

# ECO517: ECONOMETRIC THEORY I

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INSTRUCTOR (PART I) Michal Kolesár (mkolesar@princeton.edu)

Office: JRRB 278, OH: Wed 3–4pm

INSTRUCTOR (PART II) Bo Honoré (honore@princeton.edu), JRRB 392

TA Liyu Dou (ldou@princeton.edu), OH TBD Mon 4.10–5pm, JRRB A74

GRADER (PART II) Charis Katsiardi (ck7@princeton.edu)

LECTURES Mondays and Wednesdays 10.40am–12.10pm, JRRB 101

PRECEPTS ~~Time and date will be co-ordinated by Mr. Dou.~~ Mon 3–4pm, McCosh 60

COURSE DESCRIPTION Part I of the course provides an introduction to statistical theory. A brief review of probability will be given mainly as background material; it is assumed to be known. Part II of the course provides an introduction to regression analysis.

IN-CLASS MIDTERM Wednesday, Oct 25

FINAL To be scheduled

GRADING Your grade will be an equally weighted average of grades in Part I and Part II. Your grade in Part I will be based on weekly problem sets (30%) and an in-class midterm (70%).

## PART I: STATISTICS (SEPT 13–OCT 25)

TEXT Hogg, R. V., McKean, J. W. and Craig, A. T. (2013) *Introduction to Mathematical Statistics*, Pearson Education, New York, 7th edn

The book covers all of the material of the course and, in addition, provides many problems for practice as well as excellent references. Earlier editions are just as good.

LECTURE NOTES I will post lecture notes *following* each lecture.

**PROBLEM SETS** Only one problem (marked) is required from each problem set, the solution to which will be posted after the due date. All other problems are for your own study; the solutions to them won't be posted, but will be discussed during precepts. One problem from the problem sets will appear on the midterm exam.

You are free and encouraged to work in small groups for the exercises, but you should write up the solutions alone. If you worked with other people on the problem set, please record their names in your write-up.

Problem sets should be handed in to the TA at the beginning of the Wednesday lecture or sent to the TA via e-mail before the lecture. *No late assignments will be accepted.*

#### SCHEDULE

Date	Lecture	Problem Set
Sep 13 W	1. Probability review, normal distribution	
Sep 18 M	2. Limit theorems	PS 1 given
Sep 20 W	3. Sample, histograms, sample moments, likelihood.	
Sep 25 M	4. Sufficient statistics	
Sep 27 W	5. Estimation	PS 1 Due
Oct 2 M	6. Cramér-Rao bound	
Oct 4 W	7. Large sample properties of MLE	PS 2 Due
Oct 9 M	8. Bayesian concepts. Complete class theorem.	
Oct 11 W	9. Testing concepts.	PS 3 Due
Oct 16 M	10. Neyman-Pearson lemma. Unbiased tests.	
Oct 18 W	11. Testing in large samples	PS 4 Due
Oct 23 M	12. Confidence sets. Pratt's theorem.	
Oct 25 W	Midterm	PS 5 due
Oct 30 M	Fall recess	

## PART II: REGRESSION ANALYSIS

**TEXT** Hayashi, F. (2000) *Econometrics*, Princeton University Press, Princeton, NJ

**SCHEDULE:** A detailed schedule will be distributed at the beginning of the second half.