

# ECONOMICS

Our PhD program focuses on a solid core curriculum in economic theory and econometrics. Beyond this, we offer a number of specialized fields of study: econometrics, economic development, economic history, industrial organization, international trade and finance, labor and human resources, natural resources and environmental economics and public economics.

Course code for this program is ECON.

## Master's Degree

- Economics - Master of Arts (MA) (<https://catalog.colorado.edu/graduate/colleges-schools/arts-sciences/programs-study/economics/economics-master-arts-ma/>)

## Doctoral Degree

- Economics - Doctor of Philosophy (PhD) (<https://catalog.colorado.edu/graduate/colleges-schools/arts-sciences/programs-study/economics/economics-doctor-philosophy-phd/>)

## Faculty

While many faculty teach both undergraduate and graduate students, some instruct students at the undergraduate level only. For more information, contact the faculty member's home department.

Antman, Francisca Marie ([https://experts.colorado.edu/display/fisid\\_144606/](https://experts.colorado.edu/display/fisid_144606/))  
Professor; PhD, Stanford University

Avila, Sara ([https://experts.colorado.edu/display/fisid\\_165935/](https://experts.colorado.edu/display/fisid_165935/))  
Instructor; PhD, National University of Mexico

Barham, Tania C.J. ([https://experts.colorado.edu/display/fisid\\_140077/](https://experts.colorado.edu/display/fisid_140077/))  
Associate Professor; PhD, University of California, Berkeley

Bhatia, Alpna ([https://experts.colorado.edu/display/fisid\\_143993/](https://experts.colorado.edu/display/fisid_143993/))  
Instructor; PhD, University of Colorado Boulder

Boileau, Martin ([https://experts.colorado.edu/display/fisid\\_113872/](https://experts.colorado.edu/display/fisid_113872/))  
Professor, Chair; PhD, Queen's University (Canada)

Bottan, Daria ([https://experts.colorado.edu/display/fisid\\_168423/](https://experts.colorado.edu/display/fisid_168423/))  
Senior Instructor; PhD, LUISS Guido Carli (Italy)

Cadena, Brian C. ([https://experts.colorado.edu/display/fisid\\_145740/](https://experts.colorado.edu/display/fisid_145740/))  
Associate Professor; PhD, University of Michigan Ann Arbor

Carballo, Jeronimo Rafael ([https://experts.colorado.edu/display/fisid\\_155949/](https://experts.colorado.edu/display/fisid_155949/))  
Associate Professor; PhD, University of Maryland, College Park

Carlos, Ann M. ([https://experts.colorado.edu/display/fisid\\_105534/](https://experts.colorado.edu/display/fisid_105534/))  
Professor Emerita

Chen, Yongmin ([https://experts.colorado.edu/display/fisid\\_108989/](https://experts.colorado.edu/display/fisid_108989/))  
Professor, Endowed Chair; PhD, Boston University

De Bartolome, Charles A.M. ([https://experts.colorado.edu/display/fisid\\_101302/](https://experts.colorado.edu/display/fisid_101302/))  
Professor Emeritus; PhD, University of Pennsylvania

Flores, Nicholas E. ([https://experts.colorado.edu/display/fisid\\_107603/](https://experts.colorado.edu/display/fisid_107603/))  
Professor; PhD, University of California, San Diego

Gebhardt, Karen ([https://experts.colorado.edu/display/fisid\\_159742/](https://experts.colorado.edu/display/fisid_159742/))  
Senior Instructor; PhD, Colorado State University

Graves, Philip E. ([https://experts.colorado.edu/display/fisid\\_102050/](https://experts.colorado.edu/display/fisid_102050/))  
Professor Emeritus; PhD, Northwestern University

Greenwood, Michael J. ([https://experts.colorado.edu/display/fisid\\_102361/](https://experts.colorado.edu/display/fisid_102361/))  
Professor Emeritus; Ph.D., Northwestern University

Howe, Charles W.  
Professor Emeritus

Hsiao, Frank S.T.  
Professor Emeritus

Hughes, Jonathan Edward ([https://experts.colorado.edu/display/fisid\\_147335/](https://experts.colorado.edu/display/fisid_147335/))  
Associate Professor, Associate Chair; PhD, University of California, Davis

Iyigun, Fevzi Murat ([https://experts.colorado.edu/display/fisid\\_118373/](https://experts.colorado.edu/display/fisid_118373/))  
Professor; PhD, Brown University

Jaworski, Taylor Allen ([https://experts.colorado.edu/display/fisid\\_159798/](https://experts.colorado.edu/display/fisid_159798/))  
Associate Professor; PhD, University of Arizona

Kaempfer, William H.  
Professor Emeritus

Kaffine, Daniel Thomas ([https://experts.colorado.edu/display/fisid\\_153280/](https://experts.colorado.edu/display/fisid_153280/))  
Professor; PhD, University of California, Santa Barbara

Keller, Wolfgang ([https://experts.colorado.edu/display/fisid\\_141891/](https://experts.colorado.edu/display/fisid_141891/))  
Professor; PhD, Yale University

Kim, Jin-Hyuk ([https://experts.colorado.edu/display/fisid\\_149615/](https://experts.colorado.edu/display/fisid_149615/))  
Associate Professor; PhD, Cornell University

Kimball, Miles ([https://experts.colorado.edu/display/fisid\\_157993/](https://experts.colorado.edu/display/fisid_157993/))  
Endowed Chair, Professor; PhD, Harvard University

Klein, Jennifer Lynn ([https://experts.colorado.edu/display/fisid\\_158332/](https://experts.colorado.edu/display/fisid_158332/))  
Instructor; PhD, University of California, Santa Barbara

Lillydahl, Jane  
Professor Emerita

Liu, Xiaodong ([https://experts.colorado.edu/display/fisid\\_144508/](https://experts.colorado.edu/display/fisid_144508/))  
Professor; PhD, The Ohio State University

Mansfield, Richard ([https://experts.colorado.edu/display/fisid\\_157743/](https://experts.colorado.edu/display/fisid_157743/))  
Assistant Professor; PhD, Yale University

Markusen, James R. ([https://experts.colorado.edu/display/fisid\\_103187/](https://experts.colorado.edu/display/fisid_103187/))  
Professor Emeritus, Distinguished Professor; PhD, Boston College

Martins-Filho, Carlos B. ([https://experts.colorado.edu/display/fisid\\_147510/](https://experts.colorado.edu/display/fisid_147510/))  
Professor; PhD, University of Tennessee, Knoxville

Maskus, Keith E. ([https://experts.colorado.edu/display/fisid\\_103414/](https://experts.colorado.edu/display/fisid_103414/))  
Professor Emeritus, Distinguished Professor; PhD, University of Michigan  
Ann Arbor

McCloskey, Adam ([https://experts.colorado.edu/display/fisid\\_163644/](https://experts.colorado.edu/display/fisid_163644/))  
Associate Professor; MA, Boston University

McKinnish-Harlee, Terra ([https://experts.colorado.edu/display/fisid\\_115558/](https://experts.colorado.edu/display/fisid_115558/))  
Professor; PhD, Carnegie Mellon University

McNown, Robert F.  
Professor Emeritus

Mertens, William G. ([https://experts.colorado.edu/display/fisid\\_105762/](https://experts.colorado.edu/display/fisid_105762/))  
Senior Instructor; PhD, University of Colorado Boulder

Morey, Edward R.  
Professor Emeritus

Nigai, Sergey K. ([https://experts.colorado.edu/display/fisid\\_159293/](https://experts.colorado.edu/display/fisid_159293/))  
Assistant Professor; PhD, ETH Zurich

Peri, Alessandro ([https://experts.colorado.edu/display/fisid\\_157820/](https://experts.colorado.edu/display/fisid_157820/))  
Assistant Professor; PhD, Universidad Carlos III de Madrid

Poulson, Barry  
Professor Emeritus

Savage, Scott James ([https://experts.colorado.edu/display/fisid\\_121239/](https://experts.colorado.edu/display/fisid_121239/))  
Professor; PhD, Curtin University of Technology (Western Australia)

Shiue, Carol Hua ([https://experts.colorado.edu/display/fisid\\_141892/](https://experts.colorado.edu/display/fisid_141892/))  
Professor; PhD, Yale University

Song, Yangwei ([https://experts.colorado.edu/display/fisid\\_167159/](https://experts.colorado.edu/display/fisid_167159/))  
Assistant Professor; PhD, University of Rochester

Swanson, Shawn ([https://experts.colorado.edu/display/fisid\\_168257/](https://experts.colorado.edu/display/fisid_168257/))  
Instructor; PhD, University of Colorado Boulder

Valkovci, Mark  
Lecturer; PhD, University of Colorado Boulder

Waldman, Donald M.  
Professor Emeritus

Weber, Stephanie  
Assistant Professor; PhD, Yale University

Zax, Jeffrey S. ([https://experts.colorado.edu/display/fisid\\_100898/](https://experts.colorado.edu/display/fisid_100898/))  
Professor, Associate Chair; PhD, Harvard University

## Courses

### ECON 7010 (3) Microeconomic Theory 1

This course applies mathematical methods and optimization theory to study the foundation of modern microeconomic theory. The topics covered include theory of demand, theory of the firm, choice under uncertainty, equilibrium under alternative market structures, and welfare economics. Instructor consent required.

**Additional Information:** Departmental Category: Theory and History of Economic Thought

### ECON 7020 (3) Macroeconomic Theory 1

This course applies the mathematical methods of continuous-time and discrete-time dynamic optimization theory and dynamical systems to study the foundation of modern macroeconomic theory. The topics covered include economic growth, the business cycle, and the determinants of consumption and investment. Instructor consent required.

**Additional Information:** Departmental Category: Theory and History of Economic Thought

### ECON 7030 (3) Microeconomic Theory 2

Continuation of ECON 7010. Develops mathematical foundations of game theory and models of asymmetric information. Analyzes classical game-theoretic settings using analytical optimization techniques with emphasis on methodology, equilibrium concepts, theory of adverse selection and moral hazard, and principal-agent framework. Instructor consent required.

**Additional Information:** Departmental Category: Theory and History of Economic Thought

### ECON 7040 (3) Macroeconomic Theory 2

Continuation of ECON 7020. Develops the mathematical foundations of dynamic optimization and applies numerical methods to study dynamic and stochastic general equilibrium macroeconomic models. Topics covered include the business cycle, real and nominal rigidities, search and matching frictions, and financial frictions. Instructor consent required.

**Additional Information:** Departmental Category: Theory and History of Economic Thought

### ECON 7818 (3) Introduction to Probability and Asymptotic Theory

Introduces fundamental concepts and results from probability and asymptotic theory needed for a rigorous study of the limiting behavior of estimators and test statistics that emerge from the study of statistical/econometric models. Topics include the construction of probability measures, abstract integration, conditional expectation, stochastic convergence, laws of large numbers and central limit theorems. Instructor consent required.

**Additional Information:** Departmental Category: Quantitative Economics

### ECON 7828 (3) Econometrics

An introduction to estimation and inference for linear and nonlinear parametric models of regression, including least squares, method of moments and maximum likelihood estimation. Instructor consent required.

**Additional Information:** Departmental Category: Quantitative Economics

### ECON 8010 (3) Economics of Risk and Time

Develops the mathematical tools necessary to analyze optimal decision-making by individual households and firms over time and in the face of risk. This is a building block for general equilibrium models, statistical models of behavior and theoretical analyses of economic policy.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Theory and History of Economic Thought

### ECON 8015 (3) Behavioral Economics

Behavioral economics is the intersection of economics with psychology. Topics may include: (1) the effects of cognitive limitations on economic decisions, (2) the effects of internal conflict, (3) nonmarket goods, including internal mental states, such as happiness, (4) survey research, including survey design and the survey measurement of preference parameters from hypothetical choices, (5) theoretical modeling of nonstandard preferences and imperfect decision-making, and (6) welfare-theoretic consequences of nonstandard preferences and imperfect decision-making.

**ECON 8020 (3) Business Cycle Theory and Monetary and Fiscal Policy**

Develops key skills for understanding monetary, fiscal and financial stability policy: (a) deep mathematical analysis of business cycle models, including the mechanisms within models, their comparative statics and comparative dynamics, and the difference parameter values make to the behavior of business cycle models, (b) comparing model predictions to statistical data analyses, and (c) understanding real-world policy debates.

**Requisites:** Restricted to graduate students only.

**ECON 8030 (3) Advanced Economic Theory**

This course introduces students to recent advances in economic theory. Topics include foundations of price theory, pass-through, price discrimination, differential pricing, non-linear pricing, vertical price control, imperfect information, platform markets, and consumer search. The course will focus on developing the intuition and skills to formulate research questions and to build/analyze economic models. Formerly ECON 7050.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Theory and History of Economic Thought

**ECON 8209 (3) Economics Research Methods Workshop 1**

Assists students starting their doctoral thesis by discussing methodology and evaluation of economic research. Presents and discusses student research proposals.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Independent Study and Other Courses

**ECON 8211 (3) Public Economics 1**

This course studies the theory of public economics. It presents the fundamental principles of public goods, externalities, public choice, excess burden, optimal taxation, and tax incidence. Emphasis will be placed on optimization and the development of mathematical models required for public policy analysis. The course can be taken independently or in conjunction with 8221 to make a two-semester sequence in public economics.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Public Economics

**ECON 8219 (3) Economics Research Methods Workshop 2**

Continuation of ECON 8209. Assists students starting their doctoral thesis by discussing relevant economic research. Presents and discusses research papers.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Independent Study and Other Courses

**ECON 8221 (3) Public Economics 2**

This course introduces the fundamental quantitative and econometric methods required for research in public economics. It explores advanced topics in public economics such as decentralization, state and local government, program analysis, cost/benefit analysis, taxation, international tax issues, political economy issues, and market failure. The course can be taken independently or in conjunction with 8211 to make a two-semester sequence in public economics.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Public Economics

**ECON 8413 (3) International Economics 1**

This course introduces students to the theories of international trade using an optimization approach. We discuss core trade theories and their empirical applications. We also explore recent advances that focus on the firm's decision to export and investigate the role of heterogeneity in firm productivity on patterns of trade. The course can be taken independently or in conjunction with 8433 to make a two-semester sequence in international economics.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: International Trade and Finance

**ECON 8423 (3) International Macroeconomics**

Explores recent advances in international macroeconomics and international finance. The course focuses on the application of the mathematical tools and quantitative analysis of dynamic macroeconomics to examine the role of international financial markets for the behavior of the current account, the international transmission of the business cycle, and the determination of exchange rates.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: International Trade and Finance

**ECON 8433 (3) International Economics 2**

Explores advanced quantitative topics in international economics. The course focuses on statistical analysis and structural estimation of several classes of models in international trade. The models are calibrated to the data and solutions are obtained using tools from optimization theory. The students are introduced to quantitative evaluation of trade policy instruments and welfare analysis. The course can be taken independently or in conjunction with 8413 to make a two-semester sequence in international economics.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: International Trade and Finance

**ECON 8534 (3) History of Economic Growth - US**

This course covers topics in the economic history of the United States. The course focuses on applying the tools of modern empirical economics to understand the growth of the American economy. This includes using applied econometrics and quantitative models to analyze income growth and inequality, demographic change, industrialization, international trade, capital and labor mobility, infrastructure, and technological change. The course can be taken independently or in conjunction with 8554 to make a two-semester sequence in economic history.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Economic History

**ECON 8535 (3) Environmental Economics 1**

Considers the allocation of society's scarce environmental resources and government attempts to achieve more efficient and equitable allocations. It is a course in applied welfare economics with an emphasis on market failure and valuation. Incorporates static and dynamic optimization techniques to formally model environmental and resource outcomes and policy instrument choice. The course can be taken independently or in conjunction with 8545 to make a two-semester sequence in environmental economics.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Natural Resources and Environmental Economics

**ECON 8545 (3) Environmental Economics 2**

Provides advanced study of current research in environmental economics and explores opportunities for new research. Instruction in empirical research including experimental design, numerical analysis, econometric and statistical approaches. Theoretical analysis of economic problems including optimization, cost/benefit analysis and economic modeling of current environmental policies. The course can be taken independently or in conjunction with 8535 to make a two-semester sequence in environmental economics.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Natural Resources and Environmental Economics

**ECON 8554 (3) History of Economic Growth - World**

Examines economic growth over the long run. Topics include the industrial revolution, the demographic transition, the great divergence, the importance of institutional change, the impacts of trade & technology diffusion, and trends in inequality & social mobility. The course highlights the use of economic modeling, the creation of new datasets, and the implementation of empirical analysis for hypothesis testing. The course can be taken independently or in conjunction with 8534 to make a two-semester sequence in economic history. Formerly ECON 8764.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Economic History  
Departmental Category: Asia Content

**ECON 8676 (3) Labor Economics 1**

This course focuses on 1) deriving testable and quantifiable hypotheses from mathematical economic models relating to prominent policy-relevant issues in the labor market; 2) ascertaining the statistical patterns that permit identification of the parameters that govern these models; and 3) forming estimators that permit statistical inference of these parameters. The models considered are drawn from a variety of labor market contexts: static and dynamic labor supply and demand decisions, human capital investment decisions, spatial equilibrium in labor markets, and worker-firm matching with heterogeneous workers and firms.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Labor and Human Resources

**ECON 8686 (3) Labor Economics 2**

This course focuses on using state-of-the-art econometric techniques, often identified by natural experiments, to 1) quantify causal effects predicted by economic models of the labor market and 2) evaluate the causal impact of labor market policies. Topics include the economics of immigration, the minimum wage, the economics of discrimination, and information constraints and bounded rationality in human capital investment. As a final project, students gather data and perform initial statistical analysis to determine whether a proposed data analysis strategy will successfully lead to a credible answer to a novel causal question in labor economics.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Labor and Human Resources

**ECON 8747 (3) Industrial Organization 1**

This course studies the theory of industrial organization. Topics include research method in industrial organization, monopoly, oligopoly competition, vertical organization, markets with search and switching costs, online platforms, and innovation economics. Emphasis will be placed on the development of mathematical models for industry and policy analysis. The course can be taken independently or in conjunction with 8757 to make a two-semester sequence in industrial organization.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Industrial Organization

**ECON 8757 (3) Industrial Organization 2**

This course introduces the fundamental quantitative and econometric methods required for empirical research in industrial organization. The emphasis is on using theory to construct testable hypotheses and specifying empirical models for estimating structural parameters. Topics include differentiated products, market power, collusion, merger analysis and regulation. The course can be taken independently or in conjunction with 8747 to make a two-semester sequence in industrial organization.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Industrial Organization

**ECON 8774 (3) Economic Development 1**

Focuses on microeconomic issues surrounding economic development from a largely empirical perspective, emphasizing applied econometric techniques. Topics covered in the two sections will vary to keep up with the current research but this course will cover a variety of papers covering different research design and program evaluation methods on topical areas including, but not limited to, human capital development and long-run effects, environment and health, labor markets and migration, social capital and networks, micro-credit, and women's empowerment. The course can be taken independently or in conjunction with 8784 to make a two-semester sequence in economic development.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Economic Development

**ECON 8784 (3) Economic Development 2**

Focuses on microeconomic issues surrounding economic development from a largely empirical perspective, emphasizing applied econometric techniques. Topics covered in the two sections will vary to keep up with the current research but this course will cover a variety of papers covering different research design and program evaluation methods on topical areas including, but not limited to, distribution of resources within households, environmental and natural resources, as well as migration and gender issues relevant for developing countries. The course can be taken independently or in conjunction with 8774 to make a two-semester sequence in economic development.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Economic Development

**ECON 8828 (3) Econometric Theory 1**

Estimation and inference for micro-econometric models. Topics may include semi- and non-parametric econometric/statistical models; Bayesian estimation and inference; models for high dimensional data; simulation-based estimation methods. The course can be taken independently or in conjunction with 8838 to make a two-semester sequence in econometric theory.

**Requisites:** Requires prerequisite courses of ECON 7818 and ECON 7828 (all min grade B-). Restricted to graduate students only.

**Additional Information:** Departmental Category: Quantitative Economics

**ECON 8838 (3) Econometric Theory 2**

Estimation and inference for models for dependent data. Topics may include linear and non-linear time series, spatial and network models. The course can be taken independently or in conjunction with 8828 to make a two-semester sequence in econometric theory.

**Requisites:** Requires prerequisite courses of ECON 7818 and ECON 7828 (all min grade B-). Restricted to graduate students only.

**Additional Information:** Departmental Category: Quantitative Economics

**ECON 8848 (3) Applied Microeconometrics**

Presents a "user's guide" to conducting empirical research and program evaluation in applied microeconomics. Begins with a primer on an industry-standard econometric software package and a review of linear regression as a statistical technique for summarizing conditional mean relationships in data. Discusses multiple advanced econometric techniques as alternative research strategies including matching methods, difference-in-differences, panel data methods, IV, and regression discontinuity. Concludes with a research project requiring a replication and extension of an existing published paper that uses one or more of these statistical techniques.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Quantitative Economics

**ECON 8858 (3) Computational and Structural Estimation Methods**

Presents a "user's guide" to conducting quantitative research in computational economics. Teaches students to construct a variety of applied economic models, obtain parameter values through calibration or structural estimation techniques, and employs the resulting models to conduct policy simulations.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Quantitative Economics

**ECON 8909 (1-3) Independent Study**

**Repeatable:** Repeatable for up to 7.00 total credit hours.

**Additional Information:** Departmental Category: Independent Study and Other Courses

**ECON 8999 (1-10) Doctoral Dissertation**

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

**Repeatable:** Repeatable for up to 30.00 total credit hours.

**Requisites:** Restricted to graduate students only.

**Additional Information:** Departmental Category: Independent Study and Other Courses