Charles F. Manski

3331 KGH, 1-8223
cfmanski@northwestern.edu

Economics 480-1: Introduction to Econometrics (Fall 2019)

Economics 480-1 is the first third of the year-long introduction to econometrics for first-year Ph.D. students in economics. After completion of 480, students may wish to enroll in components of Economics 481, a set of courses in econometric methods; Economics 482, a course in time-series methods; and/or Economics 483, a course in microeconometrics. Prerequisites for 480-1 include undergraduate courses in probability and mathematical statistics with calculus emphasis. Grading is based on problem set assignments (10%), a midterm examination (40%), and a final examination (50%).

Text: C. Manski, *Identification for Prediction and Decision* (IPD), Harvard University Press, 2007. (Purchase Norris Bookstore or at Amazon www.amazon.com.)

Syllabus (with tentative lecture and exam schedule)

Introduction to Course (9/24)

Conditional Prediction (9/26, 10/1)
        IPD, Chapter 1

Prediction with Incomplete Data (10/3, 10/8, 10/10, 10/15)
        IPD, Chapters 2 through 5

Prediction of Treatment Response (10/17, 10/22, 10/24)
        IPD, Chapters 7 through 9

Planning under Ambiguity (10/31, 11/5, 11/7, 11/12, 11/14)
        IPD, Chapters 11 and 12

Predicting Choice Behavior (11/19, 11/21, 11/26)
        IPD, Chapters 13 through 15

Midterm Examination: Tuesday October 29, in class

Final Examination: Thursday December 5, in class

480-1 Lectures, Sections, Problem Sets, and Exams (tentative detailed schedule)

Lecture 9/24: IPD Introduction.

Lecture 9/26: Conditional prediction, IPD 1.2 and 1A.

Section 9/27: NU computer facilities. Introduction to STATA, with application to linear regression.

Lecture 10/1: Kernel Estimation of Best Predictors, IPD 1.3 and 1B.
Post Problem Set 1.

Lecture 10/3: Missing Outcomes Using the Data Alone, IPD 2.1–2.4, 2.A; Statistical Inference 2.7, 2.C.

Section 10/4: Proof of consistency of the uniform kernel estimate.

Lecture 10/8: Distributional Assumptions, IPD 2.5–2.6, Instrumental Variables, IPD 3.
Problem Set 1 due. Post Problem Set 2.

Lecture 10/10: Parametric Prediction, IPD 4.

Section 10/11: Discuss Problem Set 1. Jointly Missing Outcomes and Covariates, IPD Complement 2B.

Lecture 10/15: Decomposition of Mixtures, IPD 5.
Problem Set 2 due.

Lecture 10/17: The Selection Problem, IPD 7.1-7.4.
Post Problem Set 3.

Section 10/18: Discuss Problem Set 2.

Lecture 10/22: IPD 7.5-7.7.

Lecture 10/24: The Simultaneity Problem and Monotone Treatment Response, IPD 8 and 9
Problem Set 3 due.

Section 10/25: Discuss Problem Set 3. Review for exam.

Midterm Exam: 10/29 in class (90 minutes)

Lecture 10/31: Planning under Ambiguity, IPD 11.1–11.3.

Section 11/1: Discuss Midterm Exam.

Lecture 11/5: Planning under Ambiguity, IPD 11.4–11.8 and 11A.
Post Problem Set 4.

Lecture 11/7: More on Planning under Ambiguity.

Section 11/8: TBA

Lecture 11/12: Introduction to Statistical Decision Theory, IPD 12.1 and 12.2.
Problem set 4 due.

Lecture 11/14: Treatment Choice with Data from a Randomized Experiment, IPD 12.3. *TAS* articles.

Section 11/15: Discuss Problem Set 4. Bayesian Statistical Decision Theory

Lecture 11/19: Revealed Preference Analysis, IPD 13.1 and 13B.
Post Problem Set 5.

Lecture 11/21: Revealed Preference Analysis, IPD 13.2 and 13.3.

Section 11/22: Prediction Assuming Strict Preferences, IPD 13A.

Lecture 11/26: Revealed Preference Analysis, IPD 13.4.
Problem Set 5 due.

Section 12/3 (regular lecture time and place): Discuss Problem Set 5. Review for final exam.

Final Exam: 12/5 in class (90 minutes)