ECONOMICS
haverford.edu/economics

Economics consists of a variety of theoretical approaches to understanding human behavior, social interactions, and economic performance, and a set of powerful methodological tools that can be used to test competing theories empirically. The economics curriculum at Haverford offers introductory and upper level courses both in theory and empirical methods, as well as numerous electives on a broad range of economic topics. Students with a wide range of interests—financial markets, the environment, politics and public policy, less-developed countries, income distribution and equity, the law, and international trade, to name just a few—will find much that is useful and stimulating by studying economics. One or two economics courses can be an important part of the liberal education of any college student, and students with a diverse set of interests find the economics major to be an engaging and rewarding course of study.

LEARNING GOALS
Students will:
• achieve competency in the building blocks of economic theory.
• learn to think like economists.
• achieve competency in statistics and econometrics.
• communicate as economists.
• develop and execute an original economics research project.

CURRICULUM
The introductory courses, ECON 104, 105 or 106, introduce at an elementary level the building blocks of microeconomic theory, the study of the behavior of individuals and firms and how they interact in markets for goods, services, labor, and assets, and macroeconomic theory, the study of the behavior of aggregate economic variables, such as GNP, the inflation rate, the unemployment rate, the interest rate, and the budget deficit, and how they relate at the economy-wide level. These courses provide an overview of economics and a strong foundation for more advanced work in economics.

The intermediate (200-level) courses offer material on many different economic topics. These courses require ECON 104, 105 or 106 as a prerequisite, and are designed to be useful to non-majors as well as minors and majors. They encompass such diverse subjects as environmental economics, microfinance, law and economics, women in the labor market, crises, economic development of China and India, and game theory.

Methods courses, which include ECON 203 (Statistical Methods in Economics) or ECON 204 (Economic Statistics with Calculus) followed by ECON 304 (Introduction to Econometrics), give students the necessary methodological training to understand empirical research described in contemporary economics articles and to conduct their own original research.

Advanced theory courses, ECON 300 (Intermediate Microeconomic Theory) and ECON 302 (Intermediate Macroeconomic Theory), follow up on the introductory theory course but offer more in-depth and mathematical treatments of these theoretical concepts, which are the building blocks for modern economic thought and research.

The advanced (300-level) elective courses involve a more technically sophisticated approach to analyzing a variety of economic issues. These topics courses include such diverse areas as behavioral economics, natural resource economics, international trade, and economics of uncertainty. These advanced topics courses normally require some combination of ECON 203, 300, 302, and 304 as prerequisites, and they are designed primarily for economics minors and majors and those who expect to make use of economics in their professional careers. In most of these courses, a substantial paper is an important part of the requirement.

MAJOR REQUIREMENTS
• MATH 118 or the equivalent of two semesters of college calculus
  o Majors must complete this requirement by the end of sophomore year.
• ECON 104, 105 or 106; ECON 203 or 204, and ECON 300, 302, and 304
  o Majors are advised to take 104, 105 or 106, 203 or 204, and one of the intermediate theory courses by the end of their sophomore year. Majors must complete both intermediate theory courses by the end
of junior year and ECON 304 by the end of fall semester of senior year.

- ECON 396, a year-long two-semester Senior Thesis Research Seminar
  - During the first semester majors participate in a group seminar in which students learn salient research skills, listen to and critique work of guest economics speakers, and develop their own research questions; during the second semester students conduct original and independent economics research under the guidance of an economics faculty member.

- Four other semester courses above the 100 level
  - Two of these electives must be at the 300 level. One 300-level course must be a Junior Research Seminar, a set of courses designed to develop the student’s research skills through exploring topical cutting-edge research and developing proposals for related original research projects.

Other Information About the Major
Students may count most courses in the Bryn Mawr Economics Department toward the Haverford economics minor and major (with the exception of courses at the 100 level, excluding ECON 105). Some courses have different numbering across the campuses, in particular the Haverford courses: ECON 203/304 (Economics 257 at Bryn Mawr), ECON 300 (Economics 200 at Bryn Mawr), and ECON 302 (Economics 202 at Bryn Mawr). The two economics departments plan their course schedules jointly so that they can offer the maximum variety of economics courses across the two campuses. In order to count a course toward the major or minor requirements, the student must earn a grade of 2.0 or higher. Students with strong economics backgrounds may place out of ECON 104/105/106 through a placement test, but they will be required to take an extra elective to complete the major.

Students who plan to apply to graduate programs in public policy or business should take additional math courses through at least MATH 121 (Multivariable Calculus III) and at least one computer science course. Similarly, students who are planning to apply to Ph.D. programs in economics should take mathematics through at least MATH 215 (Linear Algebra) and MATH 317 (Analysis I). Economics majors also have the option to pursue the Concentration in Mathematical Economics, which is described under its own heading in this catalog.

MINOR REQUIREMENTS
- ECON 104, 105 or 106
- ECON 203 or 204
- ECON 300 or 302
- Three other economics courses at the 200 and/or 300 levels.

SENIOR PROJECT
The senior thesis at Haverford College is the culmination of a four-year learning process during which students develop their scholarly interests and become independent thinkers. The year-long, two-semester Senior Research Seminar in Economics imparts skills and techniques essential to students undertaking original independent research projects. The first (fall) semester includes: workshops on research techniques, on thesis writing skills and on data collection and management with Excel and Stata; presentations of working papers by visiting scholars preceded by small group critiques of each paper; and one-on-one work with a faculty member to develop a thesis proposal. The course focuses on acquisition of tools to conduct original research, learning how to engage in scholarly discussions, and learning about critical analysis. By the end of the fall semester, students have developed an original research idea and written a formal proposal for the thesis which they have orally presented to a sub-section of the class. The faculty members overseeing the class must approve the proposal.

Independent work under the guidance of a faculty adviser begins at the end of the first semester and continues throughout the second semester. During the second (spring) semester, students develop their thesis through extensive reading, empirical and or theoretical analysis of the research question, individual sessions with a faculty adviser, and group discussion. The final thesis is an original economic contribution to the field of knowledge in which the thesis is located. Each student demonstrates a clear mastery of the literature surrounding the research question, an understanding of the theoretical underpinnings of the question, and adequate analysis and discussion of results.
Senior Project Learning Goals
Students will learn to:
• craft a viable economics research question and design a project that will answer it.
• summarize the economic scholarship related to this question while discovering and articulating relationships among texts and contextualizing the research question within the broader literature.
• construct and execute an analytic argument that culminates in well-grounded and testable hypotheses.
• collect, manage, and analyze data to test the hypotheses.
• develop and articulate well-founded conclusions based on the empirical or theoretical evidence.
• write a professional-quality research paper that presents their work and findings.
• present the findings of their research orally using relevant visual aids (graphs, tables, mathematical equations, for example).

Senior Project Assessment
We provide two rubrics for assessment of the economics senior thesis, one for a theoretical thesis and one for the more common empirical thesis. The rubrics, which assess the written thesis, were tested by faculty members in the spring of 2014 with multiple faculty members assessing each thesis, and the rubrics were adapted to deal with any concerns. As the department moves forward, each faculty member will assess the thesis of his or her advisees, providing a rating of each criteria. While the ratings will be related to the final grade that the student receives, the faculty member will have the opportunity to incorporate other facets of the students’ experience to the grading process such as creativity, improvement, perseverance, etc. At the time of grading, the ratings will be submitted to the department’s administrative assistant who will compile the results, using a numerical translation of the ratings (4=excellent; 3=proficient, etc.). Each fall, the department will meet and look over the ratings to determine which categories the students are more or less proficient in and where we have seen improvement or setbacks and to assess the continued relevance of the criteria. The outcome of this meeting will guide changes to the fall senior thesis curriculum and potentially to the economics major curriculum as well as changes to the rubric.

Requirements for Honors
The department invites economics majors whose grade point average in economics courses at Haverford, Bryn Mawr, and Swarthmore at the beginning of the second semester of the senior year is 3.60 or higher to become a candidate for the degree with honors in economics. The faculty awards honors or high honors on the basis of a student’s performance in all economics courses, including those in the second semester of senior year, and in an oral examination by department faculty focused on the student’s senior thesis.

Related Concentration
Concentration in Mathematical Economics
Mathematics and economics are complementary disciplines. Most branches of modern economics use mathematics and statistics extensively, and some important areas of mathematical research have been motivated by economic problems. Economists and mathematicians have made important contributions to each other’s disciplines. Economist Kenneth Arrow, for example, did path-breaking work in the field of mathematical optimization; and in 1994 mathematician John Nash was awarded the Nobel Prize in economics for introducing a theory of equilibrium in non-cooperative games that has become central to contemporary economic theory. Haverford’s Concentration in Mathematical Economics enables students in each of the disciplines not only to gain proficiency in the other, but also to understand the ways in which they are related and complementary.

Degree Partnership Program
4+1 Engineering Program with the University of Pennsylvania
Haverford College and the University of Pennsylvania have formed a partnership that enables qualified Haverford undergraduates to gain early and expedited admission into a Master’s degree offered by Penn Engineering.

Study for four years at Haverford, then one year at Penn, enables the student to receive a Bachelor of Science degree from Haverford and a Master’s in engineering from Penn. Haverford is the first liberal arts college in the world to enter into such an agreement with an Ivy League engineering program.
FACULTY
Anne Preston
Chair and Professor

Richard Ball
Associate Professor

Carola Binder
Assistant Professor

Matthew Incatalupo
Visiting Assistant Professor

Saleha Jilani
Assistant Professor

Vladimir Kontorovich
Professor

Tim Lambie-Hanson
Visiting Assistant Professor

Shannon Mudd
MI3 Director and Visiting Professor

David Owens (on leave 2016-17)
Associate Professor

Giri Parameswaran (on leave 2016-17)
Assistant Professor

Steven Smith
Post-Doctoral Fellow in Economics and Environmental Studies

COURSES
ECONH104 INTENSIVE INTRODUCTION TO ECONOMICS
Anne Preston
An intensive introduction to both microeconomic topics—opportunity cost, supply and demand, consumer decision making, the theory of the firm, market structures, and efficiency and market failure—and macroeconomic topics—the determination of GDP, money and interest rates, unemployment and inflation, and fiscal and monetary policy. Designed for students who have not taken economics previously, the course meets 3 1 ½ hour sessions per week and includes labor market applications (minimum wage, income inequality and the returns to college). Enrollment Limit: 25; Social Science (SO)

ECONH105 INTRODUCTION TO ECONOMICS
Staff
An introduction to microeconomic topics—opportunity cost, supply and demand, consumer decision making, the theory of the firm, market structures, and efficiency and market failure—and macroeconomic topics—the determination of GDP, money and interest rates, unemployment and inflation, and fiscal and monetary policy. Because ECON 105 requires graphical and algebraic competency, students are strongly encouraged to take a college-level calculus course either before or concurrently with this course. Social Science (SO)

ECONH106 INTRODUCTION TO ECONOMICS WITH CALCULUS
Staff
An introduction to microeconomic topics—opportunity cost, supply and demand, consumer decision making, the theory of the firm, market structures, and efficiency and market failure—and macroeconomic topics—the determination of GDP, money and interest rates, unemployment and inflation, and fiscal and monetary policy. This section of Intro to Economics is intended to be more mathematical in its treatment of the material than ECON 105. Therefore, prior mathematical knowledge is a prerequisite for this course. Corequisite(s): MATH 118; Quantitative (QU), Social Science (SO)

ECONH203 STATISTICAL METHODS IN ECONOMICS
Matthew Incatalupo
Frequency distributions, probability and sampling theory, simple correlation and multiple regression, and an introduction to econometric terminology and reasoning. Three class hours and two lab hours. Prerequisite(s): ECON 104, 105 or 106; Quantitative (QU), Social Science (SO)

ECONH204 ECONOMIC STATISTICS WITH CALCULUS
Richard Ball, Matthew Incatalupo
An introductory course in statistics aimed primarily at students in economics and other social sciences. The course develops the theoretical groundwork of statistical inference and investigates the application of theoretical principles and methods to real data. Three hours of class plus two hours of lab per week. Prerequisite(s): ECON 104, 105, or 106; MATH 114 or MATH 118 or equivalent background in integral calculus; Quantitative (QU), Social Science (SO)
ECONH206 MICROFINANCE: THEORY, PRACTICE AND CHALLENGES
Shannon Mudd
An exploration of microfinance as an alternative approach to meeting the financial needs of the poor and, ideally, to assist in their current and future well-being. The course will provide theoretical explanations for its methodology, evaluate empirical research into its impacts and debate important issues in its practice. Social Science (SO)

ECONH209 LAW AND ECONOMICS
Vladimir Kontorovich
Why do rational people follow fixed rules (laws) instead of doing what is best for them in a specific situation? Can there be order without law? Should the government compensate people when it issues environmental and wildlife protection regulations which reduce the value of their property? The lady who burned herself with a cup of McDonalds coffee won several million dollars in compensation. Does that make sense? These and many other questions are addressed as we look at property law, contracts, and torts. Prerequisite(s): ECON 104, 105 or 106; Social Science (SO)

ECONH229 NEW INSTITUTIONAL ECONOMICS AND NATURAL RESOURCES
Steven Smith
Using the North American story of resource use, this course applies New Institutional Economics. When allocating scarce resources, institutions (property rights, laws, and norms) serve as constraints, but can evolve as circumstances change. This course addresses the how and why. Prerequisite(s): ECON 104, 105 or 106; ENVS 101; Crosslisted: ENVS; Social Science (SO)

ECONH240 ECONOMIC DEVELOPMENT AND TRANSFORMATION: CHINA VS. INDIA
Saleha Jilani
This is a survey course on the economic development and recent transitional experience in China and India. The course will examine the economic structure and policies in the two countries, with a focus on comparing China and India’s recent economic successes and failures and their past development policies and strategies. We will analyze the factors affecting the current reforms and transformation process in the two countries, from varying degrees of centrally planned communist/socialist economic systems, towards more decentralized reforming hybrid economies combining plan and market. Prerequisite(s): ECON 104, 105 or 106; Social Science (SO)

ECONH247 FINANCIAL AND MANAGERIAL ACCOUNTING
Neal Grabell
An introduction to financial accounting concepts, financial reporting, and managerial accounting. The course will address how accounting measures, records, and reports economic activities for business entities and how decision makers analyze, interpret, and use accounting information. Crosslisted: ICPR; Social Science (SO)

ECONH249 THE SOVIET SYSTEM AND ITS DEMISE
Vladimir Kontorovich
The Soviet system was inspired by some of the loftiest ideals of humanity. The entire society was redesigned so as to pursue common goals, rather than conflicting private objectives. The economy was run for people, not profits. The Soviet system is no more, but the ideas on which it was founded will probably always be with us. What does the largest social and economic experiment in history teach us? The course is 1/3 political science and 2/3 economics. Prerequisite(s): ECON 104, 105, or 106, or two one-semester courses in Political Science or History; Crosslisted: POLS and RUSS; Social Science (SO)

ECONH255 CRISES
Timothy Lambie-Hanson
This course will study the many dimensions of the 2008 Financial Crisis, and the ensuing macroeconomic recession in much of the industrialized world, through a variety of different perspectives, involving economic history, the history of economic thought, and also modern macroeconomic theory. Prerequisite(s): ECON 104, 105 or 106; Social Science (SO)

ECONH282 INEQUALITY AND PUBLIC POLICY
Matthew Incantalupo
An exploration of the relationship between policy and economic outcomes—or “who gets what”—in the United States. We will examine the causes of rising inequality and its effects on American democracy, with a focus on wages, taxes, healthcare, education, and criminal justice. Prerequisite(s): ECON 104, 105, or 106; Crosslisted: POLS; Social Science (SO)
ECONH297 ECONOMIC SOCIOLOGY
Mark Gould
The sociological analysis of economic systems and the sociological reconstruction of microeconomic theory. Prerequisites(s): ECON 104, 105, or 106; Social Science (SO)

ECONH298 IMPACT INVESTING
Shannon Mudd
Impact investing is investing to generate both a financial return and a positive social benefit. It supports firms seeking to address social, environmental and/or governance problems (ESG) in a sustainable way often within market activity. The focus of this course is to not only gain an understanding of the theory and practice of impact investing across its many components, but also to gain practical experience by assessing a particular set of potential impact investments, making formal presentations of findings to an investment committee leading to a recommendation for investment to a partnering foundation. Prerequisite(s): ECON 104, 105 or 106; Crosslisted: ICPR and PEAC; Social Science (SO)

ECONH300 INTERMEDIATE MICROECONOMIC ANALYSIS
Vladimir Kontorovich
Microeconomic theory has developed around the analysis of Adam Smith’s “invisible hand” conjecture. To test this conjecture, we model the behavior of economic actors (consumers and firms) and their interaction in different markets (for goods, capital and labor). These models allow us to investigate the conditions under which these markets work well, less well, or not at all. In the process, basic tools and concepts used in other areas of economics are developed. Many of the topics covered in Introduction to Economics (ECON 105/106) are studied more rigorously and in greater depth. New Topics, such as behavior under risk, insurance, and imperfect information, are introduced. Prerequisite(s): ECON 104, 105 or 106, one other ECON course, and MATH 114 or 118; Social Science (SO)

ECONH301 THEORY OF NON-COOPERATIVE GAMES
Matthew Incantalupo
A course on Game Theory. We will examine mathematical models of how rational actors engage in collaboration and conflict. Topics include utility theory, social choice, normal and extensive-form games, games with incomplete information, repeated games, and bargaining. We will connect these topics to applications in business, economics, law, politics, and biology. Our focus is on game theory as a tool to understand strategic interaction, and not just a collection of models to solve. Prerequisite(s): ECON 300; Social Science (SO)

ECONH302 INTERMEDIATE MACROECONOMIC ANALYSIS
Timothy Lambie-Hanson
Analysis of the behavior of aggregate economic variables such as GDP, inflation, unemployment, interest rates, and the budget and trade deficits. Structured around the development of a New Keynesian/Neoclassical general equilibrium model which relates the markets for goods, money, and labor. Specific topics include: determinants of the business cycle, effects of fiscal and monetary policies, supply shocks, inflationary expectations. Prerequisite(s): ECON 104, 105 or 106 and one other ECON course and MATH 114; Social Science (SO)

ECONH304 INTRODUCTION TO ECONOMETRICS
Anne Preston
Development of econometric theory introduced in Economics 203. Includes topics such as ordinary least squares estimation, estimation of models with nonlinear forms, instrumental variables, and maximum likelihood estimation. Emphasis will be on application of econometric techniques to real economic and social policy issues such as labor market discrimination, worker productivity, and educational financing. Students will be expected to use data sets to evaluate policy issues and will be required to make a final presentation of findings in class. Prerequisite(s): ECON 203; Social Science (SO)

ECONH306 ADVANCED CORPORATE FINANCE
Shannon Mudd
This course examines theories and practices of corporate finance and how they have informed each other in their development. The focus is on financing at the firm level. Topics include valuation and risk measures both at the level of individual securities and the level of firms, project analysis, cost of capital, capital budgeting, and financial statement analysis. Prerequisite(s): ECON 203 or 204 and ECON 300; Social Science (SO)
ECONH331 TOPICS IN LABOR ECONOMICS
Staff
This course surveys a broad range topics related to labor markets including; the theory of labor supply (both static and dynamic), labor demand, labor market equilibrium, unemployment, employment contracting and personnel economics, labor unions, investments in education and training, discrimination, and patterns of inequality. We will also discuss applications of economic theory to important public policy issues such as minimum wage laws and welfare reform. Prerequisite(s) or corequisite(s): ECON 300; Social Science (SO)

ECONH334 NATURAL RESOURCE ECONOMICS
Steven Smith
This course explores natural resources as an economic concept. Through mathematical and graphical analyses, we will study the value and allocation of renewable and non-renewable resources as well as concepts of sustainability and conservation. Prerequisite(s): ECON 300; Crosslisted: ENVS; Social Science (SO)

ECONH347 ADVANCED MACROECONOMICS
Carola Binder
This course builds upon the theory introduced in intermediate macroeconomics, with emphasis on empirical research and tests of the effects of macroeconomic policy. Students will present a recent journal article to the class and will write policy briefs on current issues in macroeconomic policy. Prerequisite(s): ECON 203 or 204, ECON 302. ECON 304 is recommended; Social Science (SO)

ECONH355 ADVANCED MICROECONOMICS: UNCERTAINTY
Staff
Using microeconomics we study theories of choice under uncertainty; risk aversion and applications to insurance and portfolio choice; equilibrium under uncertainty in asset markets; asymmetric information; applications to the design of incentives, contracts, contests, and auctions; common; understanding and coordination. Prerequisite(s): MATH 121, and at least one of ECON 300 or MATH 215. ECON 204 or MATH 203 is desirable; Social Science (SO)

ECONH360 MATHEMATICAL ECONOMICS
Staff
A study of advanced mathematical tools used in economic analysis. Topics include eigenvalues and quadratic forms, differential equations, convex programming and dynamic programming. Applications to consumer theory, generalized linear regression, stability of equilibrium, and models of growth and search. Fulfills Mathematical Economics (MTEC) Concentration. Prerequisite(s): MATH 121 (or MATH 216) and MATH 215. ECON 300 is desirable. Crosslisted: MATH; Quantitative (QU), Social Science (SO)

ECONH371 JUNIOR RESEARCH SEMINAR: PSYCHOLOGICAL BIASES AND ECONOMIC DECISIONS
Staff
A seminar-based course covering current research on the role of psychological biases in economic decision-making. The focus is on critical reading of recent work and developing students' own research. Prerequisite(s): ECON 300, 304; Social Science (SO)

ECONH372 JUNIOR RESEARCH SEMINAR: ADVANCED INTERNATIONAL TRADE
Saleha Jilani
This advanced seminar-based course covers topics in international trade theory and policy, with an emphasis on current research topics and developments. Determinants of international trade and foreign investment will be analyzed, and we will examine the motivations for and consequences of tariffs and quantitative restrictions on trade. Topics will include dynamic comparative advantage, factor movements and multinational corporations, effects of trade on economic growth and income inequality, international trade policy negotiations, agreements and disputes, and economic integration. Prerequisite(s): ECON 300 and ECON 304 or permission. MATH 121 or 216 are recommended; Social Science (SO)

ECONH373 JUNIOR RESEARCH SEMINAR: ACCESS TO FINANCE
Shannon Mudd
This seminar examines the determinants of access to finance with particular emphasis on small business financing. The primary focus will be on commercial banking. We will examine such issues as banking structures, lending technologies, regulatory issues and problems of asymmetric information, all with a focus on access to finance. We will also examine microfinance as an alternative approach for providing financial services to the
poor. Prerequisite(s) or corequisite(s): ECON 203, 300 and 304; Social Science (SO)

ECONH374 JUNIOR RESEARCH SEMINAR: TOPICS IN INDUSTRIAL ORGANIZATION
Timothy Lambie-Hanson
Industrial organization is the study of firm behavior in imperfect competition. This seminar introduces important empirical and theoretical work in this field. Major topics include monopoly behavior, adverse selection, oligopoly, market foreclosure, collusion, and the theory of the firm.
Prerequisite(s): ECON 300, MATH 118; Social Science (SO)

ECONH377 JUNIOR RESEARCH SEMINAR: POLITICAL ECONOMY
Staff
The focus is on critical reading of seminal works and developing students own research skills. Topics include: models of elections and application of voting models to redistributive policies; legislative bargaining; interest groups/lobbying; dynamic models of fiscal policy, debt and more.
Prerequisite(s): MATH 118 and ECON 300; MATH 121 (or MATH 216) is desirable. Crosslisted: Political Science; Social Science (SO)

ECONH379 JUNIOR RESEARCH SEMINAR: THE FEDERAL RESERVE
Carola Binder
This course covers the history of central banking, with emphasis on the Federal Reserve. We will study the creation and evolution of the Fed, its role in economic and financial crises, and current debates in monetary policy. Prerequisite(s): ECON 302; Social Science (SO)

ECONH396 RESEARCH SEMINAR
Staff
Social Science (SO)