

Graduate Studies Committee Recommendation
(Course descriptions are subject to revision.)

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.

- **Econometrics**

513 Advanced Econometrics III Introductory topics include programming in the GAUSS programming language, Monte Carlo Simulation as a tool for learning about econometric methods, and optimization methods. Core topics include linear model and maximum likelihood estimation and inference, extremum estimation: nonlinear regression models with both semi-parametric methods and parametric (maximum likelihood) methods, generalized least squares, heteroskedasticity and autocorrelation testing, limited dependent variable models. Additional topics will be covered as time permits, including generalized method of moments (GMM) methods, model selection criteria, systems of equations (SUR and simultaneous), empirical likelihood estimation and inference, and maximum entropy estimation and inference.

514 Advanced Econometrics IV Introductory topics include programming in the gauss programming language, Monte Carlo simulation as a tool for learning about econometric methods, optimization methods, and basic estimation and inference procedures (GLM and spatial regression examples). Core topics include constrained estimation, testing linear and nonlinear hypotheses, bootstrap resampling methods, generalized method of moments (GMM) estimation and inference, nonparametric regression analysis, and an introduction to bayesian econometrics.

- **Environmental & Natural Resource Economics**

581 Natural Resource Economics This class investigates the economic dynamics of managed biological systems. Biological constraint systems are embedded into dynamic-optimization and evolutionary-game frameworks to investigate the economic dynamics of resources exploited by a sole owner, or by a group of competitive economic agents interacting strategically. Specific applications include: (1) bioeconomic dynamics of stocking grazing animals under conditions of declining forage nutrients; (2) bioeconomic dynamics of trapping strategies for a diffusing nuisance-mammal population; (3) hydro-economic dynamics of sedimentation management in dam/reservoir projects; and (4) bioeconomic dynamics of controlling the spread of infectious diseases through vaccination.

582 Environmental Economics This course covers economic theory of environmental policy, including externalities, the Coasian critique; tax incidence and anomalies; indirect taxes; the double dividend; environmental standards; environmental regulation; impact of uncertainty on taxes and standards; contract theory and mechanism design; monitoring, penalties, and regulatory strategy; emissions markets. The non-market valuation section of the course starts with economic models for quality and welfare measures of quality change. Approaches to non-market valuation include single-equation travel cost, discrete choice models, contingent valuation (CV) theory and implementation and survey design; ranking, rating, conjoint analysis, and choice experiments.

- **International Economics**

571 International Trade This course acquaints students with the basic tools and propositions of international trade theory. Beyond that there is a focus on recent developments in the theory of trade and trade policy, including: (1) the incorporation of imperfect competition into the theory of international trade, (2) international factor movements, (3) the empirical investigation of trade flows, and (4) strategic trade policies.

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.

- **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)

Health: Advanced subject in economics of the healthcare sector. Considers selected topics in depth, such as 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.

Sports: Topics include the economics of leagues/conferences, such as their forms and functions and incentives to join a league/conference; single-entity versus joint-venture activities. The league/conference problem of competitive balance; optimality versus league choices versus owner/athletic director choices. League remedies. Competition Policy; and antitrust insights.

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.

- **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)

- **Public Economics**

582 Environmental Economics (valuation, externalities, public goods, and applied welfare economics)

583 Public Sector Economics (new number, new title, new description) 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.