

ECO 521: Econometrics
SUNY at Stony Brook
Spring Semester, 2002

Professor: Sangin Park
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Lectures: Tu Th 9:50 – 11:10 a.m. at SBS-N603
Office Hours: Tu Th 11:30 a.m. – 12:30 p.m.
T.A.: Olga Borovikova (vborovik@ic.sunysb.edu)
Recitations: Tu 12:50 – 1:45 p.m. at SBS-S632
Office Hours: W 11:30 a.m. – 12:30 p.m. at SBS-S628

Course Description: In this course, we discuss basic techniques in regression analysis. The emphasis will be on estimations and hypothesis tests of a variety of regression models.

Textbook: Paul A. Ruud, *An Introduction to Classical Econometric Theory*, Oxford University Press, 2000.

Grading: Grade for the course will be based on exams and problem sets. There will be about 6 problem sets, which count for **10%** of the final grade. There will be three exams during the course: two in-term exams (**25%**, respectively) and a final (**40%**). The final will cover all the materials. The dates for the in-term exams will be announced during the course. The final will be given according to the published schedule.

Policies: No makeup will be given. Excuses for absences from exams are limited to verifiable illness and emergencies. An unexcused absence from the exam will result on a score of zero. In the case of illness or emergency, if you are unable to contact me, be sure to contact the department of Economics at 632 - 7530. A failure to turn in problem sets when due will lower your grade to 2/3 a grade.

If you have a physical, psychological, medical or learning disability that may impact on your ability to carry out assigned course work, I would urge that you contact the staff in the Disabled Student Service office (DSS), Room 133 Humanities, 632-6748/TDD. DSS will review your concerns and determine, with you, what accommodations are necessary and appropriate. All information and documentation of disability is confidential.

Course Outline / Reading List: The outline presented here is tentative. Changes may be made as we progress. Lectures should be viewed as complements to rather than substitutions for the reading. If you have difficulty, seek me or T.A. out early. The course builds on itself, so failing to address questions earlier will make your studies more difficult later.

1. Review on Matrix Algebra Appendix C
 : Inverse matrices; Characteristic roots and vectors; Positive definite matrices; Quadratic forms in normal variables; Differentiation.
2. Linear Regression Model Chs. 1-9, 13.4
 : The linear model; Classical assumptions; LS estimation; Geometric interpretation; Partitioned regression; Goodness of fit; Exact, finite sample properties; Large sample properties; Forecasting.
3. Hypothesis Testing Chs. 10, 11, 17
 : Basic concepts; t ratio; F test; Wald, Lagrange Multiplier, and Likelihood Ratio Test Statistics; Non-nested Tests.
4. Model Specification and Data Problem Lecture Note
 : Dummy variables; Misspecification; Multicollinearity; Grouped data; Measurement errors; Proxy variables.

===== EXAM 1 =====

5. Heteroscedasticity Ch. 18
 : LSE and White estimator; GLS estimator; Feasible GLS estimator; Testing.
6. Autocorrelated Disturbances Ch. 19
 : Stationarity; LSE, Newey and West's estimator, and GLS estimator; AR(1); Testing.
7. Instrumental Variables Estimation Ch. 20
 : Assumptions; IV estimator; 2SLS estimator; Hausman test.
8. GMM Estimation Chs. 21, 22
 : Ingredients of basic problem; Examples; Consistency; ULLN; Asymptotic normality; Test statistics.

===== EXAM 2 =====

9. Simultaneous Equations Models Ch. 26
 : SUR model; Simultaneous equations; Identification; 2SLS (LIML); 3SLS (FIML); Hypothesis testing.
10. Introduction to Nonparametric Estimation Lecture Note
 : Kernel estimators; Optimal rate of convergence; Automatic smoothing parameters.