

# ECONOMICS

Degree Types: MA, PhD

The PhD Program in Economics (<https://www.economics.northwestern.edu/graduate/>) prepares students for careers in college teaching and research, government and international agencies, or private business. The curriculum covers all principal areas of economic study and research.

Advanced courses, seminars, and research opportunities are offered in the fields of applied microeconomics, development economics, econometrics, economic history, economic theory, industrial organization, international economics, labor economics, macroeconomics, and public finance. Weekly workshops provide a forum for faculty, students, and distinguished economists from around the world to meet and present their research.

The PhD program in Economics shares courses, faculty, and seminars with Kellogg School of Management (<https://www.kellogg.northwestern.edu/>) doctoral programs in Finance (<https://catalogs.northwestern.edu/tgs/finance/>) and Managerial Economics and Strategy (<https://catalogs.northwestern.edu/tgs/managerial-economics-strategy/>).

The Department and the Finance Department of the Kellogg School of Management jointly offer a combined PhD in Financial Economics (<https://catalogs.northwestern.edu/tgs/financial-economics/>).

The Department does not normally admit students for a terminal MA degree. An MA degree is only available to Economics PhD students who have successfully completed the first year of the doctoral program, to students enrolled in other doctoral programs at Northwestern, and to undergraduate students who are completing a combined BA/MA degree.

## Additional resources:

- Department website (<https://www.economics.northwestern.edu/>)
- Program handbook(s)

## Degrees Offered

- Economics BA/MA (<https://catalogs.northwestern.edu/tgs/economics/economics-bach-mast/>)
- Economics Master's (<https://catalogs.northwestern.edu/tgs/economics/economics-masters/>)
- Economics PhD (<https://catalogs.northwestern.edu/tgs/economics/economics-phd/>)

### Economics: MA

Learning objective(s)/Students should be able to...

- demonstrate mastery of the fundamental concepts in all three core areas of economics (microeconomics, macroeconomics, econometrics).
- develop the ability to apply economic concepts and techniques to the analysis of real-world problems.

### Economics: PHD

Learning objective(s)/Students should be able to...

- demonstrate mastery of the fundamental concepts in all three core areas of economics (microeconomics, macroeconomics, econometrics).
- demonstrate understanding of the core literature and the frontier of knowledge in multiple sub-fields within economics.
- develop skills in conducting independent research and presenting their work in both written and verbal formats.
- interpret the cutting edge of new research presented in workshops and in journal articles.
- develop skills in preparing for and conducting the teaching of economics.
- develop and implement a dissertation that contributes original research and demonstrates appropriate research methodology and analyses given the particular research question.

## Economics Courses

### ECON 307-0 Economics of Medical Care (1 Unit)

Application of microeconomics to the study of health insurance and the health care sector. Topics include: design and financing of health insurance, public and private demand for medical care, role of competition, regulation of hospitals and physicians, roles of nonprofit and for-profit organizations, and technological change.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

### ECON 308-0 Money and Banking (1 Unit)

The role of money, banking, and financial markets in the modern economy. Topics include: function and history of money, financial flows, evolving nature of banks and their regulation, monetary policy, modern central bank practices, effect of monetary policy on economic outcomes, and the response to financial crises.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

### ECON 309-0 Public Finance (1 Unit)

Understanding the role of government in the economy in theory and practice. Topics include: structure and implications of various tax instruments, role of public debt, and methods for evaluating government expenditures and programs.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

### ECON 310-1 Microeconomics (1 Unit)

A more mathematically formal and rigorous treatment of the core concepts of microeconomics introduced in ECON 202-0. Topics include: consumer behavior and the theory of demand, costs of production and the nature of equilibrium in competitive and monopolistic markets.

Prerequisites: ECON 201-0, ECON 202-0, MATH 220-1.

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### ECON 310-2 Microeconomics (1 Unit)

The continuation of the intermediate microeconomics sequence provides tools to analyze social wellbeing, social choice, risk and uncertainty, information asymmetries, competitive independencies between firms (game theory), market spillovers and general equilibrium.

Prerequisite: ECON 310-1.

### ECON 311-0 Macroeconomics (1 Unit)

A more mathematically formal and rigorous treatment of the core concepts of macroeconomics introduced in ECON 201-0. Topics include: aggregate consumption, inflation, unemployment, growth, international balances between countries, and the role of monetary and fiscal policy.

Prerequisites: ECON 201-0, ECON 202-0, MATH 220-1.

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**ECON 313-0 Economics of Data (1 Unit)**

Algorithms and data are increasingly used to guide high-stakes predictions about individuals, with a range of economic and social implications. This course covers theoretical frameworks for thinking through those implications. Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, MATH 220-2 and MATH 230-1.

**ECON 315-0 Topics in Economic History (1 Unit)**

Topics vary and may cover the economic history of a particular country or region, or a specific issue in economic history. May be taken twice for credit with different topics.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

**ECON 316-0 Advanced Topics in Macroeconomics (1 Unit)**

This course is for students looking for advanced and rigorous analysis in macroeconomics. Topics vary and may include: growth, business cycles, unemployment and search, monetary economics, macroeconomic policy, inter-temporal choice, and general equilibrium.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0, MATH 220-2, MATH 230-1.

**ECON 318-0 History of Economic Thought (1 Unit)**

Development of economic thought from the advent of the mercantilists to the formation of current schools of economics.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

**ECON 323-1 Economic History of the United States Before 1865 (1 Unit)**

Economic development of the United States with emphasis on changing structure and performance of the economy: Colonial period to 1865.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

**ECON 323-2 Economic History of the United States 1865 to Present (1 Unit)**

Economic development of the United States with emphasis on changing structure and performance of the economy: 1865 to the present.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0. ECON 323-1 is not a prerequisite.

**ECON 324-0 Western Economic History (1 Unit)**

Western European developments from 1750 to the present. Topics include: demographic, technical, social, and economic change.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

**ECON 325-0 Economic Growth & Development (1 Unit)**

Macroeconomic aspects of long-term patterns of economic development, and the examination of differences in the income levels and growth performances across countries. The role of investment, education, population, and technological change in economic growth.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

**ECON 326-0 The Economics of Developing Countries (1 Unit)**

Microeconomic issues in underdeveloped countries. Topics include: land use, labor, migration, credit and microfinance, informal and formal insurance, famine, education and health.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 327-0 Economic Development in Africa (1 Unit)**

Economic change in sub-Saharan Africa, emphasizing current issues and policies in their historical contexts. Agriculture and rural development, industrialization, and international economic relations.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 326-0.

**ECON 328-0 Complexity Economics (1 Unit)**

Relaxing the traditional assumptions of an economy in equilibrium populated by agents who are perfectly rational. Complexity economics is one alternative approach that assumes that markets may not be in equilibrium and that the people in the economy may not perfectly

understand their environment. They face fundamental uncertainty in their decision-making.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 329-0 Experimental Economics (1 Unit)**

Application of experimental methods to study economic questions. Students will learn about, participate in, and potentially design, experiments to gain insight into economic theories about decision-making, games, and markets.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 330-0 Behavioral Economics (1 Unit)**

Understanding of how humans make choices in economic situations.

The incorporation of psychology and/or sociology into economics to gain deeper insight into economic behavior, to make better predictions, and to generate improved policy prescriptions.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 331-0 Economics of Risk and Uncertainty (1 Unit)**

Models of decision making under uncertainty. Use of these models to understand economic phenomena such as investments in financial assets, insurance, contracting, and auctions.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, MATH 300-0 or equivalent.

**ECON 333-0 Economics of Social Policy (1 Unit)**

Economic concepts and empirical tools to analyze the design and effects of social policies. Topics include the social safety net, health insurance, minimum wage, and taxation.

Prerequisites: Econ 281-0, Econ 310-1, Econ 310-2. SOC\_POL 330-0 and ECON 333-0 are taught together; may not receive credit for both. SESP students must register for SOC\_POL 330-0.

**ECON 335-0 Political Economics (1 Unit)**

The analysis of political motivations and policy outcomes using economic models of social choice theory and voting theory. Application of formal theory to contemporary and historical public policy decisions.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 336-0 Analytic Methods for Public Policy Analysis (1 Unit)**

Study of methodological problems in public policy analysis and an examination of how economists perform policy analysis in practice.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 337-0 Economics of State and Local Governments (1 Unit)**

Economic functions and financing of state and local governments in theory and practice, costs and demands for local public services, and the role of government finance in urban and regional growth.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 339-0 Labor Economics (1 Unit)**

The theory and empirical analysis of employment relationships. Topics include: decision to participate in the labor market, tradeoff between labor and leisure, demand for labor by firms, matching of workers and jobs, role and effect of trade unions, minimum wage legislation, labor mobility, and human capital acquisition.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

**ECON 340-0 Economics of the Family (1 Unit)**

Application of microeconomic theory to the analysis of family issues.

Topics include: marriage, cohabitation, decision to have children, divorce, credit and insurance, legacies, bargaining within the household, and division of household labor.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 341-0 Economics of Education (1 Unit)**

The economic analysis of education. Topics include: returns to schooling, individual decisions to invest in education, the production of education, markets for schools and teachers, financing, and public policy.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 342-0 Economics of Gender (1 Unit)**

Analysis of gender differences in employment, earnings and division of labor in the household. Topics include: the status of women around the world, education, marriage, fertility, labor supply, household decision-making, and discrimination.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 343-0 Economics of Immigration (1 Unit)**

Economic determinants and consequences of international immigration. Who migrates and why? How do immigrants do in the receiving country? How do immigrants affect natives?  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

#### **ECON 349-0 Industrial Economics (1 Unit)**

Examination of the competitive and cooperative strategies employed by profit-maximizing firms in a wide range of market structures. Topics include: the setting of prices and outputs, product quality and variety, competitive responses, entry barriers, mergers and acquisitions, and relationships with suppliers and distributors.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 350-0 Monopoly Competition & Public Policy (1 Unit)**

Application of microeconomic tools to the problems and issues caused by monopoly power in the context of antitrust law, public utility regulation, and intellectual property. Use of economic theory and landmark legal cases to study the purpose and development of policies to mitigate anti-competitive practices, and highlight currently unresolved public policy debates.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 351-0 Law and Economics (1 Unit)**

Use of economic analysis to understand the incentives, workings and efficiency of the legal system. Topics include: torts, contracts, property, criminal law, corporate law, and antitrust and regulation statutes.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 354-0 Issues in Urban and Regional Economics (1 Unit)**

Factors affecting the spatial distribution of economic activity within cities and between different regions of a country. Choice of residential and workplace location. Applications of economic analysis to problems of urban areas such as housing markets, zoning restrictions, and racial and social patterns of employment and housing.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 355-0 Transportation Economics and Public Policy (1 Unit)**

Economics of all forms of transportation and the regulatory and public policy environment in which they operate. Topics include: demand by passengers and freight shippers, costs of production, optimal pricing, regulatory interventions, subsidies, evaluation of investment, and dealing with congestion.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 358-0 Economics of Art and Culture (1 Unit)**

Application of economic analysis to creative and performing arts, and the heritage and cultural industries. The economic organization of the cultural sector and with the behavior of producers, consumers and governments in that sector.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 359-0 Economics of Nonprofit Organizations (1 Unit)**

The economic rationale for the non-profit sector in a mixed economy. Topics include: objectives and behavior of non-profit organizations,

competition with commercial firms, volunteerism, and charitable donations.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 360-1 Foundations of Corporate Finance Theory (1 Unit)**

How corporations allocate resources over time as facilitated by capital markets. Topics include: discounting techniques and applications, stock and bond valuation, asset pricing models, diversification and portfolio choice, capital budgeting, and basic option theory.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0. (May not receive credit for both this course and BUS\_INST 304-0. Not for students who have previously taken KELLG\_FE 310-0.).

#### **ECON 360-2 Investments (1 Unit)**

Analysis of the issues and tradeoffs involved in forming a portfolio of financial instruments from the perspectives of individual and institutional investors. (Should not be taken by students who have taken KELLG\_FE 312-0).  
Prerequisite: ECON 360-1 or equivalent.

#### **ECON 361-0 International Trade (1 Unit)**

Factors influencing trade in goods and services between countries and the implication of globalization. The reasons for, and the effects of, trade policy instruments such as tariffs, quotas, and voluntary export restrictions.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

#### **ECON 362-0 International Finance (1 Unit)**

The determination of exchange rates, international asset prices and flows, currency crises, and the international transmission of macroeconomic disturbances.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

#### **ECON 371-0 Economics of Energy (1 Unit)**

Analysis of the functioning and regulation of electricity, oil and natural gas markets. Topics include: the role of competition and environmental concerns.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 372-0 Environmental Economics (1 Unit)**

Economic analysis of scarcity and incentives explaining environmental issues such as pollution and climate change. Modeling and evaluation of public policy.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 373-0 Natural Resource Economics (1 Unit)**

Evaluation of economics models and public policy concerning natural resources such as farming, fisheries, forests, minerals, ores and fossil fuels.  
Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 380-1 Game Theory (1 Unit)**

Game theory is a collection of mathematical models of interaction among decision makers. It is used widely in understanding economic phenomena. This course will present some of the basic ideas of game theory. (Should not be taken by students who have completed MMSS 211-2).  
Prerequisites: ECON 310-1, ECON 310-2, MATH 220-2, MATH 230-1.

#### **ECON 380-2 Game Theory (1 Unit)**

This course extends the material presented in ECON 380-1 to explore more advanced models in game theory.  
Prerequisite: ECON 380-1 or consent of instructor.

#### **ECON 381-1 Econometrics (1 Unit)**

First part of the specialized sequence in econometrics. A more rigorous and higher level alternative to ECON 281-0. Economics majors completing ECON 381-1 will have the ECON 281-0 requirement waived.

Prerequisites: ECON 310-1, (ECON 310-2, ECON 311-0 recommended), MATH 226-0, MATH 230-1, MATH 230-2, MATH 240-0 and MATH 314-0 (or equivalent).

#### **ECON 381-2 Econometrics (1 Unit)**

Second part of the upper-level econometrics sequence. The course introduces additional econometrics tools beyond those introduced in ECON 381-1. The course also explores the empirical application of these tools, and how to evaluate critically econometric and statistical methods used in policy analysis.

Prerequisite: ECON 381-1, (ECON 310-2, ECON 311-0 recommended).

#### **ECON 383-0 Applied Econometrics (1 Unit)**

Methods for using actual data together with modern software to build, assess critically, and interpret econometric models of real world phenomena and policy issues.

Prerequisites: ECON 281-0, ECON 310-1.

#### **ECON 401-0 Mathematical Methods of Economic Theory (1 Unit)**

A preparatory course held prior to the Fall Quarter of the student's first year. Emphasizing mathematical concepts and results applied in graduate economics courses. Topics include linear algebra, multivariate calculus, constrained optimization and probability theory.

#### **ECON 410-1 Microeconomics (1 Unit)**

Theoretical treatment of the behavior of consumers and firms. Topics include: uncertainty, monotone comparative statics, competitive equilibrium, matching, game theory, informational asymmetries, and mechanism design (Required sequence.)

#### **ECON 410-2 Microeconomics (1 Unit)**

Theoretical treatment of the behavior of consumers and firms. Topics include: uncertainty, monotone comparative statics, competitive equilibrium, matching, game theory, informational asymmetries, and mechanism design (Required sequence.)

#### **ECON 410-3 Microeconomics (1 Unit)**

Theoretical treatment of the behavior of consumers and firms. Topics include: uncertainty, monotone comparative statics, competitive equilibrium, matching, game theory, informational asymmetries, and mechanism design (Required sequence.)

#### **ECON 411-1 Macroeconomics (1 Unit)**

Theoretical methodologies and their application to the study of dynamic economies. Topics include: economic growth and business cycles, the determinants of consumption and investment, and the effects of monetary and fiscal policy. (Required sequence.)

#### **ECON 411-2 Macroeconomics (1 Unit)**

Theoretical methodologies and their application to the study of dynamic economies. Topics include: economic growth and business cycles, the determinants of consumption and investment, and the effects of monetary and fiscal policy. (Required sequence.)

#### **ECON 411-3 Macroeconomics (1 Unit)**

Theoretical methodologies and their application to the study of dynamic economies. Topics include: economic growth and business cycles, the determinants of consumption and investment, and the effects of monetary and fiscal policy. (Required sequence.)

#### **ECON 412-1 Economic Theory and Methods (1 Unit)**

Methodological aspects of modern economic theory. Problems in economic decision making, strategic interaction, and welfare economics.

#### **ECON 412-2 Economic Theory and Methods (1 Unit)**

Methodological aspects of modern economic theory. Problems in economic decision making, strategic interaction, and welfare economics.

#### **ECON 412-3 Economic Theory and Methods (1 Unit)**

Methodological aspects of modern economic theory. Problems in economic decision making, strategic interaction, and welfare economics.

#### **ECON 414-1 Economics of Information (1 Unit)**

Information imperfections and asymmetries in markets and organizations. The theory and application of mechanism design to markets and contracts. Topics include: modeling information, search, the value of information, games with incomplete information, adverse selection and moral hazard.

#### **ECON 414-2 Economics of Information (1 Unit)**

Information imperfections and asymmetries in markets and organizations. The theory and application of mechanism design to markets and contracts. Topics include: modeling information, search, the value of information, games with incomplete information, adverse selection and moral hazard.

#### **ECON 414-3 Economics of Information (1 Unit)**

Information imperfections and asymmetries in markets and organizations. The theory and application of mechanism design to markets and contracts. Topics include: modeling information, search, the value of information, games with incomplete information, adverse selection and moral hazard.

#### **ECON 415-1 Advanced Microeconomics (1 Unit)**

Current topics in microeconomic theory. Mathematical formulations and techniques and their applications in fields such as political economy, industrial organization, and finance.

#### **ECON 415-2 Advanced Microeconomics (1 Unit)**

Current topics in microeconomic theory. Mathematical formulations and techniques and their applications in fields such as political economy, industrial organization, and finance.

#### **ECON 416-1 Advanced Macroeconomics (1 Unit)**

Recent contributions to macroeconomics. Topics may include: models with heterogeneous agents, the role of financial markets and of the housing market, models of search and unemployment, the role of market power in good markets, and inequality.

#### **ECON 416-2 Advanced Macroeconomics (1 Unit)**

Recent contributions to macroeconomics. Topics may include: models with heterogeneous agents, the role of financial markets and of the housing market, models of search and unemployment, the role of market power in good markets, and inequality.

#### **ECON 416-3 Advanced Macroeconomics (1 Unit)**

Recent contributions to macroeconomics. Topics may include: models with heterogeneous agents, the role of financial markets and of the housing market, models of search and unemployment, the role of market power in good markets, and inequality.

#### **ECON 420-1 American Economic History (1 Unit)**

Application of economic theory and other quantitative techniques to research on long-term factors in the development of the American economy.

#### **ECON 420-2 European Economic History (1 Unit)**

Application of economic theory and other quantitative techniques to studies of European economic evolution.

#### **ECON 425-1 Development Economics (1 Unit)**

Theoretical and empirical study of economic behavior and institutions in developing countries.

#### **ECON 425-2 Development Economics (1 Unit)**

Theoretical and empirical study of economic behavior and institutions in developing countries.

#### **ECON 425-3 Development Economics (1 Unit)**



Theoretical and empirical study of economic behavior and institutions in developing countries.

**ECON 436-1 Public Finance (1 Unit)**

Theoretical and empirical aspects of government spending and taxation.

**ECON 436-2 Public Finance (1 Unit)**

Theoretical and empirical aspects of government spending and taxation.

**ECON 440-1 Labor Economics (1 Unit)**

Theoretical and empirical study of the structure and functions of labor markets.

**ECON 440-2 Labor Economics (1 Unit)**

Theoretical and empirical study of the structure and functions of labor markets.

**ECON 440-3 Labor Economics (1 Unit)**

Theoretical and empirical study of the structure and functions of labor markets.

**ECON 450-1 Industrial Organization (1 Unit)**

Theoretical and empirical analysis of the behavior of firms, the structure of markets and related public policy issues.

**ECON 450-2 Industrial Organization (1 Unit)**

Theoretical and empirical analysis of the behavior of firms, the structure of markets and related public policy issues.

**ECON 450-3 Industrial Organization (1 Unit)**

Theoretical and empirical analysis of the behavior of firms, the structure of markets and related public policy issues.

**ECON 460-1 International Economics (1 Unit)**

Analytical tools for understanding international trade and international macroeconomics. Topics include: the relationship between trade and growth, international trade policy, international effects of monetary and fiscal policy, capital flows, and the choice of exchange rate regimes.

**ECON 460-2 International Economics (1 Unit)**

Analytical tools for understanding international trade and international macroeconomics. Topics include: the relationship between trade and growth, international trade policy, international effects of monetary and fiscal policy, capital flows, and the choice of exchange rate regimes.

**ECON 460-3 International Economics (1 Unit)**

Analytical tools for understanding international trade and international macroeconomics. Topics include: the relationship between trade and growth, international trade policy, international effects of monetary and fiscal policy, capital flows, and the choice of exchange rate regimes.

**ECON 480-1 Econometrics (1 Unit)**

Nonparametric and linear regression, identification, principles of statistical inference, extremum estimators, asymptotic statistical theory, time series analysis, discrete response analysis, structural microeconometrics. (Required sequence.)

**ECON 480-2 Econometrics (1 Unit)**

Nonparametric and linear regression, identification, principles of statistical inference, extremum estimators, asymptotic statistical theory, time series analysis, discrete response analysis, structural microeconometrics. (Required sequence.)

**ECON 480-3 Econometrics (1 Unit)**

Nonparametric and linear regression, identification, principles of statistical inference, extremum estimators, asymptotic statistical theory, time series analysis, discrete response analysis, structural microeconometrics. (Required sequence.)

**ECON 481-1 Advanced Econometrics (1 Unit)**

Advanced theory of identification, estimation, and statistical inference. Topics include partial identification of probability distributions, the bootstrap, refinements of asymptotic theory, and semi- and nonparametric structural microeconometrics.

**ECON 481-2 Advanced Econometrics (1 Unit)**

Advanced theory of identification, estimation, and statistical inference. Includes partial identification of probability distributions, the bootstrap, refinements of asymptotic theory, and semi- and nonparametric structural microeconometrics.

**ECON 481-3 Advanced Econometrics (1 Unit)**

Advanced theory of identification, estimation, and statistical inference. Topics include partial identification of probability distributions, the bootstrap, refinements of asymptotic theory, and semi- and nonparametric structural microeconometrics.

**ECON 482-0 Applied Time-Series Econometrics (1 Unit)**

Methods used to analyze time-series data with a focus on macroeconomic applications.

**ECON 483-0 Applied Microeconometrics (1 Unit)**

Methods used to analyze cross-section and panel data sets with an emphasis on applications.

**ECON 498-1 Advanced Topics in Economics (1 Unit)**

Topics vary with the field of specialization of visiting or regular faculty.

**ECON 498-2 Advanced Topics in Economics (1 Unit)**

Topics vary with the field of specialization of visiting or regular faculty.

**ECON 499-0 Independent Study (1 Unit)**

SEE DEPT FOR SECTION AND PERMISSION NUMBERS Permission of instructor and department required. May be repeated for credit.

**ECON 501-0 Graduate Student Seminar (1 Unit)**

Student presentations of research papers. Primarily aimed at third year students.

**ECON 515-0 Research Seminar in Economic Theory (1 Unit)**

Open to advanced graduate students with research interests in economic theory.

**ECON 519-0 Responsible Conduct of Research Training (0 Unit)**

**ECON 520-0 Research Seminar in Economic History (1 Unit)**

Open to advanced graduate students with research interests in economic history.

**ECON 525-0 Research Seminar in Development Economics (1 Unit)**

Open to advanced graduate students with research interests in development economics.  
Prerequisites: None.

**ECON 530-0 Research Seminar in Macroeconomics (1 Unit)**

Open to advanced graduate students with research interests in macroeconomics.

**ECON 535-0 Research Seminar in Applied Microeconomics (1 Unit)**

Open to graduate students with research interests in health care, education, labor, and public finance economics.  
Prerequisites: None.

**ECON 536-0 Research Seminar in Public Finance (1 Unit)**

Open to advanced graduate students with research interests in public finance.

**ECON 540-0 Research Seminar in Labor Economics (1 Unit)**

Open to advanced graduate students with research interests in labor economics.

**ECON 550-0 Research Seminar in Industrial Organization (1 Unit)**

Open to graduate students with research interests in industrial organization.

**ECON 560-0 Research Seminar in International Economics (1 Unit)**

Open to advanced graduate students with research interests in international economics.

**ECON 580-0 Research Seminar in Econometrics (1 Unit)**

Open to advanced graduate students with research interests in econometrics.

**ECON 590-0 Research (1-3 Units)**

SEE DEPT FOR SECTION AND PERMISSION NUMBERS.