	5: <u>Sampling Distributions</u> , Chapter 6. Beals
	9/29	6	6: <u>Interval Estimation and Hypothesis Testing</u> , Chapter 8, Beals
	10/4	7	7: <u>Estimation</u> , Chapter 7. Beals
2 in, 3 out	10/6	8	8: <u>Sample Design</u>
	10/11	9	9: <u>Simple Regression I</u> , Introduction, Chapters 1, 2, & 3, Pindyck & Rubinfeld (P&R)
	10/13	10	<u>Statistics with Stata</u>
3 in	10/18	11	<u>Simple Regression II</u>
	10/20	12	Midterm Exam
4 out	11/1	13	10: <u>Multiple Regression</u> , Chapters 4 & 5, P&R
	11/3	14	11: <u>Specification Error & Multicollinearity</u> , Chapters 4.4, 7.3-7.5. P&R
	11/8	15	<u>Specification Error & Multicollinearity II</u>
	11/10	16	12: <u>Heteroscedasticity and Serial Correlation</u> , Chapter 6, P&R
4 in, 5 out	11/15	17	13: <u>Measurement Error</u> , Chapter 7.2, P&R
	11/17	18	14: <u>Binary and Discrete Choice Models</u> , Chapter 10, P&R
	11/22	19	15: <u>Dummy Variables</u> , Chapter 5.2, P&R
	11/29	20	16: <u>Time Series I</u> , Chapters 9.1, 9.2, 14, 15, & 16 P&R
5 in, 6 out	12/1	21	<u>Time Series II</u>
	12/6	22	17: <u>Simultaneous Equations I</u> , Chapter 11 P&R
	12/8	23	<u>Simultaneous Equations II</u>
	12/12	24	<u>Simultaneous Equations III</u>

Problem Set 6 is due at 5 PM Wednesday January 4, 1995.

Supplementary Text References

Topic	Text							
	A	B	C	D	E	F	G	H
1	1,2		1, 2		3	2		3
2	3	3.2	1, 3	App C.2	3.5, 3.6	3.1-3.4		4
3	4	3.3	1.9	App C.3	3.7	3.5-3.7		
4	3	3.9-3.10				3.8		
5	7	4.2	4		1, 2, 4			6
6	8	4.6-4.7	6, 9		5	4.4-4.6		8, 9
7	6	4.3-4.5	7, 8		6	4.1-4.3		7
8								
9	10	5			7	7		11, 12
10		6, 7		4, 5	10	8	1	13-15
11		8.4, 9.2		6.8, 6.2	10.3, 10.4	9.5, 10.1, 10.2		
12		14, 15		6.3, 6.4	8.2, 8.3	12	2.3	
13		9.5		6.9	9.1	13	3.4	
14		20			11.1			
15		8.2				9.2		
16		18						
17		19		10-13	13	11	4, 5	25