



Yeshiva University
M.Q.E.

Mathematical Statistics

ECON 5202

Fall 2015

Syllabus

Instructor: Pablo Crespo

Course Description: This course is the first of a two-semester graduate level study of the theory and practice of econometrics. The course assumes a working knowledge of concepts of calculus, linear algebra and some introductory probability and statistics. The objective is to work through the fundamentals of theoretical statistics.

Course Objectives: This course promotes student learning in the following topics:

1. axiomatic probability theory,
 2. random variables and their distributions,
 3. convergence concepts,
 4. foundations of point and interval estimation,
 5. foundations of statistical inference.
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Textbook information: Required textbook:

Robert V. Hogg, Joseph W. McKean, and Allen T. Craig.
Prentice Hall, 6th edition, 2004.

Introduction to Mathematical Statistics.

Supplementary reading:

George Casella and Roger L. Berger. *Statistical Inference*. Cengage Learning, 2nd edition, 2001.

Herman J. Bierens. *Introduction to the Mathematical and Statistical Foundations of Econometrics*. Cambridge University Press, New York, 2005.

Grade Distribution:

Midterm	TBA	35%
Final	TBA	45%
Problem Sets	Various due dates	20%

If the circumstances so demand, these descriptions and time-lines are subject to change at the discretion of the Professor.

Course Policies:

- **General**

- The midterm will cover the material presented in the classes prior to the midterm. The final exam is cumulative, and may cover any of the material presented in the course.
- No makeup exams will be given except in the case of an emergency, documented with either a doctor's note or a letter from Yeshiva University.

- **Grades**

- Grades in the B range (equal or above B-) represent performance that meets expectations; Grades in the A range represent performance that is substantially better than the expectations.

- **Assignments**

- There are 6 problem sets throughout the semester. Questions will primarily be from this book. You may work together for the assignments.
- No late assignments will be accepted under any circumstances. There is no extra credit work.

- **Attendance and Absences**

- Attendance is expected and will be taken each class. Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to get all missing notes or materials.

Yeshiva University's policy on academic integrity:

The faculty and administration of Yeshiva University support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the Academic Integrity Policy and the Yeshiva University procedure for implementing that policy can be found at this site: <http://yu.edu/yeshiva-college/academic-integrity/>. If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member MUST report the violation.

Administrative information

Email: pabloalejandrocrespo@gmail.com

Office Hours: TBA

Class meetings: T-R 1:00PM-2:15PM, room TBA

Tentative Course Outline

The weekly coverage might change as it depends on the progress of the class.

1. Probability Theory

- (a) Elementary Probability Theory
- (b) Conditional Probability, Independence
- (c) Random Variables, Distribution Functions, Functions of Random Variables
- (d) Transformations and Expectation
- (e) Joint and Conditional Distributions
- (f) Special Distributions
- (g) Convergence, Laws of Large Numbers, Central Limit Theorems

2. Statistical Inference

- (a) Maximum Likelihood Estimation and Simple Linear Models
- (b) Point Estimation
- (c) Interval Estimation
- (d) Bayesian Estimation
- (e) Hypothesis Testing