Lincoln University Spring 2013
Mr. Hibshoosh

Course: BA 366 – Econometrics
Credit: 3 units, 45 lecture hours
Day/Time: Thursday 12:30-15:15
Instructor: Aharon Hibshoosh
Office Hours: Thursday 21:15-22:15
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Textbooks:

Damodar J. Guarajti and Dawn C. Porter "Essentials of Econometrics", Irwin/McGraw Hill, fourth edition, 2009
ISBN-10: 0073375845, ISBN-13: 9780073375847

Robert S. Pindyck and Daniel L. Rubinfeld, *Econometric Models & Economic Forecasts, 4th edition, Mcgraw Hill, 2000,* ISBN-10: 0071188312, ISBN-13: 978-0071188319.

Other recommended textbooks:

Recommended: William H. Greene "Econometric Analysis", 7th edition, Prentice Hall, 2011.

Jack Johnston and John Di Nardo "Econometric Methods", 4th edition, Irwin/ McGraw Hill 1997

BA 366 – Econometrics

Course description:
Course Catalog Description: The course introduces students to a comprehensive treatment of econometric methods for linear models. Among topics covered are: the linear regression, linear simultaneous equations systems, maximum likelihood and instrumental variables estimation strategies, hypothesis testing. Different data and variables presentations and features are discussed. (3 units) Prerequisite: BA 241 or BA 360

Econometrics is a specialized area of statistics which deals with the measurement of economics and business data. It is broadly applied in business and industry. It requires the application of economics and business theories and use of dedicated statistical software. This application can easily be learned with the aid of personal computers. The study of econometrics addresses the unique features of stochastic behavior which characterize Business and Economics. It involves the study of multiple linear regression and time series analysis and forecasting. Its methods are tailored to deal with the departure of the economic and business behavior from the standard models of regression analysis. Economics, Finance, Marketing and other areas of business provide the theoretical underpinning which logically link variety of variables. To some extent Business and Economics also identify convenient functional forms for linking those variables,

where the identified parameters have economics, finance, and marketing interpretations. However, often, the measurement involves variables with errors, and typically we encounter missing variables.
Typically economics data exhibits heteroscedasticity (i.e. error terms are not uniform on often depends on the size of the independent variables. Furthermore, economic relationships often exhibit serial correlation, which depends on time and location. E.g., errors in a focal dependent variable in one period are related to errors in preceding periods**.** These features affect estimation efficiency and forecasts accuracy.
Similarly, misspecification of economic relationships is quite common as is measurement of independent variables with error. The problem is particularly important when we estimate parameters of a system of economic relationships. These features affect both parameter estimation and identification.
Finally, of great important in economic and finance is the time series analysis where we try to estimate and forecast in the context of dynamic relationship. Here special tools have been developed for identification and forecast of time series. Due to the great diversity in student statistical and mathematical programs in class we will be using several text books in teaching econometrics from the elementary and modern textbook of Guarajti and Porter to the classic Johnston and Di Nardo. Typically, the veteran books have more fundamental exposition and would suit the interest of the advanced students in class. I hope to provide individual guidance in your reading. Pindike and Rubinfeld text would provide the basic skeleton for the exposed topics.

As software we will use Gretl. (We will follow the download and use in class.). This econometric software is freely available and is suitable for this course. However, there are costly other programs which are available for students and industry for a fee. I would be glad to guide any individual student who has access to any of this program in its use.

Learning Objectives:

1. Learn how to model business and economics relationships based on economics and business theories.
2. Understand the assumptions of the classical Linear Multiple Regression model, and the departure in econometrics from these assumptions.
3. Gain familiarity with transformation of economics models.
4. Know how to estimate parameters of the Linear multiple Regression model, how to test hypotheses regarding the parameters values, and how to forecast based on this model.
5. Gain some experience in computer processing of econometric data.
6. Learn to estimate the biased effects of errors in variables on the estimated variable and how to use instrumental variables to eliminate or minimize the bias.
7. Learn how to test for serial correlation, estimate it and how to take advantage of the estimate in generating forecasts.
8. Learn how to deal with multicolinearity.

9. Learn to deal with identification and estimation problems of simultaneous economic relationships.
10. Learn time series analysis, with a focus on the ARIMA model.
11. Gain some familiarity with related multivariate statistical models (Analysis of Variance, Canonical Correlation, Multidimensional Scaling, etc.).

Methodology:

The course is based on lecture and homework. The homework would be both theoretical and empirical using employing statistical software and actual data. Both individual and group homework may be assigned. The range of this homework and would depend on the range of available statistical software.

Student Conduct:

- Please participate. What you put into the class will determine what you get out of it – and what others get out of it.
- Please come **on time.** Late arrivals disturb everyone else. Plan to stay during the whole class period. Attendance may be taken at least one time in of each class. In the case where more than one attendance is taken, only students attending all attendances would be considered as present.
- Students may not read other materials (newspapers, magazines) during class an no multitasking is allowed.
- Students are not allowed to come and go during class sessions.
- If you miss a class, you are responsible for getting notes/slide printouts on the material covered from a classmate in your group.
- To avoid distracting noise in class, cellular phones **must** be turned off or the ringing mode silenced.
- During the exam all recording devices of any form must be closed and stored in closed bags. (See also Examination Policy).
- All class participants are expected to exhibit respectful behaviors to other students and the instructor. All students have the right and privilege to learn in the class, free from harassment and disruption. Inappropriate or disruptive behavior will not be tolerated, nor will lewd of foul language.

Examination Policy:

The final would be comprehensive and consists of two parts. The midterm would include only chapters covered in the lecture prior to the midterm and associated extra lecture information. The final is comprehensive. Unless otherwise informed, the exams are closed book exams, with some formulation may be supplied. There will not be a restroom break (or any other break) during the midterm or each of the parts of the final. (I will make alternative examination opportunities where the need for break is medically required and professionally supported by a letter from a medical doctor). No electronic instrument capable of copying material in any form (in particular, in print or visual image) is allowed in the exam. In particular, cell phones,

organizers, calculators, tape recorders cameras, computers, etc. must be closed and stored inside a closed bag. A student violating these requirements should expect an F grade, in addition to other disciplinary consequences.

Grading Guidelines:

Class attendance 10 pts

Homework and assignments 40 pts

Midterm 17 pts

Final 33 pts

Total course points: 100 pts

The grade will be based on a curve. Gaining the number of course points would assure the grade.

Course Points	Grade
85 and above	A
80-84	A-
70-79	B+
65-69	B
60-64	B-
55-59	C+
52-54	C
50-51	C-
47-49	D+
45-46	D
Below 45	F

Course Schedule:

Topics^ and Tentative Schedule^^

We will focus on elements in the following chapters^, in Robert S. Pindyck and Daniel L. Rubinfeld, Econometric *Models & Economic Forecasts*

1/24-2/7 Introduction to Linear Regression:
Linear regression with one and two independent variables.
Transformations. Criteria for statistical estimates and inference.
Basic Forecasting. Ch(s) 1-3 and elements of 6.

1/24-2/21 The Classical Multiple Regression Model:
The general assumptions and nature of departure from assumptions. Ch. 4.
Topics in general model:

2/28 Relationship with Analysis of Variance and Dummy Variables. Testing hypotheses involving several parameters and constraints. Ch. 5.

3/7-3/14 Heteroscedasticity and serial correlation Ch. 6.

3/14 Midterm

3/19-3/23 Spring recess

3/28-4/4 Errors in Variables and Missing variables:
Specification and measurement problems.
The Instrumental Variables Technique Ch. 7.

4/4-4/18 Simultaneous Equations Models:
Problems in identification and estimation Ch.11.

4/18 Forecasting based on multiple regression Ch. 8.

4/18-5/2 Time Series ARIMA forecasting Ch. 16, 17.

5/9 Final

^ Further topics would be introduced
^^ I would try to accelerate the pace of the course if possible.

Updated 1/30/2013. The syllabus would be updated in the future as necessary. Future updates are expected.