Course Information

General: Economics 8828 is the first of two courses in the field of econometrics offered by the Department of Economics. Course material will emphasize methods of estimation in cross-section and panel data sets, and the practical application of these methods. Topics include but may not be limited to: limited and discrete dependent variables; sample selection models; panel data; and errors in variables. Throughout, students are expected to be able to write computer programs in GAUSS, available either as microcomputer software or on rastro, to implement the estimators and tests studied in the course.

Prerequisites: Economics 7818 and 7828, or equivalent.

Requirements: There will be two lectures weekly, meeting Tuesday and Thursday from 9:30 to 10:45. There will be a final exam; periodic problem sets; and a term paper.

Each student will choose one topic to pursue in depth, resulting in an original, empirical research paper. The paper requirement may be combined with other courses. Students will give a five to ten minute presentation of their paper proposal in class in midsemester, and a fifteen minute presentation in the last week of class.

Grading: Grades will be determined approximately as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Final exam</td>
<td>45%</td>
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<tr>
<td>Paper</td>
<td>35%</td>
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<tr>
<td>Residual:*</td>
<td>20%</td>
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*This includes problem sets, class participation, interaction in office hours, subjective evaluation of written work, etc.

Text: There is no required text. Readings will be taken from the books and journals listed below. All are available from the library. For statistical background, an excellent source is your 7818 text by Amemiya; for general econometrics: Greene, and Russell and MacKinnon; for limited and discrete dependent variable models, the monograph by Maddala is recommended; for panel data, the book by Baltagi is excellent.

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1One potential source of data is the Journal of Applied Econometrics data archive, a repository for data used in articles published in that journal. It is accessible on the Internet.
General Topics to be Covered:

I. Introduction and Review of the Normal Linear Regression Model; (weeks 1-2).
   1. Introduction - outline of methods and models
   2. The linear regression model
      *Problem Set #1: Introduction to data analysis with Gauss*

II. Limited and Discrete Dependent Variables (weeks 3-9).
   1. Probit and logit
   2. Tobit
      *Problem Set #2: The Value of Information on the Dependent Variable*
   3. Sample selection models
      *Problem Set #3: Estimation in Bivariate Normal Models*
   4. Duration data
      *Problem Set #4: What's an Oscar Worth?*
   5. Multiple equation models
      *Problem Set #5: Program Participation and Energy Conservation*

III. Panel Data (weeks 10-13)
   1. Notation and basic estimation
   2. Fixed and random effects
   3. Instrumental variables
      *Problem Set #6: Monthly Models of Energy Savings*

IV. Errors-in-Variables (weeks 14-16)
   1. The errors-in-variables model (EVM)
   2. Instrumental variable estimation
   3. Estimation with repeated measurements
      *Problem Set #7: Using Engineering Estimates in Conservation Models*