**Course Outline**

The goal of this course is to present and illustrate the basic techniques of empirical investigation in economics. The course emphasizes both the theoretical and practical aspects of statistical analysis and is organized around a particular empirical research topic. Computer applications are used to illustrate most of the statistical techniques covered. Emphasis will be placed on regression analysis that can be used to examine the relationship between two or more variables. Issues involved in estimation, including goodness-of-fit, statistical inference, heteroschedasticity, serial correlation, limited dependent variables, are discussed. The problem of endogeneity is then introduced, with a discussion of instrumental variables methods.

**Texts**


**Grading**

Homework problems, a mid-term examination, an econometric project, and a comprehensive final examination will be used to gauge students' comprehension of the course material. The following weights will be applied in determining the final grade. Students who miss a test, homework or project deadline without making prior arrangements, will receive a zero for that assignment. Unless otherwise notified, there will be neither makeup exams nor makeup homework. The mid-term exam will be at our regular class time. Final exam is scheduled at 2:15-4:15, December 16 (Friday).

- Homework assignments: 20%
- Econometric project: 10%
- 2 midterms: 40%
- Final exam: 30%

*Project.* Students are encouraged to work together on the project. The students will work as a group to collect and organize data for the econometric project. However, each student will submit an individual project. Students groups will review and critique other students’ computer programs and write-ups.

*Examinations.* All tests will be closed-note and closed-book. A cheat-sheet will be provided in each exam.
Unless told otherwise, students are responsible for understanding and reproducing all of the material covered in lecture. Mathematical derivations will appear in the homework assignments and tests. This means (1) that examinations will require substantial preparation and (2) that students should ask questions during class if they do not understand something.

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**Proposed Topics**

0. Introduction Ch.1
   Topics: econometric methods, data analysis, using software, project

1. Basics of Probability and Statistics Ch. 2-5
   Topics: random variables, probability theory, covariance and correlation, probability distributions, statistical inference, properties of estimators, hypothesis testing.

2. Basic Regression Ch. 6-7
   Topics: linear two variable regression, OLS, hypothesis testing, variance and standard errors.

3. Multiple Regression and Related Topics Ch.8-10
   Topics: multiple regression, functional forms of regression models, dummy variables.

4. Regression Analysis in Practice Ch.11-14
   Topics: multicollinearity, heteroskedasticity, autocorrelation, model selection criteria and tests, lag models, logit and probit analysis.