

Probability, Statistics, and Econometrics

Syllabus – Fall 2016

Course Objectives:

- (1) Students will obtain a background in mathematical statistics as preparation for PhD level work in econometrics. Subsidiary goals: provide mild introduction to the tools used in studying the economics of uncertainty and an introduction to basic programming in Matlab.
- (2) Students will be able to teach 241A.

Texts:

Main text: Casella, G. and Berger, R.L., *Statistical Inference*, Second Edition, 2002, Duxbury Advanced Series, Duxbury.

Useful backup: Hansen, B. E., *Econometrics*,
<http://www.ssc.wisc.edu/~bhansen/econometrics/Econometrics.pdf>, or
<http://www.ssc.wisc.edu/~bhansen/econometrics/EconometricsKindle.pdf>.

Good Matlab guide: Adams, A., Clarke, D., and Quiin, S., *Microeconometrics and Matlab*, Oxford University Press, 2016.

Coursework and grades:

Grading is subjective. The grading standards are:

- A excellent, at the level of understanding needed to pass the prelim
- A- close to the level needed to pass
- B+ substantial work is needed to be at the level to pass
- B even with substantial work, might not be at the level needed to pass
- B- performance is so far below the needed level to pass, that the course must be retaken

Inputs to the subjective grading process are a midterm (40%), a final (50%), problem sets (10%), required class presentations (25%), class participation (15%). It is assumed that study groups will collaborate on problem sets and preparing for class presentations. (As a practical matter final grades are largely determined by the exams, as most everyone does a near perfect job on the other elements.) *Grading is not competitive*. Everyone earning an A would be a perfect, albeit somewhat unlikely, result.

Problem sets: The purpose of the problem sets is to push you through as much technical material as possible. Problem sets are due to the TA by 3:30 on Thursdays. Problem sets are “graded” on a scale of 2 points (pretty much got everything), 1 point (should have been better), or 0 (uh, oh). The TA has been instructed to spend no more than 2 minutes “grading” each problem set. (By the way, most of the original material on the problem sets is courtesy of Prof. Paulina Oliva.)

Class assignments: Assigned problems will be presented by a selected student in most classes. The selected student will be expected to *teach* the analysis and solution of the problem. Therefore each student should bring slides (or whatever) on a thumb drive in order to be prepared to present. The presenter will be chosen either (a) at random or (b) from whoever looks most worried about presenting. [Depending on how fast lectures move, sometimes a presentation maybe put off for a day or two.]

Office hours: My office hours are Tuesdays, 2:00-3:00, but feel free to knock at other times.

Anticipated Lecture Schedule (subject to change):

Lecture	Date	Lecture/Slide name	Reading and problem sets
1	Th, 9/22	Introduction	CB 1.1, 1.2, PS1
2	T, 9/27	Using density	CB 1.3-1.6, 3.1-3.2
3	Th, 9/29	Common distributions	CB 3.1-3.5, PS2
4	T, 10/04	Transformations	CB 2, 3.6
5	Th, 10/06	Bivariate random variables	CB 4.1-4.7, PS3
6	T, 10/11		
7	Th, 10/13		PS4
8	T, 10/18		
9	Th, 10/20	Random sampling	CB 5.1-5.2, PS5
	T, 10/25	Midterm	
10	Th, 10/27	Sampling from the normal	CB 5.3., PS6
11	T, 11/01	Convergence	CB 5.5
12	Th, 11/03		
13	T, 11/8	Point Estimates	CB 7 (excluding 7.2.4)
14	Th, 11/10		PS 7
15	T, 11/15		
16	Th, 11/17	Hypothesis testing	CB 8.1, 8.2.1, 8.3, PS8
17	T, 11/22		
	Th, 11/24	Thanksgiving	
18	T, 11/29	Hypothesis testing	
19	Th, 12/01	What's Next	