

Syllabus

This course is designed to expose you to the statistical techniques economists use in estimating, testing, and forecasting economic relationships. Successful completion of this course should allow you to read and understand the basic techniques used in the professional empirical literature in economics.

Time and Location: TTH 12:30-1:50 Link Hall 114

Pre-Requisites: ECN 621 Full knowledge of the material in these courses is expected. Knowledge of some regression software is also recommended, including STATA, MATLAB, Python, and C/C++.

Textbook: Most of the course is designed around detailed notes. These notes will be available on Blackboard. Recommended textbooks include,

- *Stochastic Limit Theory*, by James Davidson, published by Oxford University Press, 1994
- *Time Series Analysis*, by James Hamilton, published by Princeton University Press, 1994
- *Nonparametrics Econometrics, Theory and Practice*, by Qi Li and Jeffrey Racine, published by Princeton University Press, 2007
- *Econometrics*, 5th Edition by Badi Baltagi, published by Springer, 2011

Some other books containing interesting applications:

- *Introduction to Econometrics*, 3rd Edition by James H. Stock and Mark W. Watson, 2010, published by Pearson/Addison-Wesley.
- *Econometric Analysis*, 6th edition by Greene William, 2008, published by Prentice Hall.
- *Introductory Econometrics: A Modern Approach*, Fifth Edition by Jeffrey M. Wooldridge, published by South-Western.

Grading: problem sets 30%, the midterm exam 30%, and the final exam or a term paper worth 40%. We will discuss.

Problem Sets: There will be 4 problem sets, roughly one every month. You can work in groups with at most 3 members.

Exams: The midterm exam will be in the midterm week. The final exam date will be posted later. It is cumulative for the course, but will focus primarily on the material after the midterm, and will be during the regularly scheduled final exam period.

Disability Services: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located at 804 University Avenue, room 309, or call 315-443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue "Accommodation Authorization Letters" to students with documented disabilities as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Religious Observances: SU's religious observances policy, found at http://supolicies.syr.edu/emp_ben/religious_observance.htm,

The University recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements

that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice/Student Services/Enrollment/My Religious Observances from the first day of class until the end of the second week of class.

Office Hours: Tuesday, 3:30-4:30, in 127 Eggers Hall AND by appointment.
I can be reached by e-mail at ywang402@maxwell.syr.edu.

Topical Outline

1. Extremum Estimator—The course begins with econometric analysis with commonly used methods, such as OLS, GMM, MLE, and etc. Consistency and asymptotic normality are rigorously considered.
2. Discrete choice—This section discusses discrete choice models, which are widely used in microeconomic analysis.
3. Cluster Standard Error — a special topic for conducting correct inference (test and confidence interval) with multi-level data. For example, you have individual level observations from multiple villages.
4. Simulation Based Methods—Method of simulated moments is introduced. This is useful especially in the structural model which is complicated to estimate.
5. Nonparametric Method—Kernel estimation is introduced. Consistency, asymptotic normality, and the choice of bandwidth are discussed.
6. Time Series 1— LLN and CLT on stationary and weakly dependent process are introduced. Main idea remain the same as in the random sample but the standard error needs to be corrected.
7. Time Series 2— Functional CLT and Nonstationary data are discussed. They are usually applied in macroeconomics and finance.