

## Field Course Descriptions

**Ph.D. Field Requirements** 12 credit hours with 6 credit hours in each of two fields selected from the following fields. Each class can count towards only one field. Course descriptions are subject to change.

Field options: Agricultural Economics, Econometrics, Environmental and Natural Resource Economics, Industrial Organization, International Economics, Public Economics

• **Agricultural Economics (Required for Agricultural Economics Ph.D.)**

**504 Economic Theory V** Topics include duality and advanced supply demand analysis. 50% consumption, including the Envelope Theorem, Distance function, inverse demand functions, separability, aggregation, intertemporal demand, empirical demand systems with application to agricultural commodities, food consumptions, international market demand. 50% Production, including multiple output modeling, inverse factor demand functions, separability, aggregation, efficiency, and technical change.

**Choice of one** of the following courses: International Trade (571); Natural Resource Economics (581); Theory Industrial Organization (594); International Development (572)

Journals with related research: *American Journal of Agricultural Economics*, *Journal of Agricultural and Resource Economics*, *Applied Economic Perspectives and Policy*, *Food Policy*

• **Econometrics**

**513 Advanced Econometrics III**

GAUSS programming introduction  
Programming basic estimation and inference  
Nonlinear least squares and maximum likelihood  
Generalized regression models

Generalized methods of moments  
Empirical maximum likelihood estimation and inference  
Nonparametric estimation and inference  
Bayesian Estimation and inference

**514 Advanced Econometrics IV**

1. Qualitative and Limited Dependent Variables
  - a. Censored Variables and Truncated Distributions
  - b. Binary Choice Models
  - c. Logit, Probit, Multinomial Logit, and Random Parameters Models
  - d. Structural Economic Models of Discrete/Continuous Choice
2. Pooled Cross-Section / Time Series Data and Models
  - a. Fixed Effects
  - b. Random Effects
  - c. Error Components
  - d. Spatiotemporal Systems and GMM Estimation
3. Advanced Topics in
  - a. Nonparametric Regression Analysis
  - b. Bootstrapping, Monte Carlo Experiments, and Resampling Methods
  - c. Bayesian Econometrics
  - d. Information Theory and the Empirical Likelihood Method

Journals with related research: *Journal of Econometrics*, *Econometrica*, *Econometric Theory*, *Journal of Business and Economic Statistics*, *Applied Econometrics*

## • Environmental & Natural Resource Economics

**581 Natural Resource Economics** This course applies economic principles to natural resource issues. Economic theory will provide a framework to analyze questions of natural resource use and misuse, natural resource policy and law, scarcity and sustainability. The first half of the course emphasizes economic modeling of natural resource problems and the second half highlights policy analysis of such problems. Each topical section is chosen to allow application of a modeling approach distinct from other sections.

**582 Environmental Economics** This course analyzes the theoretical tools and empirical techniques necessary for understanding of resource and environmental economics, developed in both static and dynamic framework. The main focus of the course is on the theory of externalities and regulation theory, as applied to environmental problem. The course gives a special emphasis to environmental problems using *game theory* and *mechanism design*. The major objectives of this class are: (1) to enhance the student's ability to conduct professional economic research and to develop and present professional proposals, papers, and presentations; and (2) to increase the student's ability to analyze environmental policies through a deeper understanding of economic behavior and incentives; economic institutions, property rights and contracts.

Journals with related research: *The American Economic Review*, *Journal of Environmental Economics and Management*, *Review of Economics Studies*, *Rand Journal of Economics*, *Journal of Economic Behavior and Organization*, *Environmental and Resource Economics*, *Land Economics*, *Resource and Energy Economics*, *Journal of Forest Economics*, *Fishery economics and management*, *Journal of Public Economics*, *Journal of Political Economy*

## • Industrial Organization

**594 Theory of Industrial Organization** Topics include market structures; product selection, quality, and advertising; product differentiation: price competition and non-price competition; information and strategic behavior: reputation, limit pricing, and predation; short-run price competition; dynamic price competition and tacit collusion; entry, accommodation, and exit; and research and development and the adoption of new technologies.

### **593 Applications in Microeconomic Topics (prerequisite EconS 594)**

Selected topics in Applied Microeconomics. Two to three topic modules are covered in a semester.

Example modules include:

Health: Advanced subject in economics of the healthcare sector. Considers selected topics in depth, such as the analysis of diseases and health behaviors, design and financing of health insurance, behavior of nonprofit hospitals, role of competition in the medical care market, determinants of technological change, and effects of government regulations. Journals of related interest include: *Journal of Health Economics*, *Health Economics*, *Health Care Management Sciences*, *Journal of Human Resources*, *Medical Care Research and Review*, *Applied Economics*.

Transportation: Subject matter will include structure of the transportation industry, demand estimation under alternative competitive situations, cost estimation and pricing determination, and modeling techniques. The pedagogical approach will include lectures and readings, critiques of journal articles, a required major paper/presentation series. Journals with related research: *Rand Journal of Economics*, *International Journal of Industrial Organization*, *Review of Industrial Organization*.

Labor and Education: Topics in human capital with an empirical focus: estimating internal rates of return, market imperfections and the role of government in education, the relationship between human and health capital. Empirical techniques for identifying and estimating treatment effects: instrumental variables, difference-in-differences, regression discontinuity, selection correction, and panel-data methods.

Journals of related interest include: *Rand Journal of Economics*, *International Journal of Industrial Organization*, *Review of Industrial Organization*, *Journal of Labor Economics*, *Journal of Human Capital*, *Economics of Education Review*

## • International Economics

**571 International Trade** The course covers recent developments in trade theory and policy, including international factor movements, empirical analysis of trade flows, and strategic trade policies. The course provides an advanced and detailed overview of the international trade literature, with emphasis on Ricardian, Heckscher-Ohlin, New Trade, and Heterogenous firm models; provides the tools for applying and understanding empiric results, with emphasis on gravity estimates and panel data applications; and provides best practices on presenting and critiquing economic papers.

**572 International Development** The course would focus on structural and two sector growth models as applied to developing countries and countries in transition; empirical estimation of sources of growth and responses to both external and internal constraints (gap models) and computable general equilibrium empirical models; growth and re-distributive policies; structural adjustment and the role of international agencies. It will also cover the emerging field of institutional constraints to growth and development.

Journals with related research: *Journal of International Economics*, *Canadian Journal of Economics*, *Review of World Economics*, *Review of International Economics*, *Journal of World Trade*, *Journal of International Trade and Economic Development*, *Open Economies Review*, *Journal of Development Economics*

## • Public Economics

### 582 Environmental Economics

**583 Public Sector Economics** Public sector topics include government debt, public capital, supply side economics. Public choice topics include Arrow's theorem, majority and unanimity, bureaucratic behavior, rent-seeking. Policy topics include policy incidence analysis, optimal policy design, and policy games.

Journals with related research: *Journal of Public Economics*, *Journal of Public Economic Theory*, *International Tax Journal*, *Journal of Urban Economics and Regional Science*, *Urban Economics*