


ECON 705 2018C Econometrics I: Fund

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Course Syllabus: [ECON705.pdf](#) 

[Probability.pdf](#)  [Last Updated 10/15/18]

8/29 Lecture 1: Sample Spaces, Probability Measures - Readings: Casella and Berger, Chapters 1.1-1.2

9/05 Lecture 2: Calculus of Probability, Probabilities on the Real Line, Distribution Functions, Random Variables, Probability Density Functions - Readings: Casella and Berger, Chapters 1.3 - 1.6

9/10 Lecture 3: Transformations of Random Variables, Expected Values, Normal Distribution, Moment Generating Function - Readings: Casella and Berger, Chapters 2, 3

9/12 Lecture 4: Gamma Distribution, Chebychev's Inequality, Tail Bound for Normal Distribution, Jensen's Inequality - Readings: Casella and Berger, Chapter 3

9/17 Lecture 5: Multiple Random Variables, Introduction to Statistical Inference - Readings: Casella and Berger, Chapter 4

[Statistical Inference.pdf](#)  [Last Updated 10/08/18]

9/19 Lecture 6: Methods of Constructing Estimators - Readings: Casella and Berger, Chapter 7.1

9/24 Lecture 7: Methods of Evaluating Point Estimators - Readings: Casella and Berger, Chapter 7.2

9/26 Lecture 8: (no class)

10/1 Lecture 9: Frequentist Hypothesis Testing - Readings: Casella and Berger, Chapter 8

10/3 Lecture 10: Frequentist and Bayesian Hypothesis Testing, Coverage Sets - Casella and Berger, Chapter 8

10/8 Lecture 11: Frequentist and Bayesian Hypothesis Testing, Coverage Sets - Casella and Berger, Chapter 8

[Regression Analysis.pdf](#)  [Last Updated 10/28/18]

10/10 Lecture 12: Numerical Properties of Least Squares Estimators - Hayashi, Chapter 1

10/15 Lecture 13: MIDTERM


10/18 Lecture 14: Sufficient Statistics, Finite Sample Properties of OLS - Casella and Berger, Chapter 6, Hayashi, Chapter 1

10/22 Lecture 15: Frequentist risk of OLS estimator, information matrix equality, Cramer-Rao lower bound - Hayashi, Chapter 1

10/25 Lecture 16: Bayesian analysis of linear regression model, hyperparameter selection

10/29 Lecture 17: Bayesian model selection, LASSO

[LLN and CLT sl.pdf](#)  [Last Updated 10/29/18]

[Asymptotics.pdf](#)  [Last Updated 11/25/18]

10/31 Lecture 18: Asymptotics, Modes of Convergence - Hayashi, Chapter 2

11/05 Lecture 19: Asymptotic analysis of the least squares estimator - Hayashi, Chapter 2

11/07 Lecture 20: Asymptotic analysis of the MLE; LR, Wald, and LM tests

11/12 Lecture 21: Asymptotic analysis of Bayesian posteriors; consistency of posterior model probabilities - Kass and Raftery (1995) "Bayes Factors," Vol 90(430), 773-795; there is no easy reference on asymptotics of posteriors, but this one explains some ideas [Link](#); <https://arxiv.org/pdf/0805.3248.pdf> the following paper by Johnson is a classic in this literature [Link](#); <https://projecteuclid.org/euclid.aoms/1177696963> and here is an eclectic reading list [Link](#) <http://bactra.org/notebooks/bayesian-consistency.html> that I found on the web.

[ExtremumEstimators.pdf](#)  [Last Updated 11/28/18]

11/14 Lecture 22: Extremum estimators - Hayashi, Chapter 7

11/19 Lecture 23: No class

11/21 No class because of Th-Fr class schedule on Tu-Wed before Thanksgiving.

11/26 Lecture 24: GMM Estimation - Hayashi, Chapter 3

[AdvancedTopics.pdf](#)  [Last Updated 11/20/18]

11/28 Lecture 25: Endogeneity - Hayashi, Chapter 3





12/03 Lecture 26: Non-standard Asymptotics







11/04 Make-up Lecture: Limited Dependent Variable Models - Hayashi, Chapters 8.1 - 8.3

12/05 Lecture 27: Panel Data Models - Hayashi, Chapter 5

12/10 Lecture 28: FINAL EXAM

Course Summary:

Date	Details	
Thu Sep 13, 2018	 Problem Set 1 (https://canvas.upenn.edu/courses/1419516/assignments/6586754)	due by 11:59pm
Wed Sep 26, 2018	 Problem Set 2 (https://canvas.upenn.edu/courses/1419516/assignments/6597524)	due by 11:59pm
Wed Oct 3, 2018	 Problem Set 3 (https://canvas.upenn.edu/courses/1419516/assignments/6614198)	due by 11:59pm
Fri Oct 12, 2018	 Problem Set 4 (https://canvas.upenn.edu/courses/1419516/assignments/6614198)	due by 11:59am

Date	Details	
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Sun Oct 28, 2018	 Midterm (https://canvas.upenn.edu/courses/1419516/assignments/6660482)	due by 11:59pm
Tue Oct 30, 2018	 Problem Set 5 (https://canvas.upenn.edu/courses/1419516/assignments/6648461)	due by 11:59pm
Fri Nov 9, 2018	 Problem Set 6 (https://canvas.upenn.edu/courses/1419516/assignments/6664833)	due by 11:59pm
Mon Nov 26, 2018	 Problem Set 7 (https://canvas.upenn.edu/courses/1419516/assignments/6675889)	due by 11:59pm
Fri Dec 7, 2018	 Problem Set 8 (https://canvas.upenn.edu/courses/1419516/assignments/6690621)	due by 11:59pm
Sun Dec 16, 2018	 Final (https://canvas.upenn.edu/courses/1419516/assignments/6732494)	due by 11:59pm