
ECONOMICS

Chair, Professor Michael Donihue

Associate Chair, Associate Professor Samara Gunter

Professors Michael Donihue, David Findlay, Patrice Franko, Randy Nelson, Douglas Terp, and Andreas Waldkirch; Associate Professors Samara Gunter, Timothy Hubbard, and Daniel LaFave; Assistant Professors Linwood Downs, Kathrin Ellieroth, Yang Fan, Erin Giffin, Robert Lester, Jennifer Meredith, Lindsey Novak, and James Siodla; Visiting Professor James Libby; Visiting Assistant Professor Benjamin Scharadin.

The Economics Department provides a wide selection of courses analyzing market behavior and the interactions among consumers, firms, and governments. Economic tools, which are applicable to a broad range of topics, are used to investigate how individuals and firms make decisions in private and public spheres and the consequences of resulting resource allocations. As the following courses illustrate, economics is central to the study of poverty, discrimination, growth, unemployment, the environment, international trade, and development, encompassing everything from fertility rates and finance to the cyclical nature of a country's aggregate production.

Economics classes emphasize theoretical modeling, empirical analysis, and critical thinking. After completing core courses in microeconomic and macroeconomic theory, students choose from a wide variety of electives. Economics majors may elect a concentration in financial markets. The economics major provides undergraduate students with an excellent background for employment and graduate work in numerous fields, including economics, business, law, government, health care, and education.

Requirements for the Major in Economics

Economics 133*, 134*, 223**, 224**, 293**, and 393; one economics senior seminar; three additional elective courses in economics at the 200 or 300 level; at least two of these elective courses must be at the 300 level and at least one 300-level elective must be completed at Colby; Mathematics 121* or 161*, or equivalent.

Requirements for the Major in Economics with a Concentration in Financial Markets

Economics 121, 133*, 134*, 211, 212, 223**, 224**, 293, and 393; one economics senior seminar; two additional elective courses in economics at the 300 level; at least one 300-level elective must be completed at Colby; Mathematics 121* or 161*, or equivalent.

A student may elect only one of the majors offered by the Economics Department.

* Students who do not complete Economics 133 and 134, as well as one of the calculus courses required for the majors with a grade of C- or above, may not enroll in Economics 223.

** Note: To continue in the major, students must receive a grade of C- or better in Economics 223, 224, and 293. Both theory courses (223, 224) must be taken at Colby. Any student who has tried and failed to satisfy the EC223 or EC224 requirement at Colby (i.e., received a grade of D+ or below for the major) may elect to take the same course elsewhere by securing the approval of the department chair on the standard credit transfer approval form. For other students seeking to fulfill the EC223 or EC224 requirement with a course taken elsewhere, approval for the standard credit transfer form can be secured only by petitioning the Economics Department and having the petition approved by majority vote of the Economics Department faculty.

At least one 300-level elective course must be taken at Colby regardless of the number and level of credits transferred from your study abroad.

Students who wish to do graduate work in economics are encouraged to consider an honors thesis and take additional courses in mathematics, especially Mathematics 253, 274, 311, 338, and Computer Science 151, 152, or 153.

The point scale for retention of the major applies to all courses offered toward the major. Independent studies and Economics 345 cannot be used to fulfill the elective course requirements for the majors. No economics courses listed for the majors may be taken satisfactory/unsatisfactory.

Senior Thesis and Honors in Economics and Economics-Mathematics

Students wishing to further their economics training with a yearlong research project must register for Economics 451 and 491 during the fall of their senior year. At the end of the fall semester, students who are interested in pursuing honors research and who have the Economics Department's approval then complete a second semester of research by enrolling in Economics 451 and 484. Those completing Economics 451 and 484 with at least an A-, and who have maintained a GPA in the major of at least 3.50, are entitled to graduate with honors in the major. Another option, the Senior Thesis, is available to students who want to do a yearlong research project but do not meet the GPA requirement for honors. These students should enroll in Economics 451 and 491 in the fall followed by Economics 451 and 482 in the spring. Further details can be obtained from the department.

Requirements for the Minor in Economics

The department offers two alternative tracks for a minor in economics. Track 1 includes courses in accounting and introductory finance. Track 2 enables students to select from a variety of policy areas to focus their study of economics in completing the minor.

Track 1. Economics 133, 134, 121, 211; and two Economics electives numbered 200 and above. Also Economics 293; or Statistics 212; or Psychology 214 and 215; or Sociology 271; or Government 281; or equivalent.

Track 2. Economics 133, 134; Mathematics 121 or 161 (or equivalent), Economics 223; and two Economics electives numbered 200 and above. Also Economics 293; or Statistics 212; or Psychology 214 and 215; or Sociology 271; or Government 281; or equivalent.

Independent studies and Economics 345 cannot be used to fulfill the elective course requirements for the minor. No economics courses listed for the minor may be taken satisfactory/unsatisfactory. A faculty-supervised internship experience is recommended.

The minor may not be combined with any of the majors offered by the Economics Department.

Course Offerings

EC117j Introduction to Financial Decision Making Five topical areas: (1) planning, including career planning, financial budgeting, and personal federal taxes, (2) consumer credit, costs of credit, and identity theft, (3) major purchasing decisions including housing and automobiles, (4) insurance such as property, health, disability, and life insurance, and (5) investing in stocks, bonds, and mutual funds for now and retirement. Does not count toward the economics majors or minors. *Prerequisite:* Junior or senior standing. *Three credit hours.* LARGAY

EC121fs Financial Accounting Introduction to financial accounting and financial statement analysis from the stakeholders' perspective. The statement preparation process is reviewed and analyzed. Accounting concepts, measurement conventions, limitations of financial statements, and the substantive and ethical issues that influence statement preparation and presentation are reviewed. Relates accounting and analysis to microeconomics, finance, and macroeconomic events and public policy, with reference to overlapping concepts and topics. Previously offered as Administrative Science 221. Does not count toward the Economics and Economics-Mathematics majors. *Prerequisite:* Sophomore standing or above. *Four credit hours.* DOWNS

EC133fs Principles of Microeconomics Introduces the fundamental problem in economics: limited resources to satisfy unlimited needs and wants. Concentration on how markets allocate these scarce resources and when they fail to operate efficiently. After analyzing costs, students look at how firms in market structures ranging from perfectly competitive to monopolistic make decisions. Key principles are illustrated by applying them to current economic issues. Students will use standard economic models to describe market structures and the effects of policy interventions, solve problems using graphical or algebraic models of these markets, and choose an appropriate model to analyze economic events described in news articles. *Four credit hours.* S. FACULTY

EC134fs Principles of Macroeconomics Introduces the measurement of macroeconomic variables and basic theoretical models of aggregate economic behavior. Focuses on the study of fluctuations in economic activity, long-run economic growth, and the role of monetary and fiscal policy in achieving macroeconomic goals. Students will develop their analytical problem-solving skills, hone their ability to think critically, gain experience in building and understanding theoretical models, and sharpen their capacity to understand and critique macroeconomic policy. *Prerequisite:* Economics 133. *Four credit hours.* S. ELLIEROTH, FAN, FINDLAY, SODLA

EC171j Global Financial Markets Fast-paced and challenging investigation of global financial markets and their effect on the world's domestic economies. We will define and explore the primary components of global financial markets, analyze the roles of the public and private sectors in the markets, and develop recognition of the linkages between financial events in disparate markets to underlying non-financial economies. We will also examine esoteric financial instruments and techniques such as credit default swaps, securities lending, and markets related to the VIX index. Does not count toward the economics majors or minor. *Three credit hours.* ATKINSON

EC211f Corporate Finance I An introduction to financial markets, institutions, and instruments. The tools needed for discounted cash-flow analysis, asset valuation, and capital budgeting are developed. The effects of diversification on risk and the relationship between risk and return are considered. *Prerequisite:* Economics 134. *Four credit hours.* NELSON

EC212s Corporate Finance II An examination of (1) the issues firms face in obtaining long-term financing and establishing a dividend policy, (2) the effects of capital structure on the cost of capital and the value of the firm, (3) international corporate finance, and (4) the use of financial derivatives, including options, to manage financial risk *Prerequisite:* Economics 121 and 211. *Four credit hours.* FAN

EC214s Economic Policy and Performance in Contemporary Latin America Analysis of macroeconomic stabilization policies and microeconomic issues such as regional trade, agriculture, health, education, the environment, and labor markets in contemporary Latin

America. *Prerequisite:* Economics 134 and a W1 course. *Four credit hours.* **W2, I.** FRANKO

EC223fs Microeconomic Theory The theory of the pricing, distribution, and allocation of resources in a market economy. Emphasis placed on the various meanings of economic efficiency. *Prerequisite:* Economics 133, and one of Mathematics 102, 121, 122, 161, 162, or equivalent; sophomore standing. *Four credit hours.* GIFFIN, HUBBARD

EC224fs Macroeconomic Theory Devoted to the development and examination of various theoretical frameworks to explain fluctuations in output, interest rates, exchange rates, unemployment, inflation, and economic growth in a globally interdependent economy. Continued study of the theoretical development of macroeconomic models and further refinement of understanding the effectiveness and optimality of macroeconomic policy. Students gain an understanding of the importance of expectations, the determination of asset prices (e.g., bond and stock prices), the relationship between financial markets and the macroeconomy, and the implications and limitations of models and policies. *Prerequisite:* Economics 134 and 223. *Four credit hours.* FINDLAY, LESTER

EC231s Environmental and Natural Resource Economics The objective is to develop and apply economic tools to current environmental and resource-management issues. Causes of and remedies to environmental and resource-management problems are analyzed through economic modeling. These models in turn serve as the theoretical foundation for designing and evaluating policy instruments and practices. Students will learn to analyze current environmental problems and assess the effectiveness of environmental and resource-management policies using economic tools. *Prerequisite:* Economics 133 and sophomore or higher standing. *Four credit hours.* COOK, MEREDITH

EC235s Organizational Strategy and Economics An integrative introduction to the dynamic, strategic decision-making process as applied in a variety of organizations, including businesses, nonprofits, and NGOs. Through readings, lecture, and case study discussion we explore the process of evaluating organizations, value models, competition, and markets so as to develop strategies that can be successful and adaptive over time. Supporting topics in organizational evolution, innovation effects, competitor response, offensive and defensive tactics, and sources of strategic failure and success are also reviewed. The economic underpinnings of strategy development are reinforced throughout. *Prerequisite:* Economics 134. *Four credit hours.* DOWNS

EC237s Experimental Economics Explores the use of experiments to study individual and strategic decision making. Topics may include choices over risky alternatives, altruism and reciprocity, cooperation, bidding in auctions, strategy in coordination games, and gender differences. *Prerequisite:* Economics 134. *Four credit hours.* GIFFIN

EC245f The Firm and Valuation The application of valuation models and techniques used throughout all phases of the firm's life cycle, including new ventures, growth and established firms, and firms under distress. Value enhancement methods, as well as valuation issues for specific industries and situations, complex firms and alternative investments are investigated, as well as valuation model limitations. The economic underpinnings of value are reinforced throughout the course. Students will perform valuations throughout the course, including a capstone project to demonstrate their proficiency. *Prerequisite:* Economics 121 and 211. Economics 293 or other statistics course recommended. *Four credit hours.* DOWNS

[EC252] Presidential Economics An analysis of key fiscal and monetary policies from the Hoover to the Clinton administrations. Topics include macroeconomic policies of the Great Depression, the gold standard, wage and price controls, the Kennedy tax cuts, and supply-side economics. The effects of economic events on political outcomes (e.g., presidential elections) and the effects of political factors on economic policies (e.g., the political business cycle) will also be examined. *Prerequisite:* Economics 134. *Four credit hours.* **H.**

EC253s The American Dream and the American Worker Explores theories from labor economics including the supply and demand of labor, human capital formation, discrimination, and mobility to examine trends in educational attainment, inequality, intergenerational mobility, and the economic welfare of labor market participants in the United States. Special emphasis will be placed on visualizing and analyzing labor market data. *Prerequisite:* Economics 134. *Four credit hours.* LESTER

EC255f Public Policy and Economic Development Examines efficient economic models for the promotion of federal, state, and local economic development. This case-based course analyzes frameworks for successful public/private partnerships that promote entrepreneurial activity, small business expansion, and the recruitment of industry to a region through the application of policy-based incentives. Investigates best-practice methods used by all levels of government to accomplish these tasks. *Prerequisite:* Economics 133. *Four credit hours.* LIBBY

[EC256] Economics of Crime Proceeds from the assumption that criminals are rational to the extent that higher costs of crime will lower criminal activity. Use of economic models to examine topics such as the criminal justice system, law enforcement, and markets for drugs and other illegal goods and services. Major projects include creation of a data portfolio examining one of several sources of national crime data using tables, graphs, and statistical relationships, and a group presentation on a major episode or issue in U.S. crime policy.

Prerequisite: Economics 134 and sophomore or higher standing. *Three credit hours.*

[EC258] Economic History of the United States Traces the structure and performance of the American economy through time. The focus is on applying the tools and methods of economics to the study of historical events from colonial times to World War II, including the American Revolution, slavery, the westward movement, the Civil War, and the Great Depression. Topics include the roles of agriculture, trade, migration, technology, banking, institutions, transportation, and labor in the development of the American economy. *Prerequisite:* Economics 134. *Four credit hours.* **H.**

[EC278] Joules to Dollars Explores economic issues defined by energy science, focusing on tradeoffs that accompany both renewable and nonrenewable energy systems. Students develop a capacity for the analysis of equivalent units of energy based on an understanding of thermodynamics and fuel types. Armed with a foundational knowledge of energy science, students employ a behavioral framework to evaluate the economics of alternative energy technologies and policy proposals for addressing environmental tradeoffs associated with energy use. Includes fieldwork, project-based cooperative learning, oral and written presentations, in-class homework assignments, quizzes, and exam. Lecture and laboratory. *Prerequisite:* Economics 133, and Chemistry 122, 141, or 147. *Four credit hours.* **N.**

[EC279] Economic Rise and Future of China Explores the historical path, current position, and future prospects of the Chinese economy. Examines the dynamics of China's recent economic success, drawing on economic analysis and recent research to understand current policy questions related to China and its role in the global economy. Students will engage with pressing issues through readings, debates, written assignments, and in-class discussions. Specific topics include Chinese monetary and trade policy, population change and the environment, science and technology policy, migration and the rural-urban divide, and the sustainability of China's growth. *Prerequisite:* Economics 133. *Four credit hours.* **I.**

EC293fs Research Methods and Statistics for Economics Provides students with the fundamental ability to understand and carry out research in economics. Covers the use of basic statistical methods, probability, and regression analysis in the description and interpretation of economic data. Students practice the application of these techniques working with powerful statistical software. *Prerequisite:* Economics 134 and Mathematics 121, 122, or equivalent & sophomore standing or above. *Four credit hours.* **KWAK, SCHARADIN**

EC297j Visualizing Our Energy Future The climate crisis is one of the defining challenges of our age, and it's a crisis that calls for data-driven solutions bridging economics and environmental science. Cities are experimenting with policies that incentivize energy efficiency as a means of achieving near-term reductions in greenhouse gas emissions. Two increasingly popular policy instruments, benchmarking and performance standards, are steeped in principles of open data and behavioral economics. Data visualization is one tool for policy makers to translate goals into action. Students will learn to communicate data insights to a variety of audiences through hands-on data exploration and visualization activities, using data from real-world building energy efficiency programs. *Prerequisite:* Economics 133. *Three credit hours.* **SANTORO**

EC298s Economics of Developing Countries An examination of current economic issues faced by low-income countries and an introduction to the study of development economics. Topics covered in detail include human capital accumulation over the life course, gender and household decision making, microcredit and insurance, inequality and development, the role of institutions and the state, the effectiveness of foreign aid, and international migration. For each topic, we seek to understand the factors and constraints influencing economic decision-making in low-income countries. Students may not receive credit for both Economics 335 and this course. *Prerequisite:* Economics 134. *Four credit hours.* **NOVAK**

EC313s Behavioral Economics Study of the economic models that combine standard economic rationality assumptions with psychologically plausible assumptions. We examine whether these new models improve our ability to understand and predict behavioral phenomena, including altruism, procrastination, self-control, errors in statistical reasoning, and stereotypes. *Prerequisite:* Economics 223. *Four credit hours.* **GIFFIN**

EC318s Economics of Health and Consumer Behavior Explores global healthcare and health insurance markets from a consumer's perspective. Applies health insurance theory to systems across the globe. We will read and discuss current literature about health phenomena in both developed and developing countries. Students will learn to analyze behaviors from an economic perspective by, for example, evaluating how responsive demand for health inputs is to changes in the price of those inputs, exploring how information affects health behaviors, and determining the value of health insurance. Students will apply their understanding to in-class exams and to a final research paper. *Prerequisite:* Economics 223 and 293. *Four credit hours.* **NOVAK**

[EC331] Industrial Organization and Antitrust Economics An examination of the structure, conduct, and performance of American industries to determine if the market process efficiently allocates resources to meet consumer demand. An economic analysis of antitrust laws, and an evaluation of their performances with reference to specific industries and cases. *Prerequisite:* Economics 223. *Four credit hours.*

[EC335] Topics in Economic Development An examination of current economic issues faced by developing countries and an introduction to the study of development economics. Topics covered in detail include the concepts and measurement of economic development, human capital over the life course, gender and household decision making, microcredit and insurance, inequality and development, the role of institutions and the state, debates over the effectiveness of foreign aid, and international migration. For each topic, we seek to understand the factors and constraints influencing economic decision making in developing countries. *Prerequisite:* Economics 223 and 293. *Four credit hours.*

[EC336] Mathematical Economics Advanced economic theory designed to give students the fundamental mathematical tools necessary to understand and analyze advanced economic models. Topics include constrained and unconstrained optimization, differential and difference equations, and dynamic optimization. Emphasis will be placed on economic applications including producer theory, consumer choice under certainty and uncertainty, and dynamic models. *Prerequisite:* Economics 224, Mathematics 253, and either Mathematics 122 or 162. *Four credit hours.*

EC338f Money, Banking, and Monetary Policy Students are introduced to the interpretation, role, and determination of interest rates, as well as the theory of consumption/saving, the theory of risk aversion, portfolio theory, the risk structure of interest rates, and the term structure of interest rates (i.e., the yield curve). We will then examine the behavior, structure, and regulation of the banking industry. Finally, students will examine monetary theory and policy with particular emphasis on the implementation of policy by the Federal Reserve. Emphasis on the theoretical, empirical, and policy-related aspects of these issues. *Prerequisite:* Economics 224 and 293. *Four credit hours.* FINDLAY

EC343s Environment and Development The link between economic development and the status of the environment is evident in many of our world's most pressing problems: from climate change to overfishing, our understanding of poverty must intertwine with our study of ecosystems. This applied economics course will introduce theoretical models of human decision-making about natural resources and analyze their empirical applications within developing countries. Topics will include the resource curse, environmental Kuznets curve, climate variability, natural disasters, fisheries, deforestation, conservation, and human health impacts. Throughout the course, we will weigh the tradeoffs between policies designed to promote sustainable development and learn how economists assess the impact of environmental interventions. *Prerequisite:* Economics 223 and 293. *Four credit hours.* MEREDITH

[EC345] Research in Economics An analytical, not descriptive, research paper in economics, to be coordinated with an elective economics course in which the student is concurrently, or previously has been, enrolled. Economics 345 cannot be used to fulfill any of the elective course requirements. *Prerequisite:* Economics 224 and permission of the instructor. *Three credit hours.*

EC347s Computational Macroeconomics Modern macroeconomic analysis is performed on computers. Economists use computers to analyze large amounts of data, solve models with no analytic solution, and conduct experiments on simulated economies. This course does not require any prior coding knowledge and provides an introduction to (i) the mathematical theory of dynamic programming to analyze dynamic economic decision-making and (ii) practical general programming basics and numerical methods to solve and simulate economies and conduct policy experiments. We will use Matlab in this course. *Prerequisite:* Economics 224 and 293. *Four credit hours.* ELLIETH

[EC348] Economic Growth Introduces students to the theory of economic growth. We will primarily be concerned with how economists measure differences in living standards across countries and over time and how they explain these differences in living standards. Students will learn how to work with models of economic growth and evaluate these theories by using publicly available data. An important part is devoted to obtaining, preparing, and presenting data on cross-country income differences. *Prerequisite:* Economics 224. *Four credit hours.*

[EC351] Public Finance Public finance is the branch of economics concerned with government expenditure and taxation. On the expenditure side, we will model externality and social insurance justifications for government intervention and examine several government policies including Social Security and health-care reform. On the tax side, we will model tax incidence of consumption, income, and wealth taxes and behavioral responses to them. Students will apply their understanding of the models in exams, policy presentations, and writing assignments and will be expected to read and interpret empirical research papers that evaluate the impacts of government policy. *Prerequisite:* Economics 223 and a W1 course. *Four credit hours.* W2.

EC353f Urban and Regional Economics Provides an in-depth perspective on the economic activity of cities and regions. The focus is on the use of economic theory to explain various urban phenomena with an emphasis on the role cities play in greater economic development. Specific topics include economic reasons for the existence of cities and specialized regions, urban spatial structure, urban sprawl, housing, local public goods and services, pollution, and urban quality of life. *Prerequisite:* Economics 223. *Four credit hours.* SIODLA

EC357s Poverty and Food Insecurity Household food insecurity has many determinants including, socioeconomic status, time, the food environment, education, and culture. This course will explore the economic determinants of food insecurity and why it still persists today. Using a multidisciplinary approach, we will conduct a detailed investigation of the four main contributors to food insecurity: inadequate income, time, food environment, and nutrition education. Within each unit we will discuss the societal occurrence, characterize formal econometric models, and use publicly available data to address simple research questions. In addition to gaining a greater appreciation for how economics is applied, we will gain a better understanding of econometric and data management tools. *Prerequisite:* Economics 223.
Four credit hours. SCHARADIN

EC364f Gender in the Macroeconomy Studies gender differences and their effect on macroeconomic outcomes (labor markets, wealth, income). We will cover theoretical models and concepts which allow us to analyze economic behavior of men and women, households, and families. We will learn about recent developments and current topics in gender economics and discuss their consequences for the macroeconomy. Examples of topics are: the decline in men's labor force participation, assortative mating, and the differential impact of recessions on men and women. We will combine data with the theory to enhance our understanding of how gender differences impact the aggregate. *Prerequisite:* Economics 224. *Four credit hours.* ELLIEROTH

EC375f Computational Finance and Portfolio Theory This course covers two major topics. First, we will apply econometric techniques to financial data. This will allow us to make statistical inferences about the underlying assets and answer interesting questions like how one determines how much value is at risk at any given time. Second, we will introduce modern portfolio theory and discuss how that theory has evolved and led to things like mutual funds today. We will learn how to acquire and calculate basic financial returns using R and use econometric techniques to generate and interpret basic descriptive statistics as well as diagnose and evaluate model fit. Previously offered as Economics 398 (Spring 2020). *Prerequisite:* Economics 211 and 293. *Four credit hours.* FAN

[EC378] International Trade An introduction to international trade theory and policy. Topics include the determinants of international trade patterns, the gains from trade, distributional effects, increasing returns and scale economies, outsourcing, commercial policy, factor movements, trade agreements, and labor and environmental standards. Students will understand and be able to manipulate the major international trade models and analyze current trade policy issues in the context of these models both orally and in writing. *Prerequisite:* Economics 224. *Four credit hours.*

EC379s Game Theory Introduction to the concepts and applications of game theory, the behavior of rational, strategic agents: "players" who must take into account how their opponents will respond to their own actions. It is a powerful tool for understanding individual actions and social institutions in economics, business, and politics. Students will enhance their analytical thinking and reasoning skills, develop their ability to engage in quantitative analysis and formal problem solving, and hone their ability to think and write with precision and rigor. Specific topics include strategic dominance, Nash equilibrium, subgame perfection, and incomplete information. *Prerequisite:* Economics 223. *Four credit hours.* HUBBARD

EC393fs Econometrics An introduction to quantitative methods used for the analysis of economic phenomenon, covering the theoretical development of the ordinary least squares regression framework, tools for model specification and estimation, hypothesis testing, methods for correcting errors in parameter estimation, and the analysis of econometric results in the context of a wide range of empirical applications. Through lab exercises and a final empirical project, develops model-building skills, builds confidence in applying econometric methods to real-world data, deepens the understanding of statistical inference, and improves the capacity for communicating econometric results. *Prerequisite:* Economics 223, and either Economics 293 or a two semester Colby course sequence in research methods and/or statistics. *Four credit hours.* DONIHUE, LAFAVE

EC451f Economics Research An intensive collaborative research experience for honors or senior thesis projects. Required for all honors and senior thesis students. *Prerequisite:* Senior standing as an economics major and permission of the instructor. *One credit hour.* GUNTER

EC452s Economics Research An intensive collaborative research experience for honors or senior thesis projects. Required for all honors and senior thesis students. *Prerequisite:* Senior standing as an economics major and permission of instructor. *One credit hour.* GUNTER

EC470f Seminar: The City in Economic History Since its founding, the United States has steadily become urbanized. What economic forces have caused people to move to cities? Can history explain today's urban locations and spatial patterns? Focusing primarily on U.S. urban growth since 1800, students will read, present, and discuss academic articles on topics such as suburbanization, zoning, local infrastructure investment, urban quality of life, housing, and racial and economic inequality. Students will build the economic models and tools necessary to complete an original empirical research paper in urban economic history. *Prerequisite:* Economics 224, 393 (may be taken concurrently), and senior standing as an economics major. *Four credit hours.* SIODLA

[EC471] Seminar: Global Production Many goods and services include components that are produced in multiple countries. Global production chains are organized within multinational enterprises or may take place through contractual arrangements. Studies the determinants of cross-border investment and production and their implications for the welfare of people in all countries. Readings are drawn largely from recent original research papers. An original empirical research project provides a deeper understanding of how economic research is conducted and evolves. Oral communication skills are developed through class discussion, presentations, and debates. *Prerequisite:* Economics 224, 393 (may be taken concurrently), and senior standing as an economics or global studies major. *Four credit hours.*

EC473f Seminar: Data Analytics and Forecasting An introduction to time series analysis focusing on exploratory data analysis, data visualization and economic modeling for the purposes of policy analysis and forecasting. Analytical methods include exponential smoothing, time series decomposition, cointegration, ARIMA and econometric regression modeling. Majors draw on previous coursework to develop their communication and modeling skills by applying descriptive and diagnostic analytics to real-world data and presenting their analysis in class and in written forecast reports and policy briefs. *Prerequisite:* Economics 224, 393 and senior standing as an economics major. *Four credit hours.* DONIHUE

EC474f Seminar: Growth and Work of Nations Why does it take less than a month for the world's richest countries to produce what the world's poorest countries produce in a year? What mechanisms lead countries to allocate a smaller fraction of their workforce to agriculture as they develop? How did the world transition from a state of ubiquitous poverty before the Industrial Revolution to sustained growth thereafter? We will read and discuss scholarly research addressing all of these questions. Students will acquire the tools of applied macroeconomic theory necessary to complete an original research project. *Prerequisite:* Economics 224, 393 (may be taken concurrently), and senior standing as an economics major. *Four credit hours.* LESTER

EC475s Seminar: Health and Global Development Exposes students to emerging issues in the economics of global health. By integrating economic theory and recent empirical work using detailed survey data and experiments, we analyze problems facing developing populations and policies aimed at their solutions. We consider extreme poverty and hunger, child mortality, health-care delivery and provider quality, and the relationship between income, poverty, and health. Attention will also be given to global health policy and empirical evidence of the success or failure of policies that target maternal and infant health, anemia, HIV, and malaria. Relies heavily on applying concepts covered in statistics, econometrics, and intermediate microeconomics to reading, discussing, and conducting empirical research. *Prerequisite:* Economics 224, 393 (may be taken concurrently), and senior standing as an economics major. *Four credit hours.* LAFAVE

EC478s Seminar: U.S. Social Safety Net Many domestic spending programs have a goal of improving the well-being of low-income citizens. What challenges does the government face when designing these programs and how do they alter behavior? Students will read and discuss scholarly research on topics including welfare, Medicaid, education, Social Security, the earned income tax credit, and personal income taxation. Students will also write an original empirical research paper. Emphasis on analyzing existing research and developing new research ideas using differences-in-differences methodology. *Prerequisite:* Economics 224, 393 (may be taken concurrently), and senior standing as an economics major. *Four credit hours.* GUNTER

EC479f Seminar: Auctions A successfully designed auction depends on the idiosyncrasies of the market being studied. While this makes it difficult to achieve general results, it opens the door to endless applications in need of customized policy advice. Students will learn the core auction formats and some classic theoretical results that provide a benchmark for even the most recent auctions research. They will learn simple empirical strategies that allow these models (and the behavior they predict) to be married with real-world data. Students will develop the tools needed for conducting, and will be required to produce, original auctions research. *Prerequisite:* Economics 224, 393 (may be taken concurrently), and senior standing as an economics major. *Four credit hours.* HUBBARD

[EC482] Senior Thesis A continuation of a year-long research project, beginning with Economics 491 in the fall semester. The completed research is to be presented in written form and as part of the Colby Liberal Arts Symposium. *Prerequisite:* Economics 451 and 491, concurrent enrollment in EC452, senior standing as an economics major, and permission of the sponsor. *Four credit hours.*

[EC483J] Senior Honors Thesis *Noncredit.*

EC484s Senior Honors Thesis A continuation of a year-long research project, beginning with Economics 491 in the fall semester. The completed research is to be presented in written form and as part of the Colby Liberal Arts Symposium. *Prerequisite:* Economics 451 and 491, concurrent enrollment in EC452, senior standing as an economics major, permission of the sponsor, and successful proposal defense. *Three or four credit hours.* FACULTY

EC491f, 492s Independent Study Independent study devoted to a topic chosen by the student with the approval of the department.

Prerequisite: Permission of the sponsor. *One to four credit hours.* FACULTY