

#### OVERVIEW

This course is intended for advanced (2nd year) graduate students in economics. The aim is to cover a range of important topics in modern econometric theory. The focus is on the construction, analysis, and theory of linear and nonlinear models with stationary (usually iid) data, using asymptotic methods. The course will not cover bayesian or time series topics. Students are assumed to have training in calculus, probability, statistics, matrix algebra, and linear regression models.

Most of the material in this course will come from the following 5 sources:

(G) Greene, W. H. (2000), "Econometric Analysis," 4th or 5th edition, Prentice Hall. Abbreviated G in the syllabus below (note earlier editions have some serious errors in them).

(S) Serfling, R.J., (1980) "Approximation Theorems of Mathematical Statistics," Wiley. Abbreviated S below. Only the first few chapters will be used.

Engle, R.F. and D. L. McFadden (1994) "Handbook of Econometrics, vol. IV," North-Holland.

The following three chapters from this handbook will be used. They can be downloaded for free from <http://www.elsevier.com/hes/books/02/menu02.htm>

(NM) "Large Sample Estimation and Hypothesis Testing," by Newey, W.K., and McFadden, D., Chapter 36. This chapter is abbreviated NM below.

(HL) "Applied Nonparametric Methods," by Hardle, W. and Linton, O., Chapter 38. This chapter is abbreviated HL below.

(P) "Estimation of Semiparametric Models," by Powell, J., Chapter 41. This chapter is abbreviated P below.

Other books you may find useful for additional reading are:

Primarily for the earlier parts of the term:

Amemiya, T. (1985) Advanced Econometrics.

Spanos, A., (1990) Statistical Foundations of Econometric Modeling.

Mittelhammer, R.C., G.G. Judge, and D.J. Miller, (2000) Econometric Foundations.

Primarily for the later parts of the term:

Lee, M.J., (1996) Methods of Moments and Semiparametric Econometrics For Limited Dependent Variables Models.

Pagan, A. and A. Ulah, (1999) Nonparametric Econometrics.

GRADING: midterm: 50%, Final: 50%.

#### SYLLABUS

1. Properties of Estimators, Asymptotic Theory

S 1, 2 G 4,

2. Linear Models - OLS and GLS Estimation

G 6, 11.1-11.4, 9, 11, 12.

3. Consistency

NM 2-2.3, 2.7

4. Maximum Likelihood Estimation

G 4.5, 19, NM 2.4, 3.0-3.2

5. Nonlinear Least Squares, Extremum Estimation

G 10, 5, NM 2.2, 3.1-3.5

6. Least Absolute Deviations and other Extremum Estimators

G 9.8, NM 2.8, 7

7. The Generalized Method of Moments

G. 4.7, 11.5-11.6, NM 2.5, 3.3

8. Two Step Estimators, Generated Regressors, and Nuisance Parameters

NM 6, G. 4.6

9. Latent Variable, Index, and Limited Dependent Variable Models

G 19, 20, and skim P 3, will cover that more deeply later.

10. Nonparametric Density Estimation

HL 1,2

11. Nonparametric Regression

HL 3,4,5

12. Semiparametric Estimators

HL 6, P 1, 2.5, 3

-if time permits, will also cover

13. General hypothesis Testing for Extremum, GMM, and related estimators

NM 9, G 4.8, 4.9, 6.8, 7, 9.6, 10.4, 11.6

14. The Bootstrap and other Resampling Techniques

handouts will be provided