UNIVERSITY OF NORTH CAROLINA
Department of Economics

Economics 275 | Dr. Gallant
Syllabus | Fall 2000

Purpose: The course covers nonlinear and nonparametric methods useful in economics and other disciplines. At the extreme, they allow efficient estimation of the parameters of a nonlinear structural model that is so intractable that one can only simulate data from it. General equilibrium models and systems of differential equations often lead to this situation. The prerequisites are a good understanding of linear models and of either multivariate linear regression or three-stage least-squares, Economics 271 and 273 for example.

Meets: M and W, 11:00 a.m. to 12:15 p.m., Room 308 Gardner Hall.

Topic	Reading Assignment
1. Deterministic chaos and neural nets	Nychka et al. (1990) "Statistics for Chaos" Statistical Computing and Statistical Graphics Newsletter 1, 4–11.
	Gallant and White (1992) "Learning the Derivatives of an Unknown Mapping ..." Neural Networks 5, 129–138.
2. Density estimation and nonparametric regression	Silverman (1986) Density Estimation for Statistics and Data Analysis Chapter 1, Chapter 2, Chapter 3.
	Wand and Jones (1995) Kernel Smoothing Chapter 3, Chapter 5
3. Univariate nonlinear models	Gallant (1987) Nonlinear Statistical Models Chapter 1. Univariate Nonlinear Regression.
4. Univariate nonlinear models: special situations	Gallant (1987) Nonlinear Statistical Models Chapter 2. Univariate Nonlinear Regression. Special situations.
5. Introduction to nonlinear multivariate regression and simultaneous equations models	Berndt and Wood (1975) "Technology, Prices, and the Derived Demand for Energy," Review of Economics and Statistics 3, 376–384.
6. Multivariate nonlinear regression	Gallant (1987) Nonlinear Statistical Models. Chapter 5. Multivariate Nonlinear Regression Read only pages 267-357.

Topic	Reading Assignment
7. Nonlinear two- and three-stage least squares	Gallant (1987) Nonlinear Statistical Models Chapter 6, Nonlinear Simultaneous Equations Models
8. Generalized method of moments estimators	Gallant (1987) Nonlinear Statistical Models Chapter 6, Nonlinear Simultaneous Equations Models
9. Seminonparametric methods, time series applications	Gallant and Tauchen (1997) "SNP: A Program for Nonparametric Time Series Analysis, User's Guide, File snpguide.ps or snpguide.pdf
10. Efficient method of moments	Gallant and Tauchen (2000) "Efficient Method of Moments," File ee.ps or ee.pdf.
	Gallant and Tauchen (1997) "EMM: A Program for Efficient Method of Moments Estimation, User's Guide. File emmgude.ps

There is no class 9/4 (Labor Day), 10/6 (Fall Break), 9/11 (travel), 11/22 (Thanksnksgiving), and 12/6 (travel). Office hours are Monday, Wednesday, and Friday from about 9 a.m. to 4 p.m.; an appointment is suggested. Satisfactory completion of all homework earns a grade of P. This, plus a passing score on the final exam earns a grade of H. The final is optional. It can be used to supplement homework to earn an H or to supplement homework to earn a P when homework performance is unsatisfactory. A project approved by the instructor may be substituted for the final exam. Homework and other class information is posted on the net at URL http://www.unc.edu/∼arg/econ275.