

# ECON - ECONOMICS

## ECON401 Current Issues in American Economic Policy (3 Credits)

Analysis of current economic problems and public policies. Topics could include poverty, income inequality, social insurance, education, environmental sustainability, immigration, and innovation. Other issues may be substituted depending on current events.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON305, ECON325); and 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON424, ECON422, ECON426).

**Restriction:** Permission of BSOS-Economics department; and must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

## ECON402 Macroeconomic Models and Forecasting (3 Credits)

Analysis of the fluctuations in economic activity and the formulation and use of forecasting models of the economy. Illustrations of computer macro models and forecasting problems.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON305, ECON325); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

## ECON406 Advanced Microeconomics (3 Credits)

Expands on the assumptions of rational decision-making used in intermediate microeconomics and develops more complicated, more realistic models which address uncertainty, intertemporal choices, strategic interactions, social preferences and considerations of what is fair.

**Prerequisite:** Minimum grade of C- in ECON326; and 1 course with a minimum grade of C- from (ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

## ECON407 Advanced Macroeconomics (3 Credits)

An in-depth analysis of current issues in macroeconomic theory and policy. Topics covered include: 1. alternative perspectives on macroeconomics including monetarism, new classical equilibrium models, rational expectations, and real business cycle models; 2. long term growth, the slowdown in productivity growth, and concerns about U.S. competitiveness; 3. the effectiveness of macroeconomic policy in an open economy; 4. the effects of finance on the real sector.

**Prerequisite:** Minimum grade of C- in ECON325; and 1 course with a minimum grade of C- from (ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

## ECON410 Comparative Economic Institutions (3 Credits)

Institutions are the sets of rules that constrain the decisions and interactions of economic agents. The course uses economic analysis to understand both formal institutions (e.g. laws) and informal institutions (e.g. cultural norms). Practical examples are drawn from economics, law, and politics, and reflect the experience of many different countries.

**Prerequisite:** Minimum grade of C- in ECON325 and ECON326; and 1 course with a minimum grade of C- from (ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

## ECON412 Economic History and Modern Development (3 Credits)

Analysis of major economic, political, and social change in the developed world since 1800. This includes factors contributing to increases in economic performance, changes in the form of government, technological change (including industrialization), and integration and disintegration of the global economy. Emphasis is on institutional changes in how societies organize economic and political activities.

**Prerequisite:** Minimum grade of C- in ECON325 and ECON326.

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

## ECON414 Game Theory (3 Credits)

Studies the competitive and cooperative behavior that results when several parties find that their individual outcomes are jointly determined. Students will learn how to use game theory to analyze situations of potential conflict. Applications are drawn from economics, business, and political science.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor).

**Credit Only Granted for:** CMSC474, ECON414, GVPT399A or GVPT390.

## ECON415 Market Design (3 Credits)

Focuses on recent developments in the design of markets to improve economic performance and to open new economic opportunities. It is divided into three main segments – auction design, the design of matching mechanisms, and antitrust theory and policy.

**Prerequisite:** Minimum grade of C- in ECON414.

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

## ECON416 Analysis of Economic Development (3 Credits)

Analysis of the determinants and influences on economic development. Emphasis on both theoretical models and econometric methods of explaining why some countries are poor, along with examination of policies to promote development.

**Prerequisite:** Minimum grade of C- in ECON325, ECON326, and ECON422.

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

**Credit Only Granted for:** ECON315 or ECON416.

## ECON417 Estimating Policy and Program Impact (3 Credits)

Governments, businesses, non-profits, funders, and other organizations must allocate scarce resources between competing uses. Understanding the causal effect of policies, programs or investments on key outcomes can guide the choices of these decision-makers. Correlations between policies and outcomes or changes in outcomes after new policies are adopted are rarely sufficient for estimating the causal effect, however. This course focuses on econometric strategies for obtaining unbiased causal estimates, including experimental methods, instrumental variables, regression discontinuity, and differences-in-differences. There will be an emphasis on using Stata and on interpreting the results of econometric analysis.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326) and 1 course with a minimum grade of C- from (ECON424, ECON422).

**Restriction:** Permission of BSOS-Economics department; and must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor; Social Data Science-Economics).

**ECON418 Economic Development of Selected Areas (3 Credits)**

Economic and institutional characteristics of a specific geographic area are identified and discussed, and alternate strategies and policies for development are analyzed.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON305, ECON306, ECON325, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**Repeatable to:** 6 credits if content differs.

**ECON422 Econometrics (3 Credits)**

Emphasizes the interaction between economic problems and the assumptions employed in statistical theory. Formulation, estimation, and testing of economic models, including single variable and multiple variable regression techniques, theory of identification, and issues relating to inference.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON325, ECON326); and 1 course with a minimum grade of C- from (ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

**Credit Only Granted for:** ECON422, ECON424, or AREC422.

**ECON423 Advanced Topics in Econometrics (3 Credits)**

Interaction between economic problems and specification and estimation of econometric models. Topics may include: autocorrelation, heteroscedasticity, functional form, simultaneous equation models, logit and probit models, instrumental variables, qualitative choice models, and other computational methods.

**Prerequisite:** Minimum grade of C- in ECON422.

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

**ECON424 Applied Econometrics (3 Credits)**

Provide the knowledge and skills necessary to accomplish and utilize basic applied econometric analysis utilized by many business service providers, government agencies, and nonprofits engaged in policy analysis. Topics include simple and multiple regressions using cross section, time series, and panel data, issues of heteroskedasticity, serial correlation, and multicollinearity, models with binary dependent variable, and program evaluation. Course emphasizes application of knowledge using software packages but still covers essential theoretical background.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON305, ECON306, ECON325, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**Credit Only Granted for:** ECON422, ECON424 or AREC422.

**ECON425 Mathematical Economics (3 Credits)**

Covers mathematical tools and skills utilized in upper undergraduate and master's level coursework in Economics and Public Policy. Reviews calculus and math of finance and growth. Introduces techniques of optimization, linear algebra, and differential equations and connects them to micro and macro theory and applications. Topics will also include coverage of probability theory to explore how economists model uncertainty, as well as economic applications of integration.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON305, ECON325); and 1 course with a minimum grade of C- from (ECON306, ECON326).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**ECON426 Economics of Cost-Benefit Analysis (3 Credits)**

Study of how to use cost benefit analysis and other similar tools of applied microeconomics to conduct policy analyses. Cost-benefit analysis is an empirical method of identifying an optimal choice from a set of policy alternatives, where optimal is defined in terms of economic efficiency. Real world examples are addressed, so that students understand limitations of the methods and also interactions of economic analysis with political and administrative processes.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON305, ECON306, ECON325, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**ECON427 Experimental Economics (3 Credits)**

An introduction to the methodology of experimental economics and its application to issues such as decision-making under uncertainty, auctions, and public goods. Also an introduction to behavioral economics as a relatively new area of economic research.

**Prerequisite:** Minimum grade of C- in ECON326; and 1 course with a minimum grade of C- from (ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

**ECON432 Applied Machine Learning (4 Credits)**

Offers a comprehensive examination of the concepts and techniques used in machine learning, with a specific emphasis on their applications in economics. Focuses on the practical aspects of machine learning, including the use of different methods, model selection, and performance evaluation. Students will explore both supervised and unsupervised learning techniques, such as linear and non-linear regression, k-nearest neighbors, tree-based approaches, support vector machines, neural networks, and dimensionality reduction methods. Additional advanced methods may be covered, depending on the time available. Hands-on implementation of these techniques will be conducted using the R programming language.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON422, ECON424).

**Restriction:** Permission of BSOS-Economics department; and must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor; Social Data Science-Economics).

**ECON433 Economics of Big Data (4 Credits)**

The importance of big data in the global economy is rising. Students will explore the definition and characteristics of big data, the impact of big data on individuals, use of big data by firms, entrepreneurs and non-profits, as well as how big data reshapes various public policies.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor; Social Data Science-Economics).

**ECON434 The Economics of Information and Uncertainty (3 Credits)**

How do rational agents make decisions when faced with uncertainty? How do markets and other institutions deal with risks? How do markets behave when some actors are better informed than others? What incentives influence whether economic decision-makers hide or reveal information? Topics include the value of information, the purchase of warranties, agency problems in management, adverse selection and moral hazard in insurance, and signaling in education.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor; Social Data Science-Economics).

**Credit Only Granted for:** ECON498U or ECON434.

**Formerly:** ECON498U.

**ECON435 Financial Markets and the Macroeconomy (3 Credits)**

Provides students with the necessary tools to understand financial decisions investors and firms make. The course will cover two of the main areas of financial economics: Asset pricing and corporate finance. Asset pricing topics include the valuation of bonds, stocks, derivatives, portfolio decisions, and arbitrage. Corporate finance topics include the valuation of investment projects, the cost of capital, capital structure, and financial distress.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON305, ECON325); and 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor; Social Data Science-Economics).

**Credit Only Granted for:** BMGT343 or ECON435.

**Additional Information:** Finance majors will not receive credit for ECON435.

**ECON436 Financial Econometrics (3 Credits)**

An introduction to financial econometrics, which is data science applied to understanding the financial system. Students will learn modern techniques in financial econometrics with an emphasis on the interaction between modeling (theory) and empirical analysis. Topics include relevant economic theory, optimization techniques, probability models, statistical analysis, and use of statistical software.

**Prerequisite:** Minimum grade of C- in ECON325 and ECON422.

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

**ECON441 Theory of International Economics (3 Credits)**

Theoretical treatment of international trade and international finance. Includes Ricardian and Heckscher-Ohlin theories of comparative advantage, analysis of tariffs and other trade barriers, international factor mobility, balance of payments adjustments, exchange rate determination, and fiscal and monetary policy in an open economy.

**Prerequisite:** Minimum grade of C- in ECON326 and ECON325.

**Restriction:** Must be in a major within the BSOS-Economics department; and must not have completed ECON340, ECON442, or ECON443.

**Credit Only Granted for:** ECON340, ECON441, ECON442, or ECON443.

**ECON442 Globalization and Capital Markets (3 Credits)**

Uses models of open-economy macroeconomics to explain the causes and consequences of international capital flows. Analysis is made of private consumption, investment, the government sector, current accounts, the labor market, and the money and foreign exchange markets in small open economies. This framework is then used to study examples of how speculative attacks on currencies, sudden reversals of capital inflows, and the effects of the lack of credibility of economic policy affect economic development.

**Prerequisite:** Minimum grade of C- in ECON326 and ECON325; and 1 course with a minimum grade of C- from (ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor); and must not have completed ECON441.

**Credit Only Granted for:** ECON441 or ECON442.

**ECON443 International Trade and Trade Policy in the New Global Economy (3 Credits)**

Examines the economics of international economic integration, including the theory of customs unions and free trade areas, the role of GATT and the WTO, changes in individual countries' foreign trade policies during the new era of globalization, the special role of multinational firms in world trade, and recent controversies about the benefits and costs of globalized trade.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON305, ECON325); and 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics); and must not have completed ECON441.

**Credit Only Granted for:** ECON441 or ECON443.

**ECON444 Research in Globalization (3 Credits)**

As globalization continues, individual countries must confront a variety of related issues including rising inequality, decline of domestic industries, climate change, and disputes over intellectual property rights. Various economic models and research methods will be covered to develop the analytic and empirical skills needed to perform independent research in globalization. Students will prepare literature reviews, conduct preliminary empirical investigations using STATA, and produce well-designed research proposals.

**Prerequisite:** Minimum grade of C- in ECON326 and ECON422.

**Restriction:** Must be in Economics Bachelor of Science program.

**Credit Only Granted for:** ECON498G or ECON444.

**Formerly:** ECON498G.

**ECON451 Public Choice (3 Credits)**

Analysis of collective decision making, economic models of government, program budgeting, and policy implementation; emphasis on models of public choice and institutions which affect decision making.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**ECON453 Natural Resources and Public Policy (3 Credits)**

Rational use and reuse of natural resources. Theory, methodology, and policies concerned with the allocation of natural resources among alternative uses. Optimum state of conservation, market failure, safe minimum standard, and cost-benefit analysis.

**Prerequisite:** AREC326, ECON306, or ECON326; and (BMGT230 or ECON230).

**Cross-listed with:** AREC453.

**Restriction:** Must be in one of the following programs (Agricultural and Resource Economics; Agricultural and Resource Economics: Agribusiness; Agricultural and Resource Economics: Environmental and Resource Economics; Economics Bachelor of Arts; Environmental Science & Policy-Env Economics; Social Data Science-Economics; Economics minor).

**Credit Only Granted for:** AREC453 or ECON453.

**ECON454 Public Finance and Public Policy (3 Credits)**

The role of the the public sector in a market economy constitutes the over-arching topic of this course. Emphasis lies on analyzing government expenditure programs and the microeconomics of tax policy.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321 or STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor; Social Data Science-Economics).

**ECON455 Economics of Education Policy (3 Credits)**

Examines the role that government plays in providing and financing education. Analyzes why people invest in education. Considers the effects of education on long-term social and economic outcomes, the behavior of institutions that produce education, and how to design and implement public policies affecting the level and distribution of educational resources. Uses microeconomic models and empirical findings to analyze current issues in education policy.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**Credit Only Granted for:** ECON468E or ECON455.

**Formerly:** ECON468E.

**ECON456 Law and Economics (3 Credits)**

Relationship of the exchange process to the system of institutions and rules that society develops to carry out economic transactions. Topics covered include: Property rights; torts, negligence, and liability; contracts and exchanges; criminal control and enforcement; equity and efficiency issues .

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**ECON458 Special Topics in Study Abroad IV (1-6 Credits)**

Special topics course taken as part of an approved study abroad program.

**Prerequisite:** At least one intermediate theory course and/or statistics.

**Repeatable to:** 15 credits if content differs.

**ECON460 Industrial Organization (3 Credits)**

Examines different theoretical models of firm behavior in markets with varying amounts of market power. Relates theory to specific industries and examines how market structure evolves over time.

**Prerequisite:** Minimum grade of C- in ECON326; and 1 course with a minimum grade of C- from (ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Science; Economics minor).

**ECON461 Economics of Regulation and Antitrust (3 Credits)**

Considers government intervention in economic activity of three types: antitrust policy, regulation of natural monopolies, and health safety regulation. Covers theoretical models, real-world policy applications, and empirical studies relevant to the impact of regulation.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**ECON463 Economics of Sports (3 Credits)**

The application of theoretical and empirical economic tools to the sports industry, including competition at professional,collegiate, and international levels. Microeconomic models from labor, industrial organization and public finance will be applied to the sports industry and combined with data from sports markets, providing students with opportunities to produce and interpret economic analysis. The topic of discrimination will also be explored in the context of this particular economic activity.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321, STAT400).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**ECON465 Health Economics (3 Credits)**

An examination of the structure, conduct and performance of the health care market, including a study of physician services, the pharmaceutical industry, the hospital market and health insurance. Students will analyze markets for health care and related products by examining the incentives and constraints for various participants, including individuals, family units, doctors, pharmaceutical companies, hospitals, and insurance providers. Analysis will combine both theoretical models and empirical tools.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321, STAT401).

**Jointly offered with:** ECON671.

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor; Social Data Science-Economics).

**Credit Only Granted for:** ECON465 or ECON671.

**ECON468 Special Topics in Applied Economics (3 Credits)**

Selected topics in applied economics. Designed to meet the changing interests of students and staff.

**Prerequisite:** 1 course with a minimum grade of C- from (BMGT230, ECON230); and 1 course with a minimum grade of C- from (ECON305, ECON306).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**Repeatable to:** 15 credits if content differs.



**ECON470 Labor Economics: Theory and Evidence (3 Credits)**

Analysis of labor markets in theory and the real world. Topics include labor supply, labor demand, human capital, performance incentives, unemployment, discrimination, and immigration. Students will develop an understanding of how formal economic research is used to analyze U.S. labor markets and how research influences policy debates.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, BMGT230, ECON321, STAT401).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science; Economics minor; Social Data Science-Economics).

**Credit Only Granted for:** ECON470 or ECON471.

**ECON471 Labor Market Policies and Research (3 Credits)**

Economic analysis of labor based on modern theory and empirical analysis. Focus on public policy, studying the interactions between labor demand and labor supply in the labor market and how policies impact those interactions. Possible policies include welfare policy, minimum wage policy, immigration policy, and anti-discrimination policies. Uses statistical software to summarize and create visualizations of economic data.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON424, ECON422).

**Restriction:** Permission of BSOS-Economics department; Must be in one of the following programs (Economics Bachelor of Arts; Economics Bachelor of Science).

**Credit Only Granted for:** ECON470 or ECON471.

**ECON472 Economics of Social Safety Nets (3 Credits)**

Analysis of the economic issues associated with social safety nets. Topics to be covered include the cash transfer programs for breaking the cycle of poverty, labor market policies aimed at combating unemployment, childhood interventions to improve human capital development, and the challenges faced by pension systems over the world. The approach is based on a life-cycle perspective. Evidence and experiences from developed and developing countries will be covered.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and minimum grade of C- in ECON424.

**Restriction:** Permission of BSOS-Economics department; and must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**ECON481 Environmental Economics (3 Credits)**

An exploration of the use of economic incentives for protection of the environment and the determination of appropriate (or efficient) level of environmental quality. Also covers the choice of policy instruments for the attainment of environmental standards.

**Prerequisite:** 1 course with a minimum grade of C- from (AREC326, ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, ECON321, BMGT230).

**Cross-listed with:** AREC481.

**Restriction:** Must be in one of the following programs (Agricultural and Resource Economics; Agricultural and Resource Economics: Agribusiness; Agricultural and Resource Economics: Environmental and Resource Economics; Economics Bachelor of Arts; Environmental Science & Policy-Env Economics; Social Data Science-Economics; Economics minor).

**Credit Only Granted for:** ECON481 or AREC481.

**ECON484 The Economics of Climate Change (3 Credits)**

The role of economics in the formation of climate policy; basic concepts of environmental economics including efficiency, externalities, and policy instruments; economic models of intertemporal decisions and decision making in the face of uncertainty. Applied economic analysis of specific issues and current policy initiatives.

**Prerequisite:** 1 course with a minimum grade of C- from (AREC326, ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, ECON321, BMGT230).

**Cross-listed with:** AREC454.

**Credit Only Granted for:** AREC454 or ECON484.

**ECON485 Economics of Land Use (3 Credits)**

Fundamentals of location theory. Microeconomics of land use decisions, including determination of rent and hedonic pricing models. Impacts of government decisions on land use, including regulation (e.g., zoning), incentives (transferable development rights), provision of public services, and infrastructure investments. Impacts of land use on environmental quality, including issues relating to sprawl, agricultural land preservation, and other topics of special interest.

**Prerequisite:** 1 course with a minimum grade of C- from (AREC326, ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, ECON321, BMGT230).

**Cross-listed with:** AREC455.

**Credit Only Granted for:** AREC455 or ECON485.

**ECON486 Energy and Environmental Economics (3 Credits)**

Economic theory and empirical methods are used to study problems of energy, the environment, and the economy. It examines the extraction, production, and use of energy and market institutions and regulatory approaches used to correct market failures. Topics covered include: oil and natural gas markets, management and design of electricity markets, renewable energy, non-market valuation, climate change, and transportation policies.

**Prerequisite:** 1 course with a minimum grade of C- from (AREC326, ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON230, ECON321, BMGT230).

**Cross-listed with:** AREC456.

**Credit Only Granted for:** AREC456 or ECON486.

**ECON488 Applied Research Practicum (1-3 Credits)**

Students gain experience applying economic knowledge and producing research valued by businesses, non-profits, and/or government agencies. Students engage in activities similar to what an intern or entry-level employee would perform. Students work in small groups to find different kinds of data and facts, analyze and interpret this information, and use research findings to develop and present recommendations for simulated clients.

**Prerequisite:** 1 course with a minimum grade of B- from (BMGT230, ECON321, ECON230); and 1 course with a minimum grade of C- from (ECON305, ECON325); and 1 course with a minimum grade of C- from (ECON306, ECON326).

**Recommended:** ECON422, ECON402, or ECON424.

**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 6 credits if content differs.

**ECON489 Applied Economics Practicum (1-3 Credits)**

Students gain experience explaining economic knowledge to people who have not studied economics. Students engage in activities preparing them for careers in banking, business consulting, financial education, wealth management, and related services.

**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 6 credits if content differs.

**ECON490 Urban & Regional Economics: Issues and Policies (3 Credits)**

Exploration of urban and regional economics and policies, including economic forces leading to formation of city and regional networks. Conceptual and empirical analysis of policies affecting land use, housing, transportation and other aspects of sub-national economic development.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON306, ECON326); and 1 course with a minimum grade of C- from (ECON321, BMGT230, ECON230).

**Restriction:** Must be in one of the following programs (Economics Bachelor of Arts; Economics minor; Social Data Science-Economics).

**Credit Only Granted for:** ECON398I or ECON490.

**Formerly:** ECON398I.

**ECON498 Special Topics in Economic Analysis (3 Credits)**

Selected topics in economic analysis. Designed to meet the changing interests of students and staff.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON321, STAT401); and 1 course with a minimum grade of C- from (ECON325, ECON326).

**Restriction:** Must be in Economics Bachelor of Science program.

**Repeatable to:** 15 credits if content differs.

**ECON499 Independent Research in Economics (1-3 Credits)**

Directed research under the supervision of a faculty member. Contact department for additional information.

**Prerequisite:** 1 course with a minimum grade of C- from (ECON230, ECON321, BMGT230, STAT400); and 1 course with a minimum grade of C- from (ECON305, ECON325); and 1 course with a minimum grade of C- from (ECON306, ECON326); and minimum of 3 credits from ECON400-499 course range.

**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 6 credits if content differs.

**ECON601 Macroeconomic Analysis I (3 Credits)**

Introductory technical treatment of standard Keynesian, classical and new classical macroeconomic models. Expectations formation and microeconomic foundations of consumption, investment, money demand, and labor market behavior.

**Restriction:** Permission of BSOS-Economics department.

**ECON602 Macroeconomic Analysis II (3 Credits)**

Further issues regarding macroeconomic topics. First half emphasis will be placed on dynamic macroeconomic theory as pertaining to monetary issues, policy ineffectiveness and effectiveness. The second half of the course will focus on theories of investment and growth.

**Prerequisite:** ECON601; or permission of BSOS-Economics department.

**ECON603 Microeconomic Analysis I (3 Credits)**

A detailed treatment of the theory of the consumer and of the firm, particularly emphasizing the duality approach. Topics include the household production model, imperfect competition, monopolistic and oligopolistic markets.

**Restriction:** Permission of BSOS-Economics department.

**ECON604 Microeconomic Analysis II (3 Credits)**

Analysis of markets and market equilibria; the Arrow-Debreu model of general equilibrium, the two-sector model, welfare theorems, externalities, public goods, markets with incomplete and asymmetric information.

**Prerequisite:** ECON603.

**Restriction:** Permission of BSOS-Economics department.

**ECON611 Seminar in American Economic Development (3 Credits)**

Selected topics in the long-term movements of the American economy. Quantitative studies of the growth of output; applications of econometric methods and economic theory to topics in American economic history.

**Restriction:** Permission of BSOS-Economics department.

**ECON613 Origins and Development of Capitalism (3 Credits)**

Institutions and technology shaping pre-capitalist economies: Archaic, Greek and Roman, Feudal, and Mercantile. Rise of the market system, national economies, and capitalism. The nature of industrial society. Imperialism.

**ECON615 Development Economics I (3 Credits)**

Explore both the causes and consequences in development economics from a historical and scientific approach. Presents theoretical models and applied work that test alternative hypotheses. Explore models of economic growth and institutions, with emphasis on property rights and political regimes as causal factors affecting development. Discuss empirical methods widely used in the field and important related topics including poverty, inequality, education and health.

**Prerequisite:** ECON603; or permission of BSOS-Economics department.

**ECON616 Economic Development II (3 Credits)**

Survey of a variety of models explaining how market failures may lead to poverty and underdevelopment, with an emphasis on the empirical evaluation of constraints faced by individuals in developing countries and the programs that attempt to alleviate those constraints. Topics include: agricultural and land markets, labor markets, human capital in developing countries, credit markets, and consumption smoothing and risk coping.

**Prerequisite:** ECON615, ECON603, and ECON604; or permission of BSOS-Economics department.

**ECON617 Topics in Development Economics (3 Credits)**

Introduces students to the factors underlying contemporary trends in the economic development of low-income countries. Combining economic theory and empirical studies, students will learn about the unique challenges currently faced by policy makers in low-income settings, their economic determinants, and the evaluation of policy solutions. The course will center around a replication and extension exercise of a recent study in the development literature. A primary aim of the course is to prepare students to conduct independent research in development economics, with a particular focus on modern research methodology and applied econometrics.

**Prerequisite:** ECON615 or ECON616; or by permission of BSOS-Economics Department.

**Restriction:** Permission of BSOS-Economics Department.

**ECON623 Econometrics I (3 Credits)**

Topics covered include problems of specification, estimation, hypothesis testing, and prediction in linear models. Topics include: classical linear regression and ordinary least squares, generalized linear models and generalized least squares, identification and estimation of simultaneous equation models including discussion of two-stage and three-stage least squares and other instrumental variable estimation methods. Both finite and large sample analysis of econometric procedures will be covered, and there will also be discussion of general hypothesis testing principles including discussion of misspecification tests. In addition, the course will provide instructions on the use of a major statistical package such as Stata.

**Prerequisite:** Must have advanced knowledge of probability, statistics, and linear algebra.

**Restriction:** Permission of BSOS-Economics department.

**ECON624 Econometrics II (3 Credits)**

A continuation of ECON623. Topics include: Nonlinear models and nonlinear estimation methods (generalized method of moments and maximum likelihood estimation), panel data models, univariate dynamic models, multivariate dynamic models including simultaneous equation models, and non-parametric/semiparametric estimation methods. The course will also provide instructions on the use of a major statistical package such as Stata or TSP.

**Prerequisite:** ECON623; or permission of BSOS-Economics department.

**ECON625 Computational Economics (3 Credits)**

An examination of the specification, computation, estimation and interpretation of structural models that are widely used in Industrial Organization, and in a range of other applied microeconomic contexts (marketing and public, environmental, education and urban economics). The focus will be on the connections between these models and relevant economic theories, and on the details of their implementation in practice.

**Prerequisite:** ECON604 and ECON624.

**Credit Only Granted for:** ECON625 or ECON698R.

**Formerly:** ECON698R.

**ECON626 Empirical Microeconomics (3 Credits)**

An overview is provided of modern microeconomic methods with a focus on reduced form causal inference. Tools discussed include linear regression and selection on observables, instrumental variables including LATE and the role of heterogeneity in causal inference, difference-in-difference, regression discontinuity, synthetic control, matching, propensity score methods, and inverse probability weighted estimation. In addition, inferential issues such as weak instruments and techniques for robust standard errors, clustering, bootstrap and randomized inference are discussed, time permitting. The course places strong emphasis on relating statistical methods to substantive empirical applications. Each topic is introduced with an empirical paper that uses the technique. The discussion of technical material is at an intuitive level that focuses on applications and recommendations for empirical practice. The course offers an opportunity to work on a number of extended empirical exercises that are based on published papers and original data. Students practice working with data, implementing code in Stata and conducting their own empirical analysis. These exercises also offer practice in scientific writing relevant for empirical work.

**Prerequisite:** ECON624.

**Restriction:** Must be in Economics (Doctoral) program.

**ECON630 Computational Methods in Macroeconomics (3 Credits)**

Essential computational methods used in macroeconomics. There will be particular focus on approximating the solution to dynamic stochastic general equilibrium models. Methods for representative-agent and heterogeneous-agent models will be extensively studied. Econometric methods such as Generalized Method of Moments, Maximum Likelihood, Vector Autoregressions will also be covered.

**Prerequisite:** ECON602 and ECON601.

**Restriction:** Must be in one of the following programs (Economics (Master's); Economics (Doctoral)) ; or permission of BSOS-Economics department.

**ECON635 Experimental Economics (3 Credits)**

An introduction to the methodology of laboratory and field experiments. The course concentrates on a series of experiments to show how experiments build on one another, allowing researchers with different theoretical dispositions to narrow the range of potential disagreement.

**Restriction:** Permission of instructor.

**ECON636 Behavioral Economics (3 Credits)**

An exploration of how people make decisions, questioning the concept of "perfect rationality" in the standard economic theory, providing improved models in line with the observed biases of decision makers. Focusing on decision making under risk and ambiguity, endowment effect, status quo bias, loss aversion, intertemporal choice, and selfish and pro-social preferences.

**Prerequisite:** ECON603 and ECON604; and permission of BSOS-Economics department.

**ECON637 Decision Theory (3 Credits)**

Decision making is a process in which we select a course of action among available options. This course will explore the various behavioral biases observed in decision making processes by adjusting our normative theories to capture these biases.

**Prerequisite:** ECON603 and ECON604.

**Restriction:** Must be in the Economics program; or must have completed ECON603 and ECON604 with a letter grade of B+ or better.

**Credit Only Granted for:** ECON698B or ECON637.

**Formerly:** ECON698B.

**ECON641 Microeconomic Analysis (3 Credits)**

Microeconomic analysis applied to public policy problems with an emphasis on practical examples and how they illustrate microeconomic theories. Policy issues such as pollution, welfare and income distribution, market design, industry regulation, price controls, tax policy and health insurance are practical examples used to illustrate the abstract principles of microeconomics.

**Restriction:** Must be in M.Prof.Studies: Applied Economics program; or permission of BSOS-Economics department.

**Credit Only Granted for:** ECON641 or ECON506.

**Formerly:** ECON506.

**ECON642 Topics in Applied Macroeconomics (3 Credits)**

Focus is on applied macroeconomic models used by federal agencies to explain and predict economic behavior. Course emphasizes macroeconomic data: NIPA accounts, GDP, construction and application of CPI, labor force data and economic indicators. Students will also study a selected set of current macroeconomic topics including models of economic growth, economic fluctuations, monetary policy, inflation and financial markets.

**Restriction:** Must be in M.Prof.Studies: Applied Economics program; or permission of BSOS-Economics department.

**ECON643 Empirical Analysis I: Foundations of Empirical Research (3 Credits)**

Fundamental aspects of data management and interpretation emphasizing sampling, descriptive statistics, index numbers and construction of aggregated variables. Students will learn probability theory, confidence intervals, hypothesis testing and regression analysis using the EXCEL spreadsheet program and STATA statistical software.

**Credit Only Granted for:** ECON643 or ECON521.

**Formerly:** ECON521.

**ECON644 Empirical Analysis II: Introduction to Economic Models (3 Credits)**

An introduction to econometric methods with applications to public policy analysis. Primary focus on application and interpretation of multiple regression analysis.

**Prerequisite:** ECON643.

**ECON645 Empirical Analysis III: Econometric Modeling and Forecasting (3 Credits)**

Study of empirical techniques that are particularly relevant to the analysis of microeconomic models. Emphasis is on advanced panel data methods, time series regressions, instrumental variables, limited dependent variables, and sample selection corrections.

**Prerequisite:** ECON644.

**Credit Only Granted for:** ECON645 or ECON523.

**Formerly:** ECON523.

**ECON652 Public Economics I (3 Credits)**

The foundations of public economics, taxation, inequality, and behavioral public economics are reviewed. Major topics include welfare economics, tax incidence, behavioral responses to tax incentives and the efficiency cost of taxation, optimal taxation, income and wealth inequality, optimal tax systems and tax evasion, capital taxation and business income taxes, and taxation and behavioral economics. The course material is aimed to give students an understanding of both the foundations and methods of modern public economics, and important recent advances in our understanding of public economics. This is the first course in the two-part Ph.D. sequence in public economics.

**Prerequisite:** ECON604 and ECON624.

**ECON662 Empirical Industrial Organization (3 Credits)**

Dynamic models are important tools to understand intertemporal individual choices and industry evolution. The course discusses a number of issues estimating and solving dynamic models, complimenting and building on the methods and topics introduced in 625. The course also covers models of endogenous product choice, matching and market design. There will be two main sets of assignments, where students simulate data by solving models, estimate models based on simulated or real data and perform counterfactual analyses. The students will also be expected to submit a research proposal.

**Prerequisite:** ECON604 and ECON603.

**ECON664 Empirical Studies in Industrial Organization (3 Credits)**

Introduces students to the recent empirical literature of industrial organization. It consists of four themes: pricing and contracting; cartels, collusion and merger reviews; demand estimation; and information economics.

**Prerequisite:** ECON603, ECON604, and ECON624.

**Credit Only Granted for:** ECON664 or ECON698J.

**Formerly:** ECON698J.

**ECON668 The Economics of Retail Systems (3 Credits)**

This course is designed mainly but not exclusively for students in the third year of the economics Ph.D program and for students at a similar stage in a marketing program. Its main objective is to help the student generate their first professional research paper. In terms of interests it targets those in the area of microeconomics (advanced micro, industrial organization, or more generally applied microeconomics or micro aspects of any field). The course will be conducted as a seminar.

**Repeatable to:** 6 credits if content differs.

**ECON670 Financial Economics (3 Credits)**

The course applies microeconomic theory and applied econometric techniques to the study of financial institutions and markets for financial assets. Students will learn how economists model and estimate the value of financial assets. The economic and empirical models are of interest to public policy makers and private wealth managers. Specific topics can include financial intermediation, the regulation of financial institutions, risk management, portfolio theory, the capital asset pricing model and the efficient markets hypothesis.

**Prerequisite:** ECON641; and must have completed or be concurrently enrolled in ECON644.

**Restriction:** Must be in M.Prof.Studies: Applied Economics program.

**ECON671 Economics of Health Care (3 Credits)**

An examination of the structure, conduct and performance of the health care market, including a study of physician services, the pharmaceutical industry, the hospital market and health insurance. Students will analyze markets for health care and related products by examining the incentives and constraints for various participants, including individuals, family units, doctors, pharmaceutical companies, hospitals, and insurance providers. Extensive use of quantitative and analytic economic tools with special emphasis on regulatory responses to market imperfections.

**Prerequisite:** ECON641; and must have completed or be concurrently enrolled in ECON644.

**Jointly offered with:** ECON465.

**Restriction:** Must be in MS Applied Economics program; or with permission from the program director.

**Credit Only Granted for:** ECON671 or ECON465.

**ECON672 Program Analysis and Evaluation (3 Credits)**

Students study the tools used to evaluate the effectiveness of public policies. All evaluations have weaknesses, and some have more weaknesses than others. You will learn how to distinguish high from low quality evaluations. We will discuss the basic economics and econometrics of program evaluation, focusing on the application of methods used for causal inference and cost-benefit analyses in public policy contexts. We will examine published evaluation research with the intent of showing how the research does or does not lead to clear conclusions regarding program performance.

**Prerequisite:** ECON641 and ECON645.

**ECON673 Information, Game Theory and Market Design (3 Credits)**

A study of the strategic decision-making and the theory and practice of market design. Focus is on the design of organized market and incentives created by market rules. Topics include online auction markets, government auctions procurement auctions and matching markets. The analysis includes documenting the rules of real-world markets, game theoretic analysis, empirical analysis, and experimental work.

**Prerequisite:** ECON641; and must have completed or be concurrently enrolled in ECON644.

**ECON674 Economic Analysis of Law (3 Credits)**

A study of the application of economics to law with a focus on game theory, strategic behavior and public policy.

**Prerequisite:** ECON641; and must have completed or be concurrently enrolled in ECON644.

**ECON675 Environmental Economics (3 Credits)**

Application of microeconomics and econometrics to analysis of environmental regulation. Many examples based on US policies, but the methods are broadly applicable in other contexts.

**Prerequisite:** ECON641; and must have completed or be concurrently enrolled in ECON644.



**ECON676 Economic Development (3 Credits)**

Analysis of economic development. The course will focus on the consequences of poverty and poor institutions for the behavior and welfare of individuals, households, firms and the aggregate economy in developing countries. Theoretical models and empirical evidence will be used to understand the intended and unintended consequences of policies designed to enhance economic development.

**Prerequisite:** ECON641; and ECON642; and must have completed or be concurrently enrolled in ECON644.

**Restriction:** Must be in M.Prof.Studies: Applied Economics program.

**ECON677 International Trade and Applications (3 Credits)**

A mix of theory and empirical work. Students will analyze the causes and consequences of international trade. The course will cover a set of conceptual tools that are useful for understanding "globalization" and the usage of these tools to address interesting and important questions about how countries, firms, and workers respond to international trade.

**Prerequisite:** ECON641 and ECON644.

**Restriction:** Must be in MS Applied Economics program; or with permission from the program director.

**ECON683 International Macroeconomics and Finance (3 Credits)**

Economic analysis of international macroeconomic issues and policy. Topics can include the study of exchange rates, balance of payments, international financial markets, international business cycles, contagion, and the roles played by international economic institutions.

**Prerequisite:** ECON641 and ECON642; and must have completed or be concurrently enrolled in ECON644.

**Restriction:** Must be in M.Prof.Studies: Applied Economics program.

**ECON684 Applied Time Series Analysis and Forecasting (3 Credits)**

This course builds on the brief introduction to time series econometrics offered in ECON 645. Students will learn the theory of stationary processes and how it applies to econometric techniques for estimation and forecasting based on time series data. The techniques will be applied in macroeconomic, financial and business applications.

**Prerequisite:** ECON642; and ECON645.

**Restriction:** Must be in M.Prof.Studies: Applied Economics program.

**ECON687 Economics Applications of R Programming (3 Credits)**

Builds on the data analysis and econometric skills learned in the Empirical analysis sequence of ECON 643, 644, and 645. The STATA skills acquired in that sequence, such as basic data manipulation and econometric estimation, will be extended to the R programming language. The fundamentals of more advanced scientific programming—objects, data structures, loops, functions, simulation, parallel computing—will be introduced with applications to economics and the social sciences. Additional emphasis is placed on good coding practices and tools for version control and collaboration such as Git and R Markdown.

**Prerequisite:** Must have completed or be concurrently enrolled in ECON645.

**Restriction:** Must be in Applied Economics Master of Science program; or permission of the program director.

**ECON698 Selected Topics in Economics (3 Credits)****ECON699 Applied Economics Internship Experience (1-3 Credits)**

Variable credit course for MS Applied Economics and Economic Analysis graduate certificate students participating in internships with well-established organizations and regular supervision from experienced professionals.

**Restriction:** Must be the Applied Economics Master's Program (ECAO or ECAM), or Economic Analysis Certificate Program (Z074 or Z098); and permission of program director.

**Repeatable to:** 6 credits.

**Additional Information:** Students may only earn credits during the term in which they are participating in the internship.

**ECON701 Advanced Macroeconomics I (3 Credits)**

Recent developments in macroeconomics with an emphasis on topics and techniques useful for conducting research in macroeconomics. Topics include advanced treatment of fiscal and monetary policy issues; the role of imperfect competition; real, sectoral and nominal business cycle models.

**Prerequisite:** ECON602 and ECON601.

**ECON702 Advanced Macroeconomics II (3 Credits)**

Recent advances in the fast-growing subfield of behavioral macroeconomics, with applications to business cycles and monetary economics. We will discuss surveys and controlled laboratory experiments that test the full information rational expectations (FIRE) hypothesis, and characterize deviations from FIRE in individual beliefs and actions, and we will study models that relax both the FI and the RE assumptions in general equilibrium settings, to bridge the gap between individual biases and constraints on the one hand and aggregate consequences and policy implications on the other.

**Prerequisite:** ECON602 and ECON601.

**ECON703 Advanced Microeconomics I (3 Credits)**

A formal treatment of game theory and its microeconomic applications is presented. Equilibrium concepts for static and dynamic games, and games with complete and incomplete information are studied. Topics also discussed: the relation between games in strategic form and games in extensive form, equilibrium refinement, Bayesian games, multi-dimensional mechanism design, dominant strategy and Bayesian implementation, Nash-in-Nash bargaining solutions.

**Prerequisite:** ECON604 and ECON603.

**ECON704 Advanced Microeconomics II (3 Credits)**

This is the second half of a two-semester sequence in Advanced Microeconomics, intended for second-year Ph.D. students. The course material varies from year-to-year, but currently it focuses on auction theory, matching theory, and the relationship between matching and auction theory. Other topics that are treated in some years include: sequential bargaining under incomplete information; and equilibrium refinements.

**Prerequisite:** ECON604 and ECON603.

**ECON708 Advanced Topics in Applied and Theoretical Microeconomics (2 Credits)**

Read, discuss, and analyze current topics in microeconomics, including public economics, environmental economics, labor economics, industrial economics, microeconomic theory, public choice and international trade. Specific topics covered will change from semester to semester depending on the students' and faculty's interests. Intended primarily for students beginning thesis research in economics.

**Prerequisite:** Must have completed a one-year graduate sequence in one of the microeconomic fields.

**Repeatable to:** 12 credits if content differs.

**ECON709 Advanced Topics in Applied and Theoretical Macroeconomics (2 Credits)**

Read, discuss, and analyze current topics in macroeconomics, including asset pricing models, models of economic growth, investment, and the labor market. Specific topics covered will change from semester to semester depending on the students' and faculty's interests. Intended primarily for students beginning thesis research in economics.

**Prerequisite:** Must have completed a one-year graduate sequence in one of the macroeconomic fields.

**Repeatable to:** 12 credits if content differs.

**ECON721 Econometrics III (3 Credits)**

Oriented towards macro-econometric methods. Topics covered will be selected from the following: Further discussion of topics covered in ECON624, non-stationary time series models (models with deterministic trends, unit roots, co-integration, error correction models, vector autoregressive models), econometric models of conditional heteroskedasticity (ARCH and GARCH models), Bayesian econometrics and methods for Bayesian computation, large-dimensional factor analysis, models of changes in regime, and methods for time series forecasting.

**Prerequisite:** ECON624; or permission of BSOS-Economics department.

**ECON722 Econometrics IV (3 Credits)**

Oriented towards micro-econometric methods. Topics covered will be selected from the following: Further discussion of topics covered in ECON624, binary and multinomial response models, semiparametric and non-parametric estimation, machine learning algorithms, neural nets, and applications of ML to program evaluation and treatment effects methods. Introduces students to Python programming and Python ML toolkits Scikit and PyTorch. Structural econometrics, the identification problem, stratified and clustered samples, spatial and social network models, dynamic panel data models, weak instruments, non-parametric and semi-parametric estimation methods, boot strap and Jack Knife methods, pre-test estimators.

**Prerequisite:** ECON624; or permission of BSOS-Economics department.

**ECON741 Advanced International Economics I (3 Credits)**

International Business Cycles; Exchange Rate Determination; Imperfect Financial Markets; Deviations from Full Information Rational Expectations; Monetary and Exchange Rate Policy

**Prerequisite:** ECON601; or permission of BSOS-Economics department.

**ECON742 Advanced International Economics II (3 Credits)**

Comparative advantage, Heckscher-Ohlin theory, specific-factors model, empirical verification, economies of scale, imperfect competition, commercial policy, factor mobility.

**Prerequisite:** ECON603; or permission of BSOS-Economics department.

**ECON743 Topics in International Finance (3 Credits)**

Covers research in quantitative macroeconomics in international finance and with heterogeneous agents. The aim is to learn these models and how to solve them numerically to equip you with computational tools to apply in your own research on these topics.

**Prerequisite:** ECON630; or permission of BSOS-Economics department.

**ECON744 Advanced Topics in International Economics (3 Credits)**

Focuses on key topics in international macroeconomics. We will cover classic and recent papers on business cycles, exchange rates, capital flows, monetary and fiscal policy, sovereign debt, default, and currency denomination. The course will be oriented towards students initiating research in the field.

**Prerequisite:** ECON601 and ECON602.

**Credit Only Granted for:** ECON698M or ECON744.

**Formerly:** ECON698M.

**ECON745 Advanced Topics in International Trade (3 Credits)**

Designed primarily for students planning to write dissertations on a topic related to international trade. Its focus is on recent research in this field including tests of trade theories; the effects of trade on growth and knowledge diffusion; the political economy of trade policy and the theory and practice of trade agreements.

**Prerequisite:** ECON604 and ECON624.

**Credit Only Granted for:** ECON698L or ECON745.

**Formerly:** ECON698L.

**ECON747 The Macroeconomics of Imperfect Capital Markets (3 Credits)**

A field course designed for students who have completed introductory graduate course work in macroeconomics. The course is built around three main ideas. First, its objective is to understand the role of financial markets for fluctuations in the macroeconomy. More specifically, starting from a complete markets benchmark, we study canonical types of credit market frictions that give rise to macroeconomic effects. Second, the course aims to enhance the students' toolkit to carry out state-of-the-art research in macroeconomics in general. It provides plenty of practical exercise to take models (usually DSGE models with financial frictions) to the computer. Third, alongside the methodological content, we revisit empirical facts on the regularities of financial variables, the 2008-09 global financial crisis and the Covid-19 recession.

**Prerequisite:** ECON602 and ECON601; or (ECON604 and ECON603); or permission of BSOS-Economics department.

**Restriction:** Must be in one of the following programs (Economics (Master's); Economics (Doctoral)).

**Credit Only Granted for:** ECON698K or ECON747.

**Formerly:** ECON698K.

**ECON752 Public Economics II (3 Credits)**

Students will study a set of issues related to the government's role in the economy, focusing on government redistribution and social insurance. Major topics covered include the optimal design of government redistribution programs; theoretical and empirical analyses of major U.S. government transfer programs; the optimal design of social insurance programs; and theoretical and empirical analyses of major U.S. social insurance programs.

**Prerequisite:** ECON751.

**ECON754 Theory of Political Economy (3 Credits)**

Basic Electoral Models of Aggregating Preferences and Information. Political Participation and Voter Turnout. Pivotal and Ethical Voters. Opportunistic versus Policy-Motivated Candidates. Credibility of Policy. Political Agency and Accountability - Moral Hazard and Selection. Legislatures - Legislative Bargaining and Legislative Dynamics. Special Interest Politics. Campaign Financing. Political Polarization and Ambiguity. Behavioral Political Economy. Populism and Authoritarianism. Political Parties.

**Prerequisite:** ECON603 and ECON604; or permission of BSOS-Economics department.

**ECON756 Empirical Political Economics (3 Credits)**

An introduction to empirical political economy. Determinants of individual political behavior, the impact of political institutions on economic outcomes, and economic determinants of political institutions will all be analyzed. Modern applied econometric techniques will also be covered.

**ECON771 Advanced Labor Economics: Theory and Evidence (3 Credits)**

Provides students the theoretical background and econometric tools to engage and conduct research in labor economics. The course highlights the importance of a good balance between theory and solid empirical work. The topics include human capital, empirical earning functions, labor demand, incentive, discrimination, minimum wage, labor supply, tasks and skills, and inequality. In addition, it goes over essential topics in applied economics, including selection bias, instrumental variables, structural vs. reduced-form analysis, dynamic discrete choice models, and unobserved heterogeneity. During the term, students work with different data sets.

**Prerequisite:** ECON603 and ECON624; or permission of BSOS-Economics department.

**Restriction:** Must be in the Economics Doctoral program.

**ECON772 Population Economics (3 Credits)**

Explore topics in labor and public economics. Study the empirical evidence and the applied methodology used within labor and public economics. Discuss important topics in labor and public economics including immigration, education, discrimination, crime, and the role of family background. Provide instruction on how to perform empirical labor and public economic research by familiarizing students with available data sources, current research methodology, and practice with statistical packages such as Stata.

**Prerequisite:** ECON603 and ECON604; and (ECON623 and ECON624) or ECON626; or permission of BSOS-Economics Department.

**ECON773 Topics in Applied Public and Labor Economics (3 Credits)**

Explore topics in labor and public economics. Study the empirical evidence and the applied methodology used within labor and public economics. Discuss important topics in labor and public economics including immigration, education, discrimination, crime, and the role of family background. Provide instruction on how to perform empirical labor and public economic research by familiarizing students with available data sources, current research methodology, and practice with statistical packages such as Stata.

**Prerequisite:** ECON603, ECON604, and ECON623; and (ECON624 or ECON626).

**ECON781 Valuing Environmental Benefits (3 Credits)**

The theory and practice of valuing environmental benefits, including the health, recreation and aesthetic benefits associated with controlling air and water pollution, and the damages associated with climate change. Estimation of the benefits of energy efficiency improvements-including the benefits of fuel economy standards.

**Prerequisite:** ECON603; and ECON623. Or students who have taken courses with comparable content may contact the department.

**ECON785 Advanced Economics of Natural Resources (3 Credits)**

The use of exhaustible and renewable natural resources from normative and positive points of view. Analysis of dynamic resource problems emphasizing energy, mineral, groundwater, forestry, and fishery resources; optimal, equilibrium, and intergenerational models of resource allocation.

**Prerequisite:** Permission of AGNR-Agricultural & Resource Economics department; or (ECON603 and AREC623).

**Cross-listed with:** AREC785.

**Credit Only Granted for:** AREC785 or ECON785.

**ECON799 Master's Thesis Research (1-6 Credits)****ECON808 Workshop on Macroeconomics, International Macroeconomics and International Finance (2 Credits)**

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**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 12 credits if content differs.

**ECON818 Workshop in Microeconomic Theory (2 Credits)**

Current research in microeconomic theory. Topics drawn from game theory, mathematical economics, and the economics of information and will include applications of the theory to diverse areas of economics. Specific topics: bargaining, auctions, mechanism design, signaling, general equilibrium, industrial organization theory, and financial markets theory.

**Repeatable to:** 12 credits if content differs.

**ECON825 Advanced Economic Welfare Analysis (3 Credits)**

Theory of economic welfare measurement, problems of path dependence in evaluating multiple price changes, welfare measurement under risk, general equilibrium welfare measurement with multiple distortions, and applications in evaluation of agricultural and resource policies.

**Prerequisite:** ECON604 and ECON603; or permission of BSOS-Economics department.

**Credit Only Granted for:** ECON825 or AREC825.

**ECON828 Workshop in Econometrics (2 Credits)**

Current research in econometrics. Topics drawn from theoretical and applied econometrics. Special topics include: maximum likelihood and generalized method of moments estimation of linear and non-linear models, analysis of stationary and non-stationary time series, cross section time series estimation, spatial estimation methods, Bayesian methods, semi-and non-parametric methods, rational expectations models, numerical methods, and various applications.

**Repeatable to:** 12 credits if content differs.

**ECON848 Workshop in International Trade, Institutional Economics and Political Economy (2 Credits)**

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**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 12 credits if content differs.

**ECON858 Workshop in Public Economics (3 Credits)**

**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 6 credits if content differs.

**ECON868 Workshop in Industrial Organization, Microeconomic Theory and Behavioral and Experimental Economics (2 Credits)**

Workshops designed to provide a structured environment for our faculty and graduate students to meet regularly to discuss and present their research ideas.

**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 12 credits if content differs.

**ECON878 Workshop in Development, Labor and Public Economics (2 Credits)**

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**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 12 credits if content differs.

**ECON888 Workshop in Comparative Institutional Economics (2 Credits)**

Current research in institutional economics and closely related fields such as economic transition, economic development, economic theory, law and economics, political economics, and economic history. Topics are drawn from both theoretical analysis of institutions and empirical studies of the effects and determinants of institutions.

**Restriction:** Permission of BSOS-Economics department.

**Repeatable to:** 12 credits if content differs.

**ECON898 Pre-Candidacy Research (1-8 Credits)****ECON899 Doctoral Dissertation Research (1-8 Credits)**