

Syllabus, Eco B2000, Fall 2011

**Statistics and Introduction to Econometrics**

Tuesday and Friday 12 – 1:50 NAC 1/203

**Course Description**

This course is designed to teach you to use the basic statistical tools that form an economist's basic toolbox. This is a hands-on course where you will work with a lot of real data. The aim of this course is to get a better understanding of statistics, of how numerical evidence is used and abused, and of how people can torture the numbers to make them appear to support their point of view. In our modern world statistics are the first choice for how someone is going to lie to you. If you know some of the secrets then you will be able to see through other people's lies (and perhaps create some of your own – if you choose to embrace the dark side!).

**Textbook**

This course uses the textbook by James H Stock and Mark W Watson, *Introduction to Econometrics*, Pearson, 3<sup>rd</sup> edition. Earlier editions are very close substitutes but you are responsible for ensuring the concordance to the most recent edition, for homework assignments. You may wish to get the accompanying study guide, but it is not necessary.

**Professor**

Kevin R. Foster, Department of Economics, The City College of New York, [kfoster@ccny.cuny.edu](mailto:kfoster@ccny.cuny.edu), w: (212) 650-6201, m: (860) 593-7674, office hours Tuesday 2-3 pm and Friday 11am-noon or by appointment, [http://www.ccny.cuny.edu/social\\_science/kfoster/](http://www.ccny.cuny.edu/social_science/kfoster/)

**Course Requirements/Prerequisites**

This course assumes that you have prerequisites of a basic undergraduate course in statistics, a course in Calculus, and a familiarity with computers enough to quickly learn new programs. I will use other math freely and often. Matrix algebra is not a prerequisite although I will occasionally use it to help more advanced students get a fuller understanding. Stats requires a willingness to work through the algebra and plow through the applicable formulas. However, that said, the point of doing it on a computer is so that the machine can do the donkey work while you worry about bigger questions – so what? why? what does it mean? what else do I need to know? what other hypotheses could present the same pattern?

**Educational Outcomes**

Students will be able to apply mathematically rigorous analysis to topics such as hypothesis testing, common probability density functions, and regression analysis. More details in the document, "Skills Learned in This Course," available from the course webpage.

## Grading

Course grades are determined by three factors: your scores on the exams, your demonstrated skill at using statistical analysis in a final project, and your scores on the homework assignments. The exams have a 50% weight, the project has a 30% weight, and homework gets 20%. There is no BS factor of effort or any other unobservable will-o-wisps – the weightings sum to 100. Your grade is determined entirely on observed performance.

You have the option of forgoing the homework assignments and having your grade determined only by exams and project. This is unwise. You must submit the online form to me early in the semester.

Grades will be posted on the course page, so that you can check your progress and determine what grade you can expect to receive. In this public grade posting, you will be identified only by the last 4 digits of your ID number (if you wish to choose some other 4-digit identifier, email me).

## Time Requirements

You should expect to spend 10-12 hours per week on this class. My simple calculation is that a student who is going to school "full time" takes 4 or 5 classes. Someone who works fulltime at a job works 40-50 hours per week. So about 10 hours per week is a good estimate (this class is 4 credits so it will take a bit more). If you don't put in that much work then you can't expect to get a good grade. (This is confirmed by research; on average a student studying one more hour per week can raise her term GPA by 0.36 – from a B to B+, for example. Stinebrickner & Stinebrickner, 2008. BE Journal of Econ Analysis & Policy, 8(1).)

## Final Project

You will work with a small group of fellow students to write a project to analyze a question using one of the datasets that we'll be working with. You will make a presentation about this project in class; the presentation counts as homework and then the written project has a separate grade. This will require you to use statistical analysis software with a large dataset. More details will be given later in the course.

## Course Material

Homework and basic course documents will be on the class page, publicly accessible from my web page ([http://www.ccny.cuny.edu/social\\_science/kfoster/](http://www.ccny.cuny.edu/social_science/kfoster/)). Readings and datasets will be on InYourClass.com (login required). Some of the homeworks will be available on the Blackboard course page (login required). I will periodically send emails to the class via Blackboard so you must keep your CCNY email updated.

## Computer Use

This course will use SPSS, data analysis software that is commonly used in business. You are not required to have previous experience with programming although that would be useful. There will be numerous web videos explaining the basics of how to use SPSS in statistical analysis.

## TA Help

There will usually be a TA available in the economics computer lab (NAC 6150) on Friday. They won't do your homework for you, though!

## Additional Reading

If you end up engulfed in a love affair with stats, you might be interested in these books too:

- Leonard Mlodinow, *The Drunkard's Walk: How Randomness Rules Our Lives*
- John W. Tukey, *Exploratory Data Analysis* (in library)
- Edward R. Tufte *The Visual Display of Quantitative Information, Visual Explanations: Images and Quantities, Evidence and Narrative* (in library);
- Howard Wainer, *Graphic Discovery: A Trout in the Milk and Other Visual Adventures*
- David Salsburg, *Lady Tasting Tea: How Statistics Revolutionized Science in the Twentieth Century*
- Stephen Stigler, *Statistics on the Table* (in library) and *The History of Statistics: The Measurement of Uncertainty before 1900* (in library).
- Dierdre McCloskey , *Economical Writing* and *The Rhetoric of Economics* (in library).
- Peter Kennedy, *A Guide to Econometrics*.
- Jane E. Miller, *The Chicago Guide to Writing about Numbers* (in library)

We will be working with SPSS, a common statistical analysis program. We will also learn a bit of STATA and Matlab, other commonly-used programs.

**Weekly Topics:**

Principles of Statistics, Eco290, Fall 2011

Kevin R Foster, CCNY

Date	Chapter(s)	Topic
Aug 26	1, <i>online notes</i>	Introduction to Econometrics, SPSS
Sept 2	2, 3	Basic Statistics
Sept 9	4	Univariate Linear Regression
Sept 16	5	Multivariate Linear Regression
Sept 23	6	Nonlinear Regression ( <i>final project topics due</i> )
<i>Sept 30</i>		<i>no class</i>
<b>Tuesday</b> Oct 4	7	Assessment of Regressions
Oct 14	1-6 and online	<b>Exam 1</b>
Oct 21	8	Panel Data
Oct 28	9	Binary Dependent Variable
Nov 4	10	Instrumental Variables
Nov 11	additional	additional material
Nov 18	1 - 10	<b>Exam 2</b>
<i>Nov 25</i>		<i>no class</i>
Dec 2		<i>Class Presentations of Research Projects</i>
Dec 9		<i>Class Presentations of Research Projects</i>
Dec. 22		<b>Final Project Due</b>

Chapters refer to **Introduction to Econometrics**, Stock and Watson, 3<sup>rd</sup> edition.

There will be lecture notes available online – these are most important. Exams will cover material in both textbook and lecture.

Deviations from the schedule will be announced in class.

The exam dates are given above. You must take the exams at the scheduled times. No excuses.

## Academic Integrity

*The CCNY Faculty Senate has recommended that every course syllabus include this notice:*

### **CUNY Policy on Academic Integrity**

As stated in the CUNY Policy on Academic Integrity: 'Plagiarism is the act of presenting another person's ideas, research or writings as your own. The following are some examples of plagiarism:

- 'Copying another person's actual words without the use of quotation marks and footnotes attributing the words to their source;
- 'Presenting another person's ideas or theories in your own words without acknowledging the source;
- 'Using information that is not common knowledge without acknowledging the source;
- 'Failing to acknowledge collaborators on homework and laboratory assignments.
- 'Internet plagiarism includes submitting downloaded term papers or parts of term papers, paraphrasing or copying information from the internet without citing the source, and "cutting & pasting" from various sources without proper attribution.'
- A student who plagiarizes may incur academic and disciplinary penalties, including failing grades, suspensions, and expulsion.
- A complete copy of the CUNY Policy on Academic Integrity may be downloaded from the College's home page.