The Master of Energy Economics (MEEcon) is a professional master’s program, administered by the Department of Economics, emphasizing applying economic theory, economic and financial modeling and analysis, and quantitative and statistical methods to provide insightful analysis of issues and policies affecting the energy industry. The program provides rigorous training in various areas including microeconomics, econometrics, economic and financial modeling, risk management, economic forecasting, geopolitics, and political economy. Students will enhance their analytical and quantitative skills and acquire the necessary energy industry knowledge to understand challenges related to technology, business, investment and regulation, and economic forecasting.

The MEEcon degree is designed to educate future leaders and strategic thinkers in the energy sector. Students develop skills to provide insightful analysis of energy markets in order to inform future market orientation, capital asset decisions and firm strategic direction. Built upon programs in the Economics Department and the Baker Institute’s Center for Energy Studies (CES), the MEEcon degree provides a new avenue for energy professionals to develop human capital relevant for business development and/or strategic planning roles.

Energy Economics does not currently offer an academic program at the undergraduate level.

**Master’s Program**

- Master of Energy Economics (MEEcon) Degree (https://ga.rice.edu/programs-study/departments-programs/social-sciences/energy-economics/energy-economics-meecon/)

**Chair, Department of Economics**

George Zodrow

**Co-Directors**

Peter Reginald Hartley
Kenneth Medlock

For Rice University degree-granting programs:
ECON 111 - AP/OTH CREDIT IN MICROECONOMICS
Short Title: AP/OTH CREDIT MICROECONOMICS
Department: Economics
Grade Mode: Transfer Courses
Course Type: Transfer
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Provides transfer credit based on student performance on approved examinations in microeconomics, such as the Advanced Placement microeconomics exam, the International Baccalaureate higher-level economics exams, or the A-Level economics exam, or for an approved introductory microeconomics course. Approved credit counts toward total credit hours required for graduation, but does not count for distribution or toward the ECON or MTEC majors. Mutually Exclusive: Cannot register for ECON 111 if student has credit for ECON 101. Mutually Exclusive: Cannot register for ECON 111 if student has credit for ECON 101.

ECON 113 - AP/OTH CREDIT IN MACROECONOMICS
Short Title: AP/OTH CREDIT MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Transfer
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Provides transfer credit based on student performance on approved examinations in macroeconomics, such as the Advanced Placement macroeconomics exam, the International Baccalaureate higher-level economics exams, or the A-Level economics exam, or for an approved introductory macroeconomics course. Approved credit counts toward total credit hours required for graduation, but does not count for distribution or toward the ECON or MTEC majors. Mutually Exclusive: Cannot register for ECON 113 if student has credit for ECON 103. Mutually Exclusive: Cannot register for ECON 113 if student has credit for ECON 103.

ECON 200 - MICROECONOMICS
Short Title: MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 and (MATH 102 (may be taken concurrently) or MATH 106)
Description: Intermediate level analysis of theories of household behavior, including demand for consumer goods, labor supply, and savings/investment decisions, and producer behavior including the supply of output and demands for labor, capital, and other production inputs. Emphasizes individual and interactive decision making under resource constraints and discusses equilibria in competitive markets. MATH 102 may be taken concurrently with ECON 200. As much of the analysis in ECON 200 involves partial differentiation, MATH 212 is strongly recommended. FALL 2022: Wednesday lab is asynchronous. Recommended Prerequisite(s): MATH 212 Mutually Exclusive: Cannot register for ECON 200 if student has credit for ECON 301.

ECON 203 - MACROECONOMICS
Short Title: MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100
Description: Analyzes aggregate performance of the national economy including output, inflation, interest rates, employment, the business cycle, monetary and fiscal policy, and more generally the role of government in influencing aggregate economic performance. Introduces both the traditional aggregative only approach to Macroeconomics and the more recent New Classical and New Keynesian micro-foundations approaches. Mutually Exclusive: Cannot register for ECON 203 if student has credit for ECON 303.

ECON 205 - INTRODUCTION TO GAME THEORY
Short Title: INTRODUCTION TO GAME THEORY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This course provides an introduction to game theory, a branch of mathematics that studies decision-making by agents in situations where the outcome for each depends on the actions taken by all. Students will develop a familiarity with analytical tools that have found applications in, for example, economics and other social sciences, biology, computer science, and philosophy. Designed for students who do not wish to major in ECON or MTEC and does not apply to ECON or MTEC major requirements. Mutually Exclusive: Cannot register for ECON 205 if student has credit for ECON 300.

ECON 209 - APPLIED ECONOMETRICS
Short Title: APPLIED ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group II
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): (ECON 100 or ECON 200) and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Applied econometric methods: econometric theory with practical emphasis on modeling, estimation, and hypothesis testing. A computer lab one day a week focuses on empirical implementation of econometric methods using statistical software. Mutually Exclusive: Cannot register for ECON 209 if student has credit for ECON 309/ECON 446.
ECON 210 - BEHAVIORAL ECONOMICS
Short Title: BEHAVIORAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 200
Description: Examines behavioral economics, which seeks to insert more behavioral realism into economic theory by incorporating into economic models insights based on empirical observations from psychology, sociology, and neuroscience. Emphasizes attempts by behavioral economists to explain anomalies that depart from the predictions of standard economic theory. Topics include temptation and self-control, fairness and reciprocity, reference dependence, bounded rationality and choice under risk and uncertainty.

ECON 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Lecture/Laboratory, Seminar, Independent Study
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ECON 239 - LAW AND ECONOMICS
Short Title: LAW AND ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 200
Description: Exploration of the law using economic tools based on microeconomic theory. Focuses on legal issues most applicable to business. Mutually Exclusive: Cannot register for ECON 239 if student has credit for ECON 438.

ECON 260 - MICROECONOMICS AND PUBLIC POLICY
Short Title: MICROECONOMICS & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 200
Description: Applies insights learned from the microeconomic component of ECON 100 to the analysis of public policy issues, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.

ECON 270 - MACROECONOMICS AND PUBLIC POLICY
Short Title: MACROECONOMICS & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 200
Description: Applies insights learned from the macroeconomic component of ECON 100 to the analysis of public policy issues, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.

ECON 275 - INTERNATIONAL MACROECONOMICS AND PUBLIC POLICY
Short Title: INT MACRO & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Prerequisite(s): ECON 100 or ECON 200
Description: Applies insights learned from the macroeconomic component of ECON 100 to the analysis of issues related to international public policy, stressing economic intuition rather than mathematical formulations. Designed for students who do not wish to major in ECON or MTEC, and does not apply toward ECON or MTEC major requirements.
ECON 205 - GAME THEORY AND OTHER MICRO TOPICS FOR MTEC MAJORS
Short Title: GAME THEORY, MICRO TOPICS/MTEC
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 307 or STAT 310 or STAT 315 or DSCI 301) and ECON 308
Description: Advanced theoretical analysis of topics in microeconomics, focusing on mathematical modeling. Topics include the foundations and applications of game theory, general equilibrium theory and applications, the economics of choice under uncertainty, and information economics including issues of asymmetric information. Additional topics may include auction theory and mechanism design. Open to all majors but designed for students in the MTEC major. Mutually Exclusive: Cannot register for ECON 305 if student has credit for ECON 405.

ECON 307 - PROBABILITY AND STATISTICS
Short Title: PROBABILITY & STATISTICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): MATH 102 or MATH 106
Description: Probability and the central concepts and methods of statistics including probability, random variables, distributions of random variables, expectation, sampling distributions, estimation, confidence intervals, and hypothesis testing. Cross-list: STAT 310. Recommended Prerequisite(s): MATH 212. Mutually Exclusive: Cannot register for ECON 307 if student has credit for BUSI 395.

ECON 308 - MATHEMATICAL ECONOMICS
Short Title: MATHEMATICAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (MATH 212 or (MATH 221 and MATH 222))
Description: Coverage of mathematical topics used in economics, such as linear algebra, optimization, and real analysis, with applications to fundamental topics in economic theory, constrained optimization, labor market dynamics, game theory and Leontief input-output model. Emphasizes logical clarity and mathematical rigor, along with the ability to follow and construct mathematical proofs. Students must have either (1) made a grade of B- or higher in MATH 212 or MATH 221/MATH 222 taken at Rice, or (2) received transfer credit for MATH 212 or MATH 221/MATH 222 and received approval of the course instructor. Mutually Exclusive: Cannot register for ECON 308 if student has credit for ECON 401.
ECON 310 - ECONOMETRICS  
Short Title: ECONOMETRICS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture/Laboratory  
Credit Hours: 4  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ECON 209 and ECON 308  
Description: Survey of estimation and forecasting models. Includes multiple regression time series analysis. A good understanding of linear algebra is highly desirable. Cross-list: STAT 376. Mutually Exclusive: Cannot register for ECON 310 if student has credit for ECON 409/STAT 400.

ECON 320 - PUBLIC POLICY AND SOCIAL PROGRAM EVALUATION  
Short Title: EVALUATION OF SOCIAL PROGRAMS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ECON 307 or STAT 310 or STAT 315 or SOSC 302  
Description: This course covers quantitative methods to evaluate three aspects of public policy and social programs. The first aspect is the quality of the implementation: are public policy and social programs implemented according to plan? The second aspect is impact: are interventions impacting the populations or issues for which they were designed? The third aspect is cost: do the program benefits justify the costs? The course audience are students interested in innovation in public policy and the design of social programs that aim to reduce inequality and to increase prosperity.

ECON 343 - CORPORATE FINANCE  
Short Title: CORPORATE FINANCE  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): (ECON 100 or ECON 200) and (STAT 280 or STAT 305 or STAT 310 or STAT 315 or ECON 307 or STAT 312 or POLI 395 or PSYC 339 or SOSC 302) and BUSI 305  
Description: Corporate financial management including tools used to evaluate and select investment projects and the method of financing those investments. The influence of corporate control on investment decisions. The valuation of stocks, bonds and options using the time value of money, the trade-off between risk and return, and arbitrage. Mutually Exclusive: Cannot register for ECON 343 if student has credit for BUSI 343.

ECON 355 - FINANCIAL MARKETS  
Short Title: FINANCIAL MARKETS  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ECON 200  
Description: Principles governing U.S. and international equity and debt markets, and the interactions between such markets and national monetary and exchange rate policies. Focuses on the role of financial markets and institutions in the allocation and transfer of credit and risk, and examines various existing and suggested regulatory frameworks.

ECON 365 - WORLD ECONOMIC HISTORY  
Short Title: WORLD ECONOMIC HISTORY  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Lecture  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ECON 100 and ECON 200 and ECON 203  
Description: Study and analysis of world economy focusing on the economic expansion of Western countries between the 14th and 21st centuries. Emphasis on contextual changes in economy, geography, history, society, culture, religion and politics in determining economic leadership of certain economies, such as Italy, Portugal, Spain, the United Kingdom, Belgium, the Netherlands, France, Germany, Sweden, the United States and Japan. Cross-list: HIST 365.

ECON 399 - INDEPENDENT RESEARCH  
Short Title: INDEPENDENT RESEARCH  
Department: Economics  
Grade Mode: Standard Letter  
Course Type: Research  
Credit Hours: 3  
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
Course Level: Undergraduate Upper-Level  
Prerequisite(s): ECON 203 and ECON 209 and (ECON 300 or ECON 305)  
Description: Independent research project under the supervision of a faculty member who must approve the topic. Consult the department website under “Independent Research” for additional details. Students must have a GPA of 3.0 or higher in the prerequisite courses and must have taken the 400-level course or courses most relevant to the research topic. Faculty advisors may require additional prerequisites. Instructor and department permission required. Not offered during the summer. Instructor Permission Required.
ECON 415 - LABOR ECONOMICS
Short Title: LABOR ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Empirical evidence and theories relating to several features of labor markets. Topics covered may include fertility, health, criminal behavior, labor force participation, hours of work, education and training, geographical and inter-firm labor mobility, static and dynamic labor demand, unions, discrimination, government intervention in labor markets, and "hedonic" equilibria in labor markets. Graduate/Undergraduate Equivalency: ECON 515. Mutually Exclusive: Cannot register for ECON 415 if student has credit for ECON 515.

ECON 418 - ECONOMIC FORECASTING
Short Title: ECONOMIC FORECASTING
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 203 and ECON 209
Description: Application of econometric techniques to problems in macroeconomics and financial economics. The course focuses on macroeconomic forecasting and test of economic theories using stationary and non-stationary time-series data. Methods include predictive regressions, vector autoregressions, impulse response functions, and variance decomposition. Tests and comparisons of forecast accuracy are also included. Projects will be completed in STATA.

ECON 419 - ADVANCED TOPICS IN ECONOMETRICS
Short Title: ADV TOPICS IN ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 310 or STAT 376
Description: Introduction to advanced econometrics, with an emphasis on methods used in microeconomic applications. Methods covered are used in the estimation of the demand for goods and services, production functions, and for analyzing the impact of social programs.

ECON 422 - INTERNATIONAL ECONOMICS AND FINANCE
Short Title: INTERNATIONAL ECON & FINANCE
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 203
Description: Studies the economic relationships among countries. Explores the sources of comparative advantage and reasons for trade policies. Examines foreign exchange and international capital markets and linkages between exchange rates, interest rates, and prices. Includes trade theory, tariffs, and other trade restrictions, an overview of historical and institutional developments, and current policy issues. Mutually Exclusive: Cannot register for ECON 422 if student has credit for ECON 420/ECON 421.

ECON 432 - POLITICAL ECONOMY
Short Title: POLITICAL ECONOMY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (ECON 300 or ECON 305)
Description: Analyzes income redistribution, taxation, the production of public goods, and other actions of the public sector as determined by a political process simultaneously with the economic process of exchange and production. Investigates the connection between public policies and the political forces that shape them.

ECON 435 - INDUSTRIAL ORGANIZATION
Short Title: INDUSTRIAL ORGANIZATION
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECON 300 or ECON 305) and (ECON 209 or ECON 310)
Description: A mathematical approach to topics in industrial organization and market design, including price discrimination, oligopoly, collusion, and auctions.
ECON 437 - ENERGY ECONOMICS
Short Title: ENERGY ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Discussion of key aspects in the supply and demand of energy. Topics include optimal extraction of depletable resources, transportation, storage, end-use and efficiency, and the relationship between economic activity, energy, and the environment. Cross-list: ENST 437. Graduate/Undergraduate Equivalency: ECON 601. Mutually Exclusive: Cannot register for ECON 437 if student has credit for ECON 601.

ECON 439 - ADVANCED TOPICS IN LAW AND ECONOMICS
Short Title: ADV TOPICS IN LAW AND ECON
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Addresses the role of economics in understanding the legal system, in particular how the law allocates entitlements and risk in property, tort and contract law. Intended primarily for students who are considering attending law school and uses instruction methods appropriate for that goal.

ECON 441 - EMPIRICAL METHODS FOR INDUSTRIAL ORGANIZATION
Short Title: EMPIRICAL METHODS FOR IO
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 209
Description: Covers empirical methods for the analysis of markets and industries. Focuses on various topics related to incomplete information in industrial organization. Topics include markets, strategy, interactions among firms, and the pricing of products, including non-linear pricing.

ECON 443 - FINANCIAL ECONOMICS
Short Title: FINANCIAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 305 and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Economic analysis of the operation of financial markets from a mathematical and theoretical perspective. Topics include asset pricing, risk management, portfolio theory, arbitrage theory, and market efficiency. Emphasizes the application of the financial concepts to decisions faced by households and firms.

ECON 445 - MANAGERIAL ECONOMICS
Short Title: MANAGERIAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Application of economics to the determination of the profitability of the firm. Includes organization theory and problems of control. A student may not receive credit for ECON 445 and ECON 245/POLI 245.

ECON 449 - PRINCIPLES OF FINANCIAL ENGINEERING
Short Title: FINANCIAL ENGINEERING
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (ECDN 308 or MATH 211) and MATH 212 and (ECON 310 or STAT 376)
Description: Covers the use of financial securities and derivatives to take or hedge financial risk positions, including most commonly used instruments, from simple forwards and futures to exotic options and swaptions. Studies the pricing of derivative securities with emphasis on the mechanics and uses of financial engineering methods. Mutually Exclusive: Cannot register for ECON 449 if student has credit for STAT 449.
ECON 450 - ECONOMIC DEVELOPMENT
Short Title: ECONOMIC DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 203
Description: This course covers different dimensions of economic development, focusing on poverty, inequality, demography, and health. It provides an overview of the economies of less developed countries, the lives of the poor, and the theories for why some countries are rich and others are poor. It also describes how labor and credit markets function in poor countries, the consequences for health and education, and the role of institutions.

ECON 452 - RELIGION, ETHICS, AND ECONOMICS
Short Title: RELIGION, ETHICS, & ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Reviews economic models of the demand, supply, and markets for religion, including the effects of economic conditions on religious choice and vice versa. Students will write a term paper on topics of their choosing, subject to professor's approval. Recommended Prerequisite(s): ECON 209 or ECON 310 or STAT 376.

ECON 455 - MONEY AND BANKING
Short Title: MONEY AND BANKING
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 203
Description: Micro-foundations of monetary, fiscal and financial theory. Examines the unique roles of money and of banking in providing the transactions mechanism and in the functioning of financial markets. Examines the use of valued fiat, unbacked money which appears to violate basic microeconomics, in the context of Samuelson's overlapping generations model, including the implications for monetary and fiscal policy and for inflation. Discusses bank runs and financial instability.

ECON 460 - ADVANCED TOPICS IN ECONOMIC DEVELOPMENT
Short Title: ADV TOPICS ECON DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 450
Description: Focuses on role of taxation, finance and international trade, foreign investment and foreign aid in economic development.

ECON 461 - URBAN ECONOMICS
Short Title: URBAN ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: In this course, we will develop theories of urban economics and then use these theories to analyze current policy issues. The theories cover a broad range of topics related to the emergence of cities, different forms of cities, and the problems associated with the process of urbanization. We will discuss potential solutions to these problems.

ECON 462 - ECONOMICS OF HUMAN CAPITAL
Short Title: ECONOMICS OF HUMAN CAPITAL
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 320
Description: This course covers theory that describes the central role of human capital in determining economic growth and inequality, uses advanced econometric techniques to test if the theory is consistent with data, and presents insights for public policy that can improve human capital formation, increase economic growth and reduce social inequality.
ECON 465 - MARKETS, GOVERNMENTS AND RESOURCE ALLOCATION
Short Title: MARKETS, GOVTs AND RESOURCES
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and MATH 212
Description: This course lays the foundation for learning the theory of policy analysis, including an introduction to economic modeling. The course begins by introducing the basic model of the competitive economy, and then investigating the efficiency of the competitive equilibrium under a host of assumptions needed to derive a tractable model. The leads to the development of the two fundamental theorems of welfare economics. The course then discusses an analysis of government and lays out an overview of the public sector. The public sector accounts for about a third of all economic activity in the United States, which is relatively small compared to some other industrialized countries. The decisions of various governments affect us daily in many ways, and we will analyze the activities of government with a particular focus on the theory and evidence on government expenditure policy. The course then examines the existence and importance of various market failures and potential government solutions, followed by an analysis of the public sector and its decision making process.

ECON 470 - MARKET DESIGN
Short Title: MARKET DESIGN
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and (ECON 307 or STAT 310 or STAT 315 or DSCI 301)
Description: Regulators, entrepreneurs and economists have recently been involved in the design of novel markets for radio spectrum, kidneys, on-line advertising, school choice, etc. This course utilizes game theory to provide the theoretical underpinning of such markets via real world examples, including the study of institutional details that can determine the success or failure of a market.

ECON 477 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture, Laboratory, Internship/Practicum, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Topics and credit hours vary each semester. Contact department for current semester’s topic(s). Repeatable for Credit.

ECON 479 - ECONOMIC MODELING AND PUBLIC POLICY
Short Title: ECONOMIC MODLG & PUBLIC POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Examines the use of computational dynamic models to analyze the effects of economic policy reforms. Introduces computer programming methods to simulate household and firm behavior in partial and general equilibrium frameworks. Policy evaluation includes personal and corporate income taxes, Social Security, retirement savings incentives, and social insurance programs.

ECON 480 - ENVIRONMENTAL ECONOMICS
Short Title: ENVIRONMENTAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Uses economic theories of externalities and common property resources to analyze how markets, legal institutions, regulations, taxes and subsidies, and voluntary activity can affect the supply of environmental amenities, such as clean air, clean water, and wilderness areas. Also discusses methods for determining the demand for environmental amenities. Cross-list: ENST 480.

ECON 481 - HEALTH ECONOMICS
Short Title: HEALTH ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Study of determinants of health, including behavioral, economic and social factors and access to health care. Application of economics to understand health insurance, the hospital and physician markets, pharmaceuticals, and the health care system. Effects of regulation and methods of payment. Graduate/Undergraduate Equivalency: ECON 565. Mutually Exclusive: Cannot register for ECON 481 if student has credit for ECON 565.
ECON 483 - PUBLIC ECONOMICS: TAXATION
Short Title: PUBLIC ECONOMICS: TAXATION
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: Provides an economic analysis of tax policy, focusing on the current national debate regarding the relative merits of income and consumption-based taxes in terms of equity, efficiency, and simplicity. Analyzes tax effects on individual and business behavior and discusses general equilibrium modeling of the economic and distributional effects of alternative tax reforms. Special topics include optimal taxation, taxation of the family, estate taxation, taxation of electronic commerce, and state and local public finance.

ECON 484 - PUBLIC ECONOMICS: EXPENDITURES
Short Title: PUBLIC ECONOMICS: EXPENDITURES
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and MATH 212
Description: Theory and evidence on government expenditure policy. Topics include the theory of public goods, education, state and local public goods, redistribution and welfare policy, cost-benefit analysis, social insurance programs such as social security and unemployment insurance, and health care policy.

ECON 485 - THE ECONOMICS OF SUSTAINABILITY, CONSERVATION, AND PANDEMICS
Short Title: ECON, CONSERVATION & PANDEMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200
Description: This course will cover issues related to conservation, sustainability and pandemics from an economics point of view. Topics will include the need for conservation policies and planning, how science informs conservation strategies, incentives and the design of conservation agreements, and the role of deforestation and wildlife markets in pandemic emergence. Policies to reduce the likelihood of pandemic emergence, as well as the effects of pandemics like influenza, HIV, and COVID-19 on the global economy will also be discussed. Recommended Prerequisite(s): MATH 212

ECON 489 - ECONOMICS OF SOCIAL NETWORKS
Short Title: ECONOMICS OF SOCIAL NETWORKS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 200 and ECON 209
Description: This course introduces research on social networks and analyzes how these networks affect our choices: the products we buy, the careers we follow, whom we marry, how we raise our children. Students will learn about network measurement and formation and the influence of social networks on our decisions.

ECON 496 - RESEARCH IN ECONOMIC THEORY
Short Title: RESEARCH IN ECONOMIC THEORY
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 203 and (ECON 310 or STAT 376) and ECON 305
Description: Capstone course for MTEC majors whose primary interest is in economic theory. Review and analysis of seminal and current research in economic theory, including independent analysis by the student. Topics vary from year to year.

ECON 497 - RESEARCH IN ECONOMETRICS
Short Title: RESEARCH IN ECONOMETRICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): ECON 203 and (ECON 310 or STAT 376) and ECON 305
Description: Capstone course for MTEC majors whose primary interest is in econometrics. Review and analysis of seminal and current research in econometrics, including independent analysis by the student. Topics vary from year to year.
ECON 498 - HONORS PROGRAM IN ECONOMICS-I
Short Title: HONORS PROGRAM IN ECONOMICS-I
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

ECON 499 - HONORS PROGRAM IN ECONOMICS-II
Short Title: HONORS PROGRAM IN ECONOMICS-II
Department: Economics
Grade Mode: Standard Letter
Course Type: Research
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

ECON 501 - MICROECONOMICS I
Short Title: MICROECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

ECON 502 - MACROECONOMICS
Short Title: MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

ECON 504 - COMPUTATIONAL ECONOMICS
Short Title: COMPUTATIONAL ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

ECON 505 - FINANCIAL ECONOMICS I
Short Title: FINANCIAL ECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

ECON 507 - MATHEMATICAL ECONOMICS I
Short Title: MATHEMATICAL ECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.

ECON 508 - MICROECONOMICS II
Short Title: MICROECONOMICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 5
Restrictions: Enrollment is limited to Graduate level students.
ECON 509 - TOPICS IN MICROECONOMICS
Short Title: TOPICS IN MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 508
Description: Discussion of selected topics in microeconomic theory. Repeatable for credit. The Spring 2021 topic was Psychology and Economics, especially individual choice under risk and uncertainty, reference-dependent preferences, temptation and self-control, other-regarding preferences, behavioral game theory, and bounded rationality. Repeatable for Credit.

ECON 510 - ECONOMETRICS I
Short Title: ECONOMETRICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Estimation and inference in single equation regression models, multicollinearity, autocorrelated and heteroskedastic disturbances, distributed lags, asymptotic theory, and maximum likelihood techniques. Emphasis is placed on critical analysis of the literature. Cross-list: STAT 610.

ECON 511 - ECONOMETRICS II
Short Title: ECONOMETRICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 510 or STAT 610
Description: Topics in linear and nonlinear simultaneous equations estimation, including panel data, qualitative and categorical dependent variable models, duration analysis, simulation-based estimation, treatment effects, stochastic production frontier estimation. Cross-list: STAT 611.

ECON 512 - INTERNATIONAL TRADE THEORY
Short Title: INTERNATIONAL TRADE THEORY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Exploration of classical, neoclassical, and modern trade theory. Includes welfare aspects of trade such as the theory of commercial policy, with emphasis on applications.

ECON 513 - ECONOMICS OF INSURANCE
Short Title: ECONOMICS OF INSURANCE
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 510
Description: This course will cover the theory of insurance, including classic and some behavioral models of insurance demand. The course will heavily focus on estimation techniques including estimating demand for insurance, tests for moral hazard and selection, insurance design, and measures of welfare. Empirical topics will include property insurance, health insurance, annuities, life insurance, and unemployment insurance.

ECON 514 - EMPIRICAL INDUSTRIAL ORGANIZATION
Short Title: EMPIRICAL INDUSTRIAL ORGANIZATION
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Topics include structural analysis of auction, nonlinear pricing, insurance and bargaining data. Emphasizes the use of advanced econometric methods (nonparametric and semiparametric) to estimate and test models under incomplete information.

ECON 515 - LABOR ECONOMICS
Short Title: LABOR ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 510
Description: This course will cover the theory of insurance, including classic and some behavioral models of insurance demand. The course will heavily focus on estimation techniques including estimating demand for insurance, tests for moral hazard and selection, insurance design, and measures of welfare. Empirical topics will include property insurance, health insurance, annuities, life insurance, and unemployment insurance.

ECON 516 - EMPIRICAL MICROECONOMICS
Short Title: EMPIRICAL MICROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 508
Description: Overview of methods used in empirical microeconomic research. Examples are drawn from health economics, law and economics, and business economics. Emphasis is placed on designing econometric and statistical analyses to test economic hypotheses. Class projects will expand on analyses from previously published studies.
ECON 517 - EMPIRICAL INDUSTRIAL ORGANIZATION II
Short Title: EMPIRICAL INDUSTRIAL ORG II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Examines economic models of competition and industry structure. These include models of demand, supply, investment and entry. Special attention is paid to economic structural modeling of industries and the use of price and game theory in industrial organization. Matching and market design are also covered.

ECON 518 - INTERNATIONAL MACROECONOMICS
Short Title: INTERNATIONAL MACROECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Effects of fiscal and monetary policies on exchange rates and the current account and balance of payments. Includes exchange market efficiency, exchange rates and prices, LDC debt, and policy coordination.

ECON 519 - ECONOMIC GROWTH AND DEVELOPMENT
Short Title: ECONOMIC GROWTH & DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 508 and ECON 510 and ECON 511
Description: Mathematical and statistical analysis of topics in microeconomic development and introduction to some frequently used applied econometric methods. Topics covered include poverty and inequality, health, education, fertility, marriage markets, and other gender issues. Special focus is given to intra-household bargaining models and their applications.

ECON 521 - MATCHING AND MARKET DESIGN
Short Title: MATCHING AND MARKET DESIGN
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): ECON 501 and ECON 502 and ECON 510 and ECON 505 and ECON 508 and ECON 511 and MATH 321
Description: This course begins with an overview of different matching markets (e.g., one-to-one or many-to-one AND with or without transfers AND centralized or decentralized) and the common empirical models; it then provides a relatively in-depth discussion of market design, both theoretical and empirical, for school choice and kidney transplants.

ECON 522 - PUBLIC ECONOMICS: TAX POLICY
Short Title: PUBLIC ECONOMICS: TAX POLICY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of the effects of taxation on individual and firm behavior, general equilibrium tax incidence analysis, optimal taxation theory, optimal implementation of tax reform, analysis of comprehensive income, and consumption taxes.

ECON 523 - DYNAMIC OPTIMIZATION
Short Title: DYNAMIC OPTIMIZATION
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Study of dynamic optimization in discrete and continuous time, including numerical methods and applications to macroeconomics, finance and resource and energy economics.

ECON 547 - ADVANCED TOPICS IN ENERGY ECONOMICS
Short Title: ADV TOPICS IN ENERGY ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Prerequisite(s): (ECON 301 or ECON 370) and (ECON 309 or ECON 446 or ECON 409 or ECON 400 or STAT 400) and ECON 437
Description: A detailed development and analysis of topics in energy modeling. Topics include optimal extraction of depletable resources, models of storable energy commodities, energy demand by end-use sector, models of non-competitive behavior, energy security and the relationship between energy and commodity prices. ECON 547 requires an additional assignment in addition to the assignments of ECON 447. Recommended Prerequisite(s): ECON 477 or ECON 401. Mutually Exclusive: Cannot register for ECON 547 if student has credit for ECON 447/ECON 604.

ECON 556 - HEALTH ECONOMICS
Short Title: HEALTH ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Application of empirical and theoretical economic models to health and healthcare. Includes production, cost, demand and supply factors; methods of payment and effects of regulation. Topics include optimal design of health insurance markets, cost-benefit analysis of healthcare technologies, econometric evaluation of government regulations and reimbursement in the healthcare sector, and testing of hypothesis that explain rising prices and costs of healthcare. Graduate/Undergraduate Equivalency: ECON 481. Mutually Exclusive: Cannot register for ECON 556 if student has credit for ECON 481.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Short Title</th>
<th>Department</th>
<th>Grade Mode</th>
<th>Course Type</th>
<th>Credit Hours</th>
<th>Restrictions</th>
<th>Course Level</th>
<th>Prerequisite(s)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ECON 575</td>
<td>TOPICS IN FINANCIAL ECONOMICS</td>
<td>TOPICS IN FINANCIAL ECONOMICS</td>
<td>Economics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>ECON 505</td>
<td>Topics in asset pricing, corporate financial theory, and market microstructure, including asymmetric information, learning, heterogeneous priors, market frictions, nonstandard preferences, production models, q theory, real options, dynamic capital structure, quote-driven markets, order-driven markets, and dealer markets. Repeatable for Credit.</td>
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<tr>
<td>ECON 576</td>
<td>TOPICS IN MACROECONOMICS</td>
<td>TOPICS IN MACROECONOMICS</td>
<td>Economics</td>
<td>Standard Letter</td>
<td>Seminar</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td></td>
<td>Discussion topics in macroeconomics. Repeatable for Credit.</td>
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<tr>
<td>ECON 577</td>
<td>TOPICS IN ECONOMIC THEORY I</td>
<td>TOPICS IN ECONOMIC THEORY I</td>
<td>Economics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td></td>
<td>Discussion of topics in advanced economic theory. Repeatable for Credit.</td>
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<tr>
<td>ECON 578</td>
<td>TOPICS IN ECONOMETRICS I</td>
<td>TOPICS IN ECONOMETRICS I</td>
<td>Economics</td>
<td>Standard Letter</td>
<td>Lecture/Laboratory</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>ECON 501 and ECON 502 and ECON 510 and ECON 505 and ECON 508 and ECON 511</td>
<td>Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Repeatable for credit.</td>
</tr>
<tr>
<td>ECON 579</td>
<td>TOPICS IN ECONOMETRICS II</td>
<td>TOPICS IN ECONOMETRICS II</td>
<td>Economics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>ECON 511</td>
<td>Discussion of selected topics in advanced econometrics that focus on the mathematical and statistical modeling of such phenomena as (1) extended panel data methods; (2) spatial econometrics; (3) bootstrapping; (4) factor models, wavelets, smoothing-splines, sieves; (5) model averaging; (6) continuous and discrete dynamic programming models; (7) econometrics of auctions; (8) BLP methods of demand estimation; (9) structural and non-structural models of producer behavior; (10) point and set identification; (11) Bayesian Econometrics/Metropolis-Hastings MCMC algorithms. Repeatable for Credit.</td>
</tr>
<tr>
<td>ECON 592</td>
<td>TOPICS IN POLICY AND APPLIED ECONOMICS</td>
<td>TOP-POLICY&amp;APPL'D ECON</td>
<td>Economics</td>
<td>Standard Letter</td>
<td>Lecture</td>
<td>3</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td></td>
<td>Discussion of selected topics and applied economics. Repeatable for Credit.</td>
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<tr>
<td>ECON 593</td>
<td>WORKSHOP IN MICROECONOMICS</td>
<td>WORKSHOP IN MICROECONOMICS</td>
<td>Economics</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>1</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>ECON 508 and ECON 510</td>
<td>Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Repeatable for credit.</td>
</tr>
<tr>
<td>ECON 594</td>
<td>WORKSHOP IN ECONOMICS II</td>
<td>WORKSHOP IN ECONOMICS II</td>
<td>Economics</td>
<td>Satisfactory/Unsatisfactory</td>
<td>Seminar</td>
<td>1</td>
<td>Enrollment is limited to Graduate level students.</td>
<td>Graduate</td>
<td>ECON 508 and ECON 510</td>
<td>Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Repeatable for credit.</td>
</tr>
</tbody>
</table>
ECON 595 - WRITING WORKSHOP
Short Title: WRITING WORKSHOP
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Lecture
Credit Hours: 1-4
Restrictions: Enrollment limited to students with a class of Graduate. Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Students in this course will read instructional materials on writing in the field of economics as well as generally in social science and will write both short and long pieces directly related to their research and the larger field of economics. Instructional topics will include appropriate tone, style, organizational patterns, grammar, and word choice for different genres of writing within the field.

ECON 596 - RESEARCH SEMINAR
Short Title: RESEARCH SEMINAR
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hours: 0.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Supervises fourth-year and fifth-year Ph.D. students in their quantitative dissertation research in preparation for graduation. Students must present their own research at least once during the semester. Repeatable for Credit.

ECON 597 - COLLOQUIUM ON RESEARCH IN ECONOMICS
Short Title: COLLOQUIUM ON RESEARCH IN ECON
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hour: 1
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Workshop prepares graduate students for completing innovative and original research. All second-year graduate students must attend the workshop. Each week, a faculty member will give a brief lecture about their experience with research. Possible topics include how they came up with ideas, how those ideas evolved and became papers, how these papers proceeded through the publication process, etc. Alternatively, faculty members can present a broad overview of particular research areas and discuss outstanding questions in those areas. Instructor Permission Required. Repeatable for Credit.

ECON 599 - SEMINAR WORKSHOP
Short Title: SEMINAR WORKSHOP
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 0.5
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Promotes graduate students' attendance and active participation in the Econ 593 and Econ 594 seminar workshops. Each student is required to attend at least fifteen ECON 593/594 seminars per semester, write a brief report on each seminar presentation they attend, prepare to present a background paper for three of the seminars they plan to attend, and participate in post seminar discussions. Repeatable for Credit.

ECON 601 - ENERGY ECONOMICS I
Short Title: ENERGY ECONOMICS I
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Introduces the energy sector to students, discusses key aspects of energy supply, demand and pricing, and is foundational for the MEECON degree. Topics include optimal extraction of depletable resources, investment in energy-using capital, trade of energy commodities, storage, end-use demand and energy efficiency, and the relationship between economic activity, energy and the environment. Students learn to apply dynamic optimization, linear programming and econometric techniques in addressing the course topics. Graduate/Undergraduate Equivalency: ECON 437. Mutually Exclusive: Cannot register for ECON 601 if student has credit for ECON 437.

ECON 602 - MICROECONOMICS OF THE ENERGY SECTOR
Short Title: MICROECONOMICS - ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Covers basic microeconomic concepts and applies them to contemporary issues in the energy sector. Topics covered include demand and supply analysis, market equilibrium and different market structures, international trade, investment and capacity expansion, risk and investment finance, and economic analysis of energy policy including environmental policy. This course enables students to apply quantitative microeconomic theory in order to make data-driven recommendations to case studies presented by industry partners.
ECON 603 - APPLIED ECONOMETRICS FOR ENERGY MARKETS
Short Title: APPLIED ECONOMETRICS ENGY MKTS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Students will be introduced to basic concepts in statistical analysis and how to use statistical tools to analyze economic data and test economic theories. The course includes a laboratory session where students practice using the tools discussed in lectures with data that is particularly relevant to the energy industry.

ECON 604 - ENERGY ECONOMICS II
Short Title: ENERGY ECONOMICS II
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Explores a variety of topics in energy modeling and energy data analysis. Topics include optimal extraction of depletable resources, game theoretic approaches to OPEC behavior, national oil company behavior, models of storable energy commodities and energy demand by end-use sector, energy security and fundamental drivers of commodity prices. This course tasks students to expand on the dynamic optimization problems and econometric techniques applied to energy economics. Mutually Exclusive: Cannot register for ECON 604 if student has credit for ECON 547.

ECON 605 - TAXATION IN THE ENERGY SECTOR
Short Title: TAXATION IN THE ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Introduces basic principles of taxation, and general equilibrium modeling of the economic effects of taxes, and applies them to federal and state taxes on the energy sector. Topics include royalties resource rent taxes, corporate income taxes including international tax issues such as transfer pricing and income shifting, excess profit taxes, production-sharing agreements, and environmental taxes. Students will formulate, implement, and use quantitative models to solve problems related to private and public decision making in the context of taxes applied to U.S. energy systems.

ECON 606 - CORPORATE FINANCE FOR THE ENERGY SECTOR
Short Title: CORP FINANCE - ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Examines the investment decisions of corporations, the valuation of stock, bonds and options investments by individual investors. The implications of investor decisions for corporations, and specifically the manner in which they evaluate investment projects and finance investments are a core focus. Examples and case studies focus on the energy sector. Students will increase their understanding of financing and investment decision as the relate to energy companies and energy related projects using analytical and mathematical techniques to make data-driven recommendation to real-world problems.

ECON 607 - THE ECONOMICS OF ENERGY AND THE ENVIRONMENT
Short Title: ECON OF ENERGY & ENVIRONMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course provides students with an introduction to, and overview of, policies to protect environmental resources against emissions from energy production and use and hazardous wastes. The first part of the course will present an economic analysis of the costs and benefits of using different types of policies to control emissions from fossil fuel use. The remainder of the course, taught from a practitioner’s perspective, will discuss the interrelationship between science, institutions and politics when designing environmental policy. The focus will be on problems associated with oil and gas production - especially water contamination and use - and hazardous waste disposal.

ECON 608 - RISK MANAGEMENT IN THE ENERGY INDUSTRY
Short Title: RISK MANAGEMENT/ENERGYINDUSTRY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course introduces quantitative risk management techniques often employed in the energy industry. It covers topics such as real options, value at risk, conditional value at risk, and expected shortfall, as well as the use of derivatives for trading and hedging various risk exposures. The course is methodologically self-contained and provides students with hands-on experience with state-of-the-art software to measure and manage risk-adjusted returns of heterogeneous asset portfolios.
ECON 610 - ENERGY AND THE MACROECONOMY
Short Title: ENERGY & THE MACROECONOMY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses connections between energy and economic activity at the regional, national, and international level, and especially the role of energy shocks in economic fluctuations, innovations in energy supply as drivers of regional economic growth, and the role of energy commodities in transportation and international trade.

ECON 611 - GEOPOLITICS OF ENERGY
Short Title: GEOPOLITICS OF ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Explores the geopolitical issues around energy security and trade by focusing on role of energy as the world’s largest business and a strategic requirement of the modern nation-state, a source of power in international relations, and a major influence on national politics and institutions. This course equips students with the analytical skills to inform policy debates, advocate for the interests of principals, and advise policy makers and firms amid rapid changes in energy markets. Students learn both to produce sound empirical analysis by employing state of the art econometric techniques and to be discerning consumers of empirical research.

ECON 612 - ENERGY PROJECT DEVELOPMENT
Short Title: ENERGY PROJECT DEVELOPMENT
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course will cover the development of energy projects, especially electric power projects, from inception through to financing. It examines key issues such as: siting/permitting, including compliance with federal, state and local environmental and regulatory issues; fuel supply agreements; capital cost pricing; off-take agreements; and the various methods of project financing. Microsoft Excel is used for project financial analysis, including revenue and cost modeling, debt management, project net cash flow, project internal rate of return and net present value. The course also will cover strategies to monetize the project including development fees, carried equity, and private and public sale of equity, including initial public offerings (“IPOs”).

ECON 613 - INTERNATIONAL TRADE IN ENERGY
Short Title: INTERNATIONAL TRADE IN ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course explores the effects of international trade and the determinants of the amount of trade between countries in energy commodities, and the role of international capital flows in financing energy projects, in particular. It will also discuss the many ways that governments can alter international trade through various policies.

ECON 614 - POLITICAL ECONOMY OF OIL IN DEVELOPING COUNTRIES
Short Title: POLITICAL ECONOMY OF OIL
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: This course evaluates the political and economic determinants of oil and gas policies in developing countries and their impact on world markets, the interaction between states and oil companies, the challenges of oil wealth management, and the causal links between resource dependency, development, institutions, and political regimes. Although the main focus is on oil production, natural gas is also analyzed, and both are compared to other natural resources. Emphasis is on the analysis of institutional change and the functions of institutional change in the energy industry using data-driven methods to examine case studies.

ECON 615 - SOCIAL STUDIES OF ENERGY
Short Title: SOCIAL STUDIES OF ENERGY
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Investigate the ways in which energy production and consumption impacts social life. By studying the implementation and use of renewable and on-renewable energy infrastructures in different parts of the world, the students will develop a contextual, self-reflexive and critical lens that will help them make decisions in later stages of their careers.
ECON 620 - INDUSTRIAL ORGANIZATION AND THE ENERGY SECTOR
Short Title: INDUSTRIAL ORG & ENERGY SECTOR
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: The course will discuss monopoly, oligopoly, and the underlying sources of monopoly power in energy industries and how the industries can be restructured to isolate the monopoly elements from the more competitive ones. Other topics include price discrimination, vertical control, mergers and acquisitions, and strategic behavior between firms.

ECON 621 - THE ECONOMICS OF THE ELECTRICITY INDUSTRY
Short Title: ELECTRICITY INDUSTRY ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses the determinants of the cost of electricity, the effects of organizing the industry in different ways, the need to encourage sufficient investment in reserve capacity, and the use of information technology to allow for new ways of pricing electricity, operating the network and coordinating supply and demand. Students will learn to analyze the behavior of power markets, the effect of different policies, and draw empirical solutions to the real-world issues.

ECON 622 - TRANSPORTATION ECONOMICS
Short Title: TRANSPORTATION ECONOMICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Discusses transportation as a major source of energy demand in modern post-industrial economies and of future demands in emerging economies. Emphasizes that the demand for energy use in the transportation sector involves modeling household choices, economic growth and demographic transition, government decisions to support transportation infrastructure development, and the introduction of new technologies. Students will apply problem solving and analytical skills to perform calculations related to transportation energy and its environmental impact.

ECON 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Economics
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Laboratory, Lecture, Seminar, Independent Study, Lecture/Laboratory
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ECON 699 - PRACTICUM
Short Title: PRACTICUM
Department: Economics
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 4
Restrictions: Enrollment is limited to Graduate level students. Enrollment limited to students in a Master of Energy Economics degree.
Course Level: Graduate
Description: Projects developed by an industry advisory group to be researched and presented to participating industry at completion of all course work. Internships with an approved employer may be substituted. Emphasis on skill building components may include: analyzing data for accuracy and reconciliation across different sources, quantitative analysis and risk assessment of a firm's portfolio of assets and capital investment opportunities, and briefing expert and non-expert audiences.

ECON 700 - DEPARTMENTAL SERVICE COURSE
Short Title: DEPARTMENTAL SERVICE COURSE
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Independent Study
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: In each semester in which students perform departmental service, they need to register in the departmental service course Econ 700. Students must meet their faculty supervisors as early as possible before the semester starts and regularly during the semester to ensure there is a mutual understanding of the job responsibilities. Repeatable for Credit.

ECON 800 - GRADUATE RESEARCH
Short Title: GRADUATE RESEARCH
Department: Economics
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Research
Credit Hours: 1-12
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Assists students in the dissertation writing process. Students must write an independent and original piece of quantitative research that is of sufficient quality to merit publication in an academic economics journal. Towards this objective, faculty mentor evaluate and critique the research of PhD students who are either preparing research before formally selecting a dissertation topic or actively engaged in dissertation research. Repeatable for Credit.

Description and Code Legend
Note: Internally, the university uses the following descriptions, codes, and abbreviations for this academic program. The following is a quick reference:

Course Catalog/Schedule
• Course offerings/subject code: ECON

Department Description and Code
• Economics: ECON

Graduate Degree Description and Code
• Master of Energy Economics degree: MEEcon
Graduate Degree Program Description and Code

• Degree Program in Energy Economics: ENEC

CIP Code and Description

• ENEC Major/Program: CIP Code/Title: 45.0603 - Econometrics and Quantitative Economics

1 Classification of Instructional Programs (CIP) 2020 Codes and Descriptions from the National Center for Education Statistics: https://nces.ed.gov/ipeds/cipcode/