ECONOMICS 244
APPLIED ECONOMETRICS

This course examines identification issues in empirical microeconomics. It supplements topics covered in Economics 240A/B, 241A, with a focus on the sensible application of econometric methods to empirical problems in economics and policy research – particularly labor and health economics. The course examines issues that arise when analyzing non-experimental data and provides a guide for tools that are useful for applied research. The course also emphasizes how a basic understanding of theory and institutions can help inform the analysis. By the end of the course, students should have a firm grasp of the types of research designs that can lead to convincing analysis and be comfortable working with large-scale data sets.

**Course Time:** Friday, 9-11:30 in 608-7 Evans

**Home Page:** TBA

**Office Hours:** Tuesday and Friday, 4-5, 657 Evans Hall

Required Background: Economics 240A and B
Suggested Background: Economics 241A

**Course Requirements:**
Students should read assigned readings and attend all lectures as some class material will not be in the readings. There will be 4 applied exercises. There will be no final exam.

Class handouts will be available at Janet Henry’s office in 643 Evans Hall and on the course home page.

**Course Grading:**
80% 4 Problem Sets (Applied Exercises)
20% Class participation

**Late problem sets will not be accepted.**

Many of the readings covered in class will be made available on the course webpage.

We will not follow any particular text. The following books may be useful as references on the econometric tools covered.

**Part I: Econometric Methods/Models**

1. Introduction – econometric models, the scientific method, and “credible” inference.
2. The linear regression model and regression analysis as a statistical tool. Measurement error, “omitted variables” bias, and the functional form of the conditional expectation. When does the tool of linear regression lead to “causal” inferences?
3. Selection on observables and program evaluation. The method of matching and propensity score approaches to dimensionality reduction.
4. The regression discontinuity design.
6. Heterogeneous treatment effects, self-selection, and identification of average treatment effects.
7. Experimental and Quasi-experimental research designs.
8. Linear panel data models and program evaluation. Random effects, correlated random effects, and fixed effects models. Dynamic panel data models and the feedback problem.

**Part II: Topics in Health and Labor**

1. Human capital models and production functions. Health production functions.
2. Effects of education and schooling interventions on production function. Effects of training.
3. Impacts of smoking, air pollution and other “inputs” on health.
4. Relations between economic status and health and the directions of causality. Race, economic status, and health.
5. Role of birth weight and other markers in health and economics research.
6. Long-run and intergenerational linkages between health and economic status.

**Rough outline of lectures and readings**

*Lectures 1 and 2: Overview and the linear regression model*


*Lectures 3, 4, 5: Selection on observables, propensity score and matching methods*

Lecture 5, 6: Regression discontinuity design approaches to omitted variables bias


Lectures 7, 8, 9, 10: Selection on unobservables, instrumental variables, control functions, heterogeneous treatment effects and self-selection


Lectures 10, 11, 12: Panel data (and siblings) models


Lectures 12, 13, 14: Health Capital, Demand for Health, and Health Production Functions

Background papers


**Recent research**


