

# ECONOMICS (ECON)

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**Courses primarily for undergraduates:**

## **ECON 101: Principles of Microeconomics**

(3-0) Cr. 3. F.S.SS.

Resource allocation, opportunity cost, comparative and absolute advantage. Supply and demand. Marginal analysis. Theories of production and consumption, pricing, and the market system. Perfect and imperfect competition and strategic behavior. Factor markets. Present discounted value.

## **ECON 101H: Principles of Microeconomics: Honors**

(3-0) Cr. 3.

*Prereq: Honors program students only*

Resource allocation, opportunity cost, comparative and absolute advantage. Supply and demand. Marginal analysis. Theories of production and consumption, pricing, and the market system. Perfect and imperfect competition and strategic behavior. Factor markets. Present discounted value.

## **ECON 101L: Laboratory in Principles of Microeconomics**

(0-2) Cr. 1. F.

*Prereq: Concurrent enrollment in the appropriate section of ECON 101*

Discussion of material typically covered in Econ 101. Application of economic principles to real world problems. Economic principles and basic business management concepts applied to decision-making in agribusiness operations.

## **ECON 102: Principles of Macroeconomics**

(3-0) Cr. 3. F.S.SS.

*Prereq: ECON 101 recommended*

Measurement of macro variables and general macro identities. Classical models of full employment. Production and growth. Savings and investment. Employment and unemployment. Money, inflation, and price levels. Operation of the U.S. banking system. Fiscal and monetary policy. Elements of international finance.

## **ECON 102H: Principles of Macroeconomics: Honors**

(3-0) Cr. 3.

*Prereq: ECON 101 recommended; admission to the Honors program.*

Measurement of macro variables and general macro identities. Classical models of full employment. Production and growth. Savings and investment. Employment and unemployment. Money, inflation, and price levels. Operation of the U.S. banking system. Fiscal and monetary policy. Elements of international finance.

## **ECON 110: Orientation in Agricultural Business**

(1-0) Cr. 1. F.

Orientation course for freshman and new transfer students in agricultural business.

## **ECON 207: Applied Economic Optimization**

(2-2) Cr. 3. F.S.

*Prereq: MATH 151, MATH 160, MATH 165 or equivalent*

Application of linear algebra, calculus and unconstrained and constrained optimization techniques to economic problems. Learning outcomes include the ability to (i) identify the objective, decision variables and constraints in economic decision problems, (ii) represent elements of an economic problem in simple mathematical models, (iii) identify and apply mathematical tools that can be used to solve the problems, (iv) identify the strengths and limitations of the solution method, and (v) interpret the economic meaning and implications of the solution.

## **ECON 230: Farm Business Management**

(2-2) Cr. 3. F.S.

*Prereq: ECON 101; ACCT 284*

Business and economic principles applied to decision making and problem solving in the management of a farm business. Cash flow, partial, enterprise, and whole farm budgeting. Information systems for farm accounting, analysis, and control. Obtaining and managing land, capital, and labor resources. Alternatives for farm business organization and risk management.

## **ECON 234: Small Business Management**

(3-0) Cr. 3.

*Prereq: ECON 101*

An introduction to small business management, entrepreneurship, and economics utilizing a series of case studies. Exploration of issues related to starting or acquiring a new business and development of knowledge and skills for successful management of a small business, with an emphasis on agricultural business.

## **ECON 235: Introduction to Agricultural Markets**

(3-0) Cr. 3. F.S.

*Prereq: ECON 101*

Basic concepts and economics principles related to markets for agricultural inputs and products. Overview of current marketing problems faced by farms and agribusinesses, farm and retail price behavior, structure of markets, food marketing channels, food quality and food safety, and the role of agriculture in the general economy. The implications of consumer preferences at the farm level. Introduction to hedging, futures, and other risk management tools.

**ECON 292: Career Seminar**

(1-0) Cr. 1.

*Prereq: Classification in economics or agricultural business*

Career opportunities in the various industries and government institutions. Required training and skills needed to perform successfully in different types of careers. Factors important in finding and obtaining employment either before or after graduation including personal resumes, interviewing, and letter writing. Only one of ECON 292, 292A, and 292B can be used toward graduation.

**ECON 292A: Career Seminar: Agricultural Business**

(1-0) Cr. 1.

*Prereq: Classification in economics or agricultural business*

Career opportunities in the various industries and government institutions. Required training and skills needed to perform successfully in different types of careers. Factors important in finding and obtaining employment either before or after graduation including personal resumes, interviewing, and letter writing. Only one of ECON 292, 292A, and 292B can be used toward graduation.

**ECON 292B: Career Seminar: Economics and Business Economics**

(1-0) Cr. 1.

*Prereq: Classification in economics or agricultural business*

Career opportunities in the various industries and government institutions. Required training and skills needed to perform successfully in different types of careers. Factors important in finding and obtaining employment either before or after graduation including personal resumes, interviewing, and letter writing. Only one of ECON 292, 292A, and 292B can be used toward graduation.

**ECON 297: Internship**

Cr. 2. Repeatable, maximum of 4 credits.

*Prereq: Permission of instructor and classification in agricultural business or economics*

Students complete a research report, based on their internship or approved work experience, that examines chosen topics in management, marketing or finance. Offered on a satisfactory-fail basis only.

**ECON 298: Cooperative Education**

Cr. R. Repeatable.

*Prereq: Permission of the department cooperative education coordinator; sophomore classification*

Required of all cooperative education students. Students must register for this course prior to commencing each work period.

**ECON 301: Intermediate Microeconomics**

(3-0) Cr. 3-4. F.S.SS.

*Prereq: ECON 101; ECON 207 or MATH 166*

Theory of consumer and business behavior; optimal consumption choices and demand; theory of firm behavior; costs, production, and supply; competitive and imperfectly competitive markets; theory of demand for and supply of factors of production; general equilibrium analysis. Recitation required for 4 credits.

**ECON 301H: Intermediate Microeconomics: Honors**

(3-0) Cr. 3-4.

*Prereq: ECON 101; ECON 207 or MATH 166*

Theory of consumer and business behavior; optimal consumption choices and demand; theory of firm behavior; costs, production, and supply; competitive and imperfectly competitive markets; theory of demand for and supply of factors of production; general equilibrium analysis. Recitation required for 4 credits.

**ECON 302: Intermediate Macroeconomics**

(3-0) Cr. 3. F.S.

*Prereq: ECON 101, ECON 102; MATH 160 or MATH 165*

Theory of income, employment, interest rates, and the price level; fiscal and monetary policy; budget and trade deficits; money and capital inflows, interest rates, and inflation.

**ECON 302H: Intermediate Macroeconomics: Honors**

(3-0) Cr. 3.

*Prereq: ECON 101, ECON 102; MATH 160 or MATH 165*

Theory of income, employment, interest rates, and the price level; fiscal and monetary policy; budget and trade deficits; money and capital inflows, interest rates, and inflation.

**ECON 313: Economics of Sports**

(3-0) Cr. 3.

*Prereq: ECON 101*

Application of economics to issues in sports, including franchising; rival leagues and barriers to entry; cooperative, competitive, and collusive behavior; player productivity and compensation; contracts, unions, and discrimination; antitrust, taxation, and subsidies. Economic concepts include supply and demand, labor economics, pricing, public finance, production, game theory, and industrial organization.

**ECON 320: Labor Economics**

(3-0) Cr. 3.

*Prereq: ECON 101*

Economic analysis of contemporary domestic and international labor market issues including labor supply and demand, unemployment, and employment in the U.S. and elsewhere; investments in and returns to education, training, health, immigration and migration; income inequality; labor productivity; out-sourcing and global competitiveness; work incentives; compensation including benefits; and labor policies such as minimum wages, over-time pay, discrimination, unions, and immigration. Examples drawn from the U.S. and other developed countries with reference to developing countries where relevant.

Meets International Perspectives Requirement.

**ECON 321: Economics of Discrimination**

(Cross-listed with WGS). (3-0) Cr. 3.

*Prereq: ECON 101*

Economic theories of discrimination. Analysis of the economic problems of women and minorities in such areas as earnings, occupations, and unemployment. Public policy concerning discrimination. Poverty measurement and antipoverty programs in the U.S.

Meets U.S. Diversity Requirement

**ECON 330: Advanced Farm Business Management**

(3-0) Cr. 3.

*Prereq: ECON 230*

Effective use of strategic planning, decision methods, and computer assistance for solving farm problems. Applications of economic and management theory to analyze farm business decisions using efficiency measures to assess current resource use and direct the farm business analysis, planning, and tax process.

**ECON 332: Cooperatives**

(3-0) Cr. 3.

*Prereq: ECON 101*

Survey of cooperative business structure, including historical developments in the United States, principles of cooperation, state and federal authorization for cooperative activity, economic motivations and foundations, governance, marketing and pricing strategies, and financing, capitalization and taxation considerations. Students will learn how the cooperative model is applied in a variety of markets.

**ECON 334: Entrepreneurship in Agriculture**

(3-0) Cr. 3. F.S.

*Prereq: ECON 101*

Introduction to the process of entrepreneurship within the agricultural and food sectors. Emphasis on opportunity recognition and assessment, resource acquisition and feasibility analysis for both private and social enterprises. Students will develop a comprehensive feasibility study for a new business or non-profit organization.

**ECON 335: The Economics of Global Agricultural Food and Bio-energy**

(Cross-listed with GLOBE). (3-0) Cr. 3.

*Prereq: ECON 101*

Applied economic analysis of the determinants of world agricultural production, marketing, and use in feed, food, fiber, biofuel, and other applications, and global food processing and consumption. Analysis of market case studies and various data on global agricultural production and transformation, land and resource use, demography, economic activity, nutrition and health trends.

Meets International Perspectives Requirement.

**ECON 336: Agricultural Selling**

(3-0) Cr. 3.

*Prereq: ECON 101*

Principles of selling with application to agricultural and food related businesses. Attitudes, value systems, and behavioral patterns that relate to agricultural sales. Electronic marketing, selling strategies, preparing for sales calls, making sales presentations, handling objections, and closing sales. Analysis of the buying or purchasing process. Evaluation of agri-selling as a possible career choice.

**ECON 337: Agricultural Marketing**

(3-0) Cr. 3.

*Prereq: ECON 101 required, ECON 235 recommended*

Understanding of agricultural commodity markets for grain, livestock and dairy with emphasis on marketing decisions and risk management for farmers and processors. Hands-on applications of marketing and management tools via market simulations.

**ECON 344: Public Finance**

(3-0) Cr. 3.

*Prereq: ECON 101*

The economic role of governments in market economies. Public goods, externalities, income distribution, and income maintenance programs. The effect of taxes on economic behavior, descriptions of the structure of the principal U.S. taxes, and current reform proposals.

**ECON 353: Money, Banking, and Financial Institutions**

(3-0) Cr. 3. F.S.

*Prereq: ECON 101, ECON 102*

Theoretical and applied analysis of money, banking, and financial markets; interest rates and portfolio choice; the banking industry in transition; the money supply process; the Federal Reserve System and the conduct of monetary policy; macro implications of monetary policy; international finance.

**ECON 355: International Trade and Finance**

(3-0) Cr. 3.

*Prereq: ECON 101, ECON 102*

Explanations of causes of international trade and the impact of trade on welfare and employment patterns. Analysis of government policies towards trade, such as tariffs, quotas, and free trade areas. Theory of balance of payments and exchange rate determination, and the role of government policies. Examination of alternative international monetary arrangements.

Meets International Perspectives Requirement.

**ECON 362: Applied Ethics in Agriculture**

(Cross-listed with SOC). (3-0) Cr. 3.

*Prereq: ECON 101 or SOC 134, junior or senior status in the College of Agriculture*

Identify major ethical issues and dilemmas in the conduct of agricultural and agribusiness management and decision making. Discuss and debate proper ethical behavior in these issues and situations and the relationship between business and personal ethical behavior.

**ECON 364: Rural Property Appraisal**

(3-0) Cr. 3.

*Prereq: ECON 101*

Use of income capitalization, sales comparison and cost appraisal concepts in appraising agricultural resources. Application of underlying economic/business/management principles, especially present value, as they relate to farmland appraisal. Determination and estimation of economic impacts of special consideration and property use factors. Evaluate feasibility and profitability of investment in rural property.

**ECON 371: Introductory Econometrics**

(4-0) Cr. 4. F.S.

*Prereq: ECON 301, ECON 302 OR ECON 353, STAT 326*

Introduction to the models and methods used to estimate relationships and test hypotheses pertaining to economic variables. Among the topics covered in the course are: Single and multiple regression analysis; functional forms; omitted variable analysis; multicollinearity; heteroskedasticity; autocorrelation; simultaneous equations; and dynamic models.

**ECON 376: Rural, Urban and Regional Economics**

(Cross-listed with C R P). (3-0) Cr. 3.

*Prereq: ECON 101*

Firm location with respect to regional resources, transport, scale economies, externalities, and policies. Measures of local comparative advantage and specialization. Spatial markets. Population location considering jobs, wages, commuting, and local amenities. Business, residential, and farm land use and value. Migration. Other topics may include market failure, regulation, the product cycle, theories of rural and urban development, developmental policy, firm recruiting, local public goods and public finance, schools, poverty, segregation, and crime.

**ECON 378: Retirement Planning and Employee Benefits**

(Cross-listed with GERON, HD FS). (3-0) Cr. 3. S.

*Prereq: 3 credits in introductory economics*

Economic well-being in the context of demographic change, the present and future of Social Security, family retirement needs analysis, investment strategies and characteristics of retirement plans, helping others to work towards financial security, family economic issues for retired persons. Overview of employee and retirement benefits.

Meets U.S. Diversity Requirement

**ECON 380: Energy, Environmental and Resource Economics**

(Cross-listed with ENV S). (3-0) Cr. 3.

*Prereq: ECON 101*

Natural resource availability, use, conservation, and government policy, with emphasis on energy issues. Environmental quality and pollution control policies.

**ECON 385: Economic Development**

(Cross-listed with GLOBE). (3-0) Cr. 3.

*Prereq: ECON 101, ECON 102*

Current problems of developing countries, theories of economic development, agriculture, and economic development, measurement and prediction of economic performance of developing countries, alternative policies and reforms required for satisfying basic needs of Third World countries, interrelationships between industrialized countries and the developing countries, including foreign aid.

Meets International Perspectives Requirement.

**ECON 387: Economies of China and India**

(3-0) Cr. 3.

*Prereq: ECON 101*

The economic development of China and India within the larger historical, political, and socioeconomic contexts. The characteristics of the development paths of major industries. The drivers of and impediments for future economic development. The two economies' connections with the world economy.

Meets International Perspectives Requirement.

**ECON 398: Cooperative Education**

Cr. R.

*Prereq: Permission of the department cooperative education coordinator; junior classification*

Required of all cooperative education students. Students must register for this course prior to commencing each work period.

**ECON 401: Topics in Microeconomics**

(3-0) Cr. 3.

*Prereq: ECON 301, STAT 226*

Advanced treatment of selected topics from one or more of the following areas: household production models, factor markets, game theory and imperfect competition, general equilibrium, intertemporal choice, asset markets, income distribution, externalities and public goods, etc.

**ECON 402: Topics in Macroeconomics**

(3-0) Cr. 3.

*Prereq: ECON 301, ECON 302, STAT 226*

Advanced treatment of selected topics from one or more of the following areas: business cycle theory, growth theory, fiscal and monetary policy, coordination issues, open economy macroeconomics, and financial economics.

**ECON 416: Industrial Organization**

(3-0) Cr. 3.

*Prereq: ECON 301*

Study of the structure of firms and markets and of their interaction, with emphasis on imperfectly competitive markets. Behavior of firms in strategic settings and insights of basic game-theoretic models. Welfare implications of alternative market organizations, consequences of market power, and scope for government regulation and antitrust/competition policies. Topics include monopoly and price discrimination, oligopoly models, product quality, product differentiation, vertical integration, information and advertising, patents, R&D and innovation, and regulation.

**ECON 418: Introduction to Game Theory**

(3-0) Cr. 3.

*Prereq: ECON 301*

Systematic introduction to game theory and its uses in economics. Develops the basic framework, models and tools necessary to analyze games of strategy, including: Strategic and extensive-form representations of games; best response functions and Nash equilibrium, mixed strategies backward induction and subgame-perfect equilibrium, imperfect and incomplete information, Bayesian and sequential equilibria. Examples and applications taken from economics, business, political science, law and biology.

**ECON 431: Managerial Economics**

(3-0) Cr. 3.

*Prereq: ECON 301*

Theory of the firm; organizational incentives and efficiency; moral hazard; role of information and decision making under uncertainty; ownership and control; business investment.

**ECON 437: Commodity Marketing and Risk Management**

(3-0) Cr. 3.

*Prereq: ECON 235, ECON 301, STAT 326*

The purpose and performance of commodity markets. How commodity marketing institutions function. Merchandising arrangements. Distinguishing features of agricultural commodities. Hedging, arbitrage, and speculation in commodity spot, forward, futures, and options markets. Valuation theory.

**ECON 455: International Trade**

(3-0) Cr. 3.

*Prereq: ECON 301*

Rigorous treatment of theories of international trade and international factor movements. Examination of the impact of trade and labor migration on domestic and world welfare and on the distribution of income. Theoretical analysis of government policies towards trade and factor movements, including quotas, tariffs, free trade areas and immigration restrictions. Discussion of contemporary issues and controversies concerning globalization, including multinational firms and labor migration.

Meets International Perspectives Requirement.

**ECON 457: International Finance**

(3-0) Cr. 3.

*Prereq: ECON 302*

National income accounting and balance of payments; foreign exchange rates and exchange rate markets; money, interest rates, and exchange rate determination; prices, exchange rates, and output in the short run; international monetary arrangements; fixed versus flexible exchange rates; optimal currency areas; international capital flows; currency and financial crises in emerging markets.

Meets International Perspectives Requirement.

**ECON 458: Economic Systems for Electric Power Planning**

(Cross-listed with E E). (3-0) Cr. 3.

*Prereq: E E 303 or ECON 301*

Evolution of electric power industry. Power system operation and planning and related information systems. Linear and integer optimization methods. Short-term electricity markets and locational marginal prices. Risk management and financial derivatives. Basics of public good economics. Cost recovery models including tax treatment for transmission investments.

**ECON 460: Agricultural, Food, and Trade Policy**

(Dual-listed with ECON 560). (3-0) Cr. 3.

*Prereq: ECON 301 or ECON 501*

Description and analysis of economic problems of U.S. agriculture. Explanation and economic analysis of government policies and programs to develop agriculture, conserve agricultural resources, address consumer food concerns, stabilize farm prices, and raise farm incomes. The influence of macropolicy, world economy, international trade, and bioenergy on U.S. agriculture.

**ECON 466: Agricultural Finance**

(3-0) Cr. 3.

*Prereq: ECON 301, STAT 226, FIN 301 and ECON 353 (recommended)*

Financial analysis of agricultural businesses; liquidity, capital structure, and growth and risk of agricultural firms; capital budgeting methods; analysis of land investments, leasing, and costs of credit; financial intermediation and major financial institutions for agriculture; borrower-lender relationships, and asset-liability management techniques by financial intermediaries; public policies affecting agricultural credit markets.

**ECON 480: Intermediate Environmental and Resource Economics**

(Dual-listed with ECON 580). (3-0) Cr. 3.

*Prereq: ECON 301 or ECON 501*

Theories of natural resource utilization and allocation. Externalities, public goods, and environmental quality. Renewable energy, biofuels, land use change and life cycle analysis of carbon, and sustainability and resource conservation. Methodologies for analyzing natural resource and environmental problems and evaluating resource policies.

**ECON 490: Independent Study**

Cr. 1-5. Repeatable, maximum of 6 credits.

*Prereq: Junior or senior classification, 14 credits in economics*

Offered on a satisfactory-fail basis only. No more than 9 credits of Econ 490 may be used toward graduation

**ECON 490E: Independent Study: Entrepreneurship**

Cr. 1-5. Repeatable, maximum of 6 credits.

*Prereq: Junior or senior classification, 14 credits in economics*

Offered on a satisfactory-fail basis only. No more than 9 credits of Econ 490 may be used toward graduation

**ECON 490H: Independent Study: Honors**

Cr. 1-5. Repeatable, maximum of 6 credits.

*Prereq: Junior or senior classification, 14 credits in economics*

Offered on a satisfactory-fail basis only. No more than 9 credits of Econ 490 may be used toward graduation

**ECON 492: Graduating Senior Survey**

Cr. R.

*Prereq: Graduating senior*

Final preparations for graduation. The final stages of job searching, interviewing, letter writing, and resume preparation. Outcomes assessment information from graduating seniors including opinion surveys, instructor/advisor/course evaluations, exit interviews, student accomplishment surveys, job placement surveys, and comprehensive skills examinations. Departmental recognition of graduating seniors. Life as an alumnus - expectations and obligations. Convocation and commencement information. Offered on a satisfactory-fail basis only.

**ECON 495: Economics Domestic Travel Course**

Cr. 1-3.

*Prereq: Sophomore status. Permission of instructor*

Tour and study of domestic businesses, markets, and economic institutions located outside Iowa to expose students to the diversity of activities within the U.S. economy. Pre-trip sessions arranged. Locations and duration of tours will vary.

**ECON 496: Economics International Travel Course**

Cr. 1-3. Repeatable.

*Prereq: Sophomore status; permission of instructor.*

Tour and study of international agricultural and/or nonagricultural economies, markets, and institutions. Locations and duration of tours will vary. Limited enrollment.

Meets International Perspectives Requirement.

**ECON 498: Cooperative Education**

Cr. R.

*Prereq: Permission of the department cooperative education coordinator; senior classification*

Required of all cooperative education students. Students must register for this course prior to commencing each work period.

**Courses primarily for graduate students, open to qualified undergraduates:**

**ECON 500: Quantitative Methods in Economic Analysis I**

(4-0) Cr. 4. F.

*Prereq: ECON 301, 1 year of calculus, STAT 401, and permission of Director of Graduate Education*

Economic applications of selected mathematical and statistical concepts: linear models and matrix algebra; differential calculus and optimization; integral calculus and economic dynamics; probability distributions, estimation, and hypothesis testing in the analysis of economic data.

**ECON 501: Microeconomics**

(4-0) Cr. 4. F.

*Prereq: ECON 301, credit or enrollment in ECON 500 or equivalent background in calculus and statistics*

The theory of the consumer, theory of the firm, perfect and imperfect competition, welfare economics, and selected topics in general equilibrium and uncertainty.

**ECON 502: Macroeconomics**

(4-0) Cr. 4. F.

*Prereq: ECON 302, credit or enrollment in ECON 500 or equivalent background in calculus and statistics*

Models of aggregate supply and demand, theories of consumption and investment, money supply and demand, inflation, rational expectations, stabilization policy, financial markets, and international finance.

**ECON 509: Applied Numerical Methods in Economics**

(3-0) Cr. 3.

*Prereq: ECON 500, ECON 501; or ECON 600, ECON 601*

Use of numerical techniques to solve economic problems. Numerical differentiation and integration numeric solutions of systems of equations, static and dynamic optimization problems including unconstrained optimization, maximum likelihood methods, general nonlinear programming methods, dynamic programming and optimal control, numerical methods for solving functional equations.

**ECON 510: Experimental Economics**

(3-0) Cr. 3.

*Prereq: ECON 501 or ECON 601*

Introduction to experimental economics and major subject areas addressed by laboratory and field experiments. Exploration of experimental methods by concentrating on series of experiments. Applications include individual decision-making, behavioral game theory, markets, behavioral labor, public and development economics, social network, and neuroeconomics. Research project.

**ECON 520: Labor Supply and Human Capital Formation**

(3-0) Cr. 3.

*Prereq: ECON 501 or ECON 601*

Labor supply decisions and empirical analysis for agricultural operators and other self-employed and wage-earning households; multiple job holding; resource allocation in productive households; human capital formation by households, firms, and public institutions, which includes schooling, on-the-job training, migration, health, research, raising of children, and implications for household income and welfare; applications to problems in rural areas of developing and developed countries.

**ECON 521: Labor Markets**

(3-0) Cr. 3.

*Prereq: ECON 501 or ECON 601*

Analysis of labor demand and market determination of wages and employment; analysis of distortions in labor markets due to non-competitive forces, legislation, and discrimination; wage inequality, compensation and work incentives; compensating differentials; microeconomic analysis of unemployment and job search.

**ECON 532: Managerial Economics for the Global Organization**

(3-0) Cr. 3.

*Prereq: ECON 101 and enrollment in MBA or BAS program; not for economics majors*

Applications of microeconomic theory and decision analysis for firms operating in U.S. and internationally. Topics include demand & supply, consumer choice theory, production and cost theory, short run and long run business decisions, input cost and human capital differences across countries, empirical estimation of demand and supply, pricing, exchange rates, government and business, market structures and strategy.

**ECON 537: Commodity Markets: Analysis and Strategy**

(3-0) Cr. 3.

*Prereq: ECON 501 or ECON 532 or ECON 601, ECON 571 or STAT 326*

Analysis of exchange-traded and over-the-counter commodity markets, their functions and performance. Evaluation of hedging, speculation, and arbitrage strategies. Commodity transformation over space and time. Valuation of derivatives and comparison with derivatives on financial assets. Efficiency and the role of information in commodity markets. Market regulation.

**ECON 545: Public Economics**

(3-0) Cr. 3.

*Prereq: ECON 501 or ECON 601*

Economic justifications for government activities; illustrative theoretical and empirical analyses of expenditure programs; foundations of excess burden, incidence analysis, and optimal taxation; effects of taxation on labor supply; public goods and externalities; social insurance; introduction to economics of the health sector with an emphasis on the role of market failures.

**ECON 560: Agricultural, Food, and Trade Policy**

(Dual-listed with ECON 460). (3-0) Cr. 3.

*Prereq: ECON 301 or ECON 501*

Description and analysis of economic problems of U.S. agriculture. Explanation and economic analysis of government policies and programs to develop agriculture, conserve agricultural resources, address consumer food concerns, stabilize farm prices, and raise farm incomes. The influence of macropolicy, world economy, international trade, and bioenergy on U.S. agriculture.

**ECON 571: Intermediate Econometrics**

(3-0) Cr. 3. S.

*Prereq: ECON 500*

Single and multiple equation regression models; dummy explanatory variables; serial correlation; heteroskedasticity; distributed lags; qualitative dependent variables; simultaneity. Use of econometric models for tests of economic theories and forecasting.

**ECON 576: Spatial Economics**

(3-0) Cr. 3.

*Prereq: ECON 501 or ECON 601*

Analysis of location choice by firms, employees, and households emphasizing the role of spatial variations in agglomeration economies, economies of scale, distance, transport, endowments, amenities, and local government. Models of land use, urban form, spatial competition, central place theory, and migration. Techniques of discrete choice analysis, statistical analysis of categorical data, urban system modeling, and interregional computable general equilibrium.

**ECON 580: Intermediate Environmental and Resource Economics**

(Dual-listed with ECON 480). (3-0) Cr. 3.

*Prereq: ECON 301 or ECON 501*

Theories of natural resource utilization and allocation. Externalities, public goods, and environmental quality. Renewable energy, biofuels, land use change and life cycle analysis of carbon, and sustainability and resource conservation. Methodologies for analyzing natural resource and environmental problems and evaluating resource policies.

**ECON 581: Advanced Environmental Economics**

(3-0) Cr. 3.

*Prereq: ECON 501 or ECON 601*

Interrelationships of natural resource use and the environment. Applied welfare and benefit-cost analyses. Externalities and pollution abatement. Nonmarket valuation of resources. Property rights. Legal and social constraints. Policy approaches.

**ECON 590: Special Topics**

Cr. 1-5. Repeatable.

Offered on a satisfactory-fail basis only.

**ECON 599: Creative Component**

Cr. 1-5.

Offered on a satisfactory-fail basis only.

**Courses for graduate students:**

**ECON 600: Quantitative Methods in Economic Analysis II**

(4-1) Cr. 4. F.

*Prereq: ECON 500*

Unconstrained and equality- and inequality-constrained optimization; the Kuhn-Tucker formulation; abstract spaces; dynamic programming; dynamical systems.

**ECON 601: Microeconomic Analysis I**

(4-1) Cr. 4. F.

*Prereq: ECON 301, previous or concurrent enrollment in 600 and permission of Director of Graduate Education*

Economic theory and methodology; theory of consumer behavior, theory of the competitive firm, supply and factor demand; duality relations in consumer and producer theory, welfare change measures; partial equilibrium analysis, perfect competition, monopoly; choice under uncertainty, the expected utility model, risk aversion; insurance, portfolio and production decisions under risk.

**ECON 602: Macroeconomic Analysis**

(4-1) Cr. 4. S.

*Prereq: ECON 301, ECON 302, previous or concurrent enrollment in 600 and permission of Director of Graduate Education*

Neoclassical aggregate growth models; the overlapping generations model; endogenous growth models; equilibrium business cycle theories; equilibrium job search and matching; models of money; fiscal and monetary policy; income and wealth distribution.

**ECON 603: Microeconomic Analysis II**

(4-1) Cr. 4. S.

*Prereq: ECON 601, ECON 602 and permission of Director of Graduate Education*

General equilibrium analysis, efficiency, and welfare; market failures, externalities, and the theory of the second best; introduction to game theory; adverse selection, signaling, screening and moral hazard.

**ECON 604: Advanced Macroeconomic Analysis**

(4-1) Cr. 4. F.

*Prereq: ECON 601, ECON 602 and permission of Director of Graduate Education*

Topics will be selected from: new Keynesian approaches to business cycle theory; endogenously generated business cycles; models of credit and financial intermediation; mechanism design and time inconsistency issues; political economy models; heterogeneous-agent models with strategic interaction; path dependence, network effects, and lock-in; economies as evolving self-organizing systems.



**ECON 606: Advanced Topics in Macroeconomics**

(3-0) Cr. 3.

*Prereq: ECON 603, and credit or current enrollment in ECON 604*

Selected topics in macroeconomic theory of current significance to the profession.

**ECON 615: Theoretical Industrial Organization**

(3-0) Cr. 3.

*Prereq: ECON 603*

Theoretical analysis of traditional topics in industrial organization. Review of game theory. Monopoly and oligopoly theory, price discrimination, product differentiation, research and development, diffusion of innovation, network externalities, and asymmetric information.

**ECON 618: Game Theory**

(3-0) Cr. 3.

*Prereq: ECON 603, or ECON 501 and permission of instructor*

Theoretical analysis and applications of strategic games, extensive form games, and cooperative games. Nash equilibrium, correlated equilibrium, Bayesian games, subgame perfect equilibrium, the core, evolutionary equilibrium, repeated games with finite automata, and common knowledge.

**ECON 641: Agricultural Economics I**

(3-0) Cr. 3.

*Prereq: ECON 603*

Demand and supply for agricultural products, market equilibrium models, implications of government policies on the agricultural sector, evaluation of research and development policies in agriculture, and biofuel and energy policy analysis. Commodity promotion programs, food safety and consumers' valuation of product attributes.

**ECON 642: Agricultural Economics II**

(3-0) Cr. 3.

*Prereq: ECON 603*

Advanced treatment of topics and models in agricultural economics with emphasis on stochastic models. Topics will include analysis of risk in decision making by consumers, firms and farms; analysis of risk management strategies for farmers; the economics of commodity storage; analysis of the impact of biofuels on commodity prices; and models of agricultural inputs and outputs.

**ECON 653: Financial Economics**

(3-0) Cr. 3.

*Prereq: ECON 603, ECON 672. Recommended: ECON 674, StAT 551*

Review of decision-making under uncertainty. Portfolio Theory. Theoretical foundations of asset valuation models: capital asset pricing model (CAPM), arbitrage pricing theory (APT), representative agent models, pricing of derivative securities. Complete and incomplete asset markets, credit markets, financial intermediaries, the role of government in the financial sector. Market frictions, crashes, bubbles. Applications of asset valuation models, with emphasis on their testable implications.

**ECON 655: International Trade**

(3-0) Cr. 3.

*Prereq: ECON 603*

Theories of international trade; welfare and distributional aspects of trade and commercial policies. Optimal trade policies in the presence of domestic distortions; strategic trade policy; international trade and economic growth.

**ECON 657: International Finance**

(3-0) Cr. 3.

*Prereq: ECON 602*

The intertemporal approach to current account determination; non-traded goods and the real exchange rate; fiscal policy in the open economy; monetary approach to balance of payments and exchange rate determination; sticky price models of the open economy; exchange-rate based stabilizations; capital inflows; financial and balance of payments crises; international business cycles.

**ECON 671: Econometrics I**

(4-1) Cr. 4. F.

*Prereq: ECON 501 and STAT 447 or STAT 542*

Probability and distribution theory for univariate and multivariate normal random variables, introduction to the theory of estimators for linear models, hypothesis testing and inference, introduction to large sample properties of estimators; derivation of common estimators and their properties for the classical and general multiple regression models, hypothesis testing, forecasting, implications of specification errors - missing data, left-out regressors, measurement error, stochastic regressors.

**ECON 672: Econometrics II**

(4-1) Cr. 4. S.

*Prereq: ECON 671*

Identification, estimation, and evaluation of systems of simultaneous equations; qualitative choice and limited dependent variable models; introduction to time series methods and applications, including alternative variance specifications.

**ECON 673: Microeconometrics**

(3-0) Cr. 3.

*Prereq: ECON 672, ECON 601*

Econometric treatment of models arising in microeconomic applications. Methods are primarily concerned with the analysis of cross-section data. Topics may include: systems of demand equations in panel data settings, random utility models of discrete choices, production possibilities frontier estimation, and discrete/continuous models of participation and consumption.

**ECON 674: Macroeconometrics**

(3-0) Cr. 3.

*Prereq: ECON 672, ECON 602*

Time-series econometric techniques and their application to macroeconomics and financial markets. Techniques may include GARCH and ARCH-M models, unit-root tests, nonlinear adjustment models, structural VARs, and cointegration tests.

**ECON 680: Advanced Resource Economics**

(3-0) Cr. 3.

*Prereq: ECON 603*

Dynamic allocation of scarce, exhaustible, and renewable natural resources, including minerals and energy, soil, water, forests, and fish. Social versus private decisions. Market and nonmarket considerations. Technological change. Regulation. Dynamics and uncertainty.

**ECON 690: Advanced Topics**

Cr. 1-5. Repeatable.

Offered on a satisfactory-fail basis only.

**ECON 691: Third-Year Paper**

Cr. 3.

Under the direction of the major professor, Ph.D. students write a formal research paper as an introduction to the dissertation research process.

Offered on a satisfactory-fail basis only.

**ECON 693: Workshops**

Cr. 3.

Workshop in economics. Offered on a satisfactory-fail basis only.

**ECON 699: Research for Thesis or Dissertation**

Cr. arr. Repeatable.

Offered on a satisfactory-fail basis only.