I. Catalog Description

EC 552, 553  Econometrics (4) (4)

Specification and statistical inference in econometric models; estimation, verification and prediction of economic variables; recent empirical studies, advanced topics in econometrics. 4 lecture/discussions. Prerequisite: Calculus and matrix algebra, EC 401, EC 402, EC 403, and EC 322/EC 322A. Unconditional standing required.

II. Required Background or Experience

Calculus and matrix algebra, EC 401, EC 402, EC 403, and EC 322/EC 322A. Unconditional standing required.

III. Expected Outcomes

Students in EC 552 and EC 553 will:

a) identify and apply ordinary least squares procedures to economic behavior,

b) examine alternative estimation procedures for applications when ordinary least squares is inappropriate, ie. generalized least squares, orthogonal regression, maximum likelihood estimation,

c) practice the art of economic and econometric model building,

d) compare and contrast various estimation procedures involving simultaneous equations systems,

e) analyze the interaction between economic theory and empirical economics, and

f) investigate and summarize cutting-edge econometric studies.

IV. Text and Readings

Texts:


References:

Economic Modeling
Econometric Theory
Econometrica
International Journal of Forecasting
Journal of Business and Economic Statistics
Journal of Applied Econometrics
Journal of Economic Behavior
Journal of Economic Surveys
Journal of Econometrics
Journal of the American Statistical Association
Journal of Quantitative Economics
Review of Economics and Statistics

V. **Minimum Student Materials**

Required texts, notebooks, calculators, and access to library references and personal computers.

VI. **Minimum College Facilities**

Classroom suitable for lecture/discussions. Library collection of references listed and a collection of economic statistical data from government agencies and private organizations. Computer lab with student work stations and SAS software.
VII. Course Outline

For EC 552:

A. History and Current Status of Econometrics
   1. Review of Probability Theory and Statistical Inference
   2. Survey and Introduction to Various Available Computational Software Packages for Econometricians

B. Simple Linear Models: Model Specification and Parameter Estimation
   1. Inference in the Linear Model: Properties of the Estimators
   2. Functional Forms, Interval Estimates, Hypothesis Testing, Reporting Results and Analysis
   3. General Linear Statistical Model Specification and Estimation

C. Inference in the General Linear Model
   1. Combining Sample and Nonsample Information
   2. Dummy Variables and Varying Coefficient Models

D. Problems in Model Specification
   1. Multicollinearity
   2. Large Sample Theory and Random Regressors
   3. Model Misspecification
   4. Heteroscedasticity
   5. Autocorrelation
For EC 553:

A. SUR Models: Combining Time Series and Cross Section Data

B. Simultaneous equation models: Identification problem
   1. Identification Problem
   2. Estimation

C. Univariate Time Series Analysis and Forecasting

D. Bivariate and Multivariate Time Series Models

E. Nonlinear Least Squares

F. Discrete Dependent Variables Models
   1. Logit Analysis
   2. Probit Analysis

G. Recent Advances in Econometrics

VIII. Instructional Methods

Lecture/discussions of assigned texts and reading materials. Instructor-led demonstrations of computer applications of econometric modeling. Review of assigned problems and exercises in the computer lab. Student research papers on a macroeconomic topic of their choice.

IX. Evaluation of Outcomes

Students are evaluated based on class participation, completion of assigned exercises and problem sets, written research papers, and midterm and final examinations.