

# BUSINESS ECONOMICS & PUBLIC POLICY (BEPP)

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## **BEPP 201 Public Finance and Policy.**

This course explores the economics and politics of public policy to provide an analytic framework for considering why, how, and with what success/failure government intervenes in a variety of policy areas. Particular attention will be paid to important policy issues relating to taxation, social security, low-income assistance, health insurance, education (both K-12 and higher ed), the environment, and government deficits. The costs and benefits of alternative policies will be explored along with the distribution of responsibilities between the federal, state and local governments. While the course will focus primarily on U.S. policies, the topics covered (e.g. tax reform, deficits versus austerity, etc.) are currently at the center of the policy debate in many other industrialized countries as well.

Taught by: Deniz Selman

One-term course offered either term

Also Offered As: BEPP 770

Activity: Lecture

1.0 Course Unit

## **BEPP 202 Consumer Financial Decision Making**

Research shows that many individuals are profoundly underinformed about important financial facts and financial products, which frequently lead them to make mistakes and lose money. Moreover, consumer finance comprises an enormous sector of the economy, including products like credit cards, student loans, mortgages, retail banking, insurance, and a wide variety of retirement savings vehicles and investment alternatives. Additionally, recent breakthroughs in the FinTech arena are integrating innovative approaches to help consumers. Though virtually all people use these products, many find financial decisions to be confusing and complex, rendering them susceptible to fraud and deception. As a result, government regulation plays a major role in these markets. This course intended for Penn undergraduates considers economic models of household decisions and examines evidence on how consumers are managing (and mismanaging) their finances. Although academic research has historically placed more attention on corporate finance, household finance is receiving a brighter spotlight now—partly due to its role in the recent financial crisis. Thus the course is geared toward those seeking to take charge of their own financial futures, anyone interested in policy debates over consumer financial decision making, and future FinTech entrepreneurs.

Taught by: Olivia Mitchell/Nicholas Roussanov

One-term course offered either term

Also Offered As: FNCE 202

Activity: Lecture

1.0 Course Unit

## **BEPP 203 Business in the Global Political Environment.**

This course examines the non-market components of business and the broader political, regulatory, and civil context in which companies function. This course addresses how businesses interact with political and regulatory institutions, as well as the general public, with a focus on the global economy. The first portion examines the realities associated with political economy and the actual making of laws and regulations by imperfect politicians and regulators. The second portion analyzes the economic rationale for legislation and regulation in the presence of market failures. The course covers specific market failures and potential solutions including government regulation.

Taught by: Santosh Anagol/Shing-yi Wang

One-term course offered either term

Prerequisite: BEPP 250 OR ECON 001 OR ECON 010

Activity: Lecture

1.0 Course Unit

## **BEPP 207 Economics for the Next Hundred Years**

Taught by: Eduardo Azevedo

Activity: Lecture

0.5 Course Units

## **BEPP 208 Housing Markets**

This course is designed for students interested in the economics and operations of housing markets. It is primarily a U.S. focused course, but does include a limited amount of international material for comparative purposes. The class is divided into four sections: (1) supply and demand for housing, including the operations of homebuilders and rental landlords; (2) house prices, including cycles and price dynamics; (3) international comparisons; and (4) public policy analysis applied to a current housing markets-related issue. This course presumes knowledge of intermediate economics, as we will apply that knowledge throughout the semester. For Wharton students, this means you must have passed BEPP 250 (undergrads) or MGEC 611 and 612 for MBA's. Non-Wharton students should have taken the equivalent course in the College. Lecture with discussion required.

Taught by: Gyourko

Course usually offered in spring term

Also Offered As: BEPP 708, REAL 208, REAL 708

Prerequisite: BEPP 250

Activity: Lecture

1.0 Course Unit

Notes: Lecture with discussion required.

**BEPP 210 Firms, Markets and Public Policy.**

Many dimensions of firms' strategies, including agreements with suppliers and competitors, mergers and acquisitions, pricing, and technology standards development, among others, are subject to the oversight of regulatory bodies and governmental agencies. This course studies how public policy impacts firms' strategic choices in a host of economic environments. We will analyze pricing strategies including versioning and bundling; product standardization decisions; the management of complementarities between products; the role of network effects and platform competition; and how firms can take advantage of the regulatory environment they operate in when making such decisions. We will study, for example, why Sony won the Blu-Ray format war against the widely supported HD-DVD format; how the FCC plans to incentivize television broadcasters to return spectrum holdings for auction to wireless broadband providers; and how contracts with content providers affect firms' strategic interactions in the e-reader market. To understand how firm strategy and public policy interact, the course will rely on a mix of simple but rigorous analytical models and case studies.

Taught by: Katja Seim.

One-term course offered either term

Also Offered As: BEPP 710

Prerequisite: BEPP 250

Activity: Lecture

1.0 Course Unit

**BEPP 212 Economic Analysis of Law**

This course provides an introduction to the economic analysis of law and legal institutions. Our goal is develop intuitions about the ways law simultaneously shapes and responds to private behavioral incentives. In the first half of the course, we will survey the application of key economic concepts to basic features of the Anglo-American common law of property, contract, and tort. In the second half of the course, we will use the tools developed in our survey to focus in depth on the law of intellectual property.

Taught by: Buccola

One-term course offered either term

Also Offered As: LGST 212

Activity: Lecture

1.0 Course Unit

**BEPP 214 Nonprofit Sector: Economic Challenges and Strategic Responses.**

The nonprofit sector plays a key role in the provision of many goods and services which are fundamental in our society and which may be difficult to provide using market mechanisms alone. Education, health care, charitable services, and the arts are some primary examples of these. Nonprofit organizations operate in service of specific social missions rather than profit maximization, but in order to serve those missions effectively while ensuring their own survival, they must also make many of the decisions typically associated with private firms. That is, they must compete for funding, human resources, and consumers of their services, they must manage and invest their resources efficiently, and they must innovate new products and services over time. Importantly, the latter requirements may at times come in conflict with the organizations' social values. As a result, nonprofit organizations as economic decision-makers confront a number of unique challenges to their success and growth. The goal of this course is to give students a broad overview of the economic, organizational, and strategic concerns facing the non-profit sector. Our objective is to characterize the unique economic environment, identify effective strategic governance, and management approaches, and explore how appropriate measurement techniques can inform the policy treatment of nonprofits. This course is organized around a number of lectures, readings and outside speakers, a midterm exam and a required project.

Taught by: Ashley Swanson.

Activity: Lecture

1.0 Course Unit

**BEPP 220 Behavioral Economics, Markets, and Public Policy**

Behavioral economics has revealed a variety of systematic ways in which people deviate from being perfectly selfish, rational, optimizing agents. These findings have important implications for government policy and firm behavior. This course will explore these implications by answering two main questions: (1) what does behavioral economics imply for when and how the government should intervene in markets? (2) What does behavioral economics imply for firms' pricing and production decisions? The course will present the standard economic approaches to answering these questions and then explore how answers change when we consider that people act in behavioral ways. Towards the end of the course, we will investigate specific policy questions, allowing us to debate solutions while hearing from policy makers operating in a world of behavioral agents.

Taught by: Judd Kessler.

Course usually offered in spring term

Activity: Lecture

1.0 Course Unit

**BEPP 230 Urban Fiscal Policy**

This course will examine the provision of public services for firms and people through cities. Why cities exist, when fiscal policy fails, investments in infrastructure, realities of local governments such as inequality, crime, corruption, high cost of living, congestion, and unfunded pensions and debt, will be covered. We will pay special attention to recent topics, such as partnerships with the private sector, enterprise zones, the role of technology, environmental challenges, and real estate policies that promote housing affordability, such as rent control and inclusionary zoning.

Taught by: Fernando Ferreira

Course usually offered in spring term

Also Offered As: FNCE 230, REAL 230

Activity: Lecture

1.0 Course Unit

**BEPP 233 Consumers, Firms and Markets in Developing Countries**

Nearly four-fifths of the world's population lives in low income or developing countries. Though currently far behind the U.S., the 15 fastest growing economies/markets in the world are all developing countries. And developing countries already account for 6 of the world's 15 largest economies. This course will examine economic life, including consumers, firms and markets, in low income countries. We will apply both economic theory and empirical analysis for analyzing the roles of both business and government in consumption, production and market equilibria.

Taught by: Robert Jensen

One-term course offered either term

Activity: Lecture

1.0 Course Unit

**BEPP 236 International Housing Comparisons**

This course analyzes housing finance systems and housing market outcomes across the globe. In the US, the course focuses on the development of securitization markets and addresses the current challenges of housing finance reform, including the future of Fannie Mae and Freddie Mac. Internationally, the course covers issues of access to housing and housing informality in developing countries, financial crises arising out of the housing sector, and market-oriented and public policy solutions. The course features a wide array of speakers in finance, government and academia who contribute their perspectives to pressing issues of mortgage market design.

Taught by: Wachter

Course usually offered in spring term

Also Offered As: BEPP 836, REAL 236, REAL 836

Activity: Lecture

1.0 Course Unit

**BEPP 250 Managerial Economics**

This course will introduce you to 'managerial economics' which is the application of microeconomic theory to managerial decision-making. Microeconomic theory is a remarkably useful body of ideas for understanding and analyzing the behavior of individuals and firms in a variety of economic settings. The goal of the course is for you to understand this body of theory well enough so that you can effectively analyze managerial (and other) problems in an economic framework. While this is a 'tools' course, we will cover many real-world applications, particularly business applications, so that you can witness the usefulness of these tools and acquire the skills to use them yourself. We will depart from the usual microeconomic theory course by giving more emphasis to prescription: What should a manager do in order to achieve some objective? That course deliverable is to compare with description: Why do firms and consumers act the way they do? The latter will still be quite prominent in this course because only by understanding how other firms and customers behave can a manager determine what is best for him or her to do. Strategic interaction is explored both in product markets and auctions. Finally, the challenges created by asymmetric information - both in the market and within the firm - are investigated.

One-term course offered either term

Also Offered As: BEPP 950

Prerequisite: ECON 001 AND MATH 103

Activity: Lecture

1.0 Course Unit

**BEPP 261 Risk Analysis and Environmental Management**

This course is designed to introduce students to the role of risk assessment, risk perception and risk management in dealing with uncertain health, safety and environmental risks including the threat of terrorism. It explores the role of decision analysis as well as the use of scenarios for dealing with these problems. The course will evaluate the role of policy tools such as risk communication, economic incentives, insurance, regulation and private-public partnerships in developing strategies for managing these risks. A project will enable students to apply the concepts discussed in the course to a concrete problem.

Taught by: Kunreuther

One-term course offered either term

Also Offered As: BEPP 761, BEPP 961, ESE 567, OIDD 261, OIDD 761

Activity: Lecture

1.0 Course Unit

**BEPP 263 Environmental & Energy Economics and Policy**

This course examines environmental and energy issues from an economist's perspective. Over the last several decades, energy markets have become some of the most dynamic markets of the world economy, as they experienced a shift from heavy regulation to market-driven incentives. First, we look at scarcity pricing and market power in electricity and gasoline markets. We then study oil and gas markets, with an emphasis on optimal extraction and pricing, and geopolitical risks that investors in hydrocarbon resources face. We then shift gears to the sources of environmental problems, and how policy makers can intervene to solve some of these problems. We talk about the economic rationale for a broad range of possible policies: environmental taxes, subsidies, performance standards and cap-and-trade. In doing so, we discuss fundamental concepts in environmental economics, such as externalities, valuation of the environment and the challenge of designing international agreements. At the end of the course, there will be special attention for the economics and finance of renewable energy and policies to foster its growth. Finally, we discuss the transportation sector, and analyze heavily debated policies such as fuel-economy standards and subsidies for green vehicles. Prerequisites: An introductory microeconomics course (ECON1, or another course approved by the instructor) will be sufficient in most cases; BEPP 250 or an equivalent intermediate microeconomics course is recommended.

Taught by: Arthur van Benthem

Also Offered As: OIDD 263

Activity: Lecture

1.0 Course Unit

**BEPP 280 Applied Data Analysis.**

This course will examine how and when data can be used specifically to infer whether there is a causal relationship between two variables. We will emphasize (a) the critical role of an underlying economic theory of behavior in interpreting data and guiding analysis, as well as (b) a range of advanced techniques for inferring causality from data, such as randomized controlled trials, regression discontinuity, difference-in-difference, audit study (mystery shopping) approaches and stock-market event studies. The issue of causality, and the relevance of thinking about models and methods for inferring causality, is just as central and important for 'Big Data' as it is when working with traditional data sets in business and public policy. The emphasis will not be on proofs and derivations but rather on understanding the underlying concepts, the practical use, implications and limitations of techniques. Students will work intensively with data, drawing from examples in business and public policy, to develop the skills to use data analysis to make better decisions. All analysis will be conducted using R. The goals of the course are for students to become expert consumers able to interpret and evaluate empirical studies as well as expert producers of convincing empirical analysis themselves.

Taught by: Santosh Anagol.

One-term course offered either term

Also Offered As: BEPP 780

Prerequisite: STAT 102 OR STAT 112 OR STAT 431 OR ECON 104

Activity: Lecture

1.0 Course Unit

**BEPP 284 Game Theory for Business and Life**

The objective of this course is to make you more skilled in the art and science of strategic reasoning. Strategic situations permeate our lives and we will examine many such situations through the lens of game theory. The course is composed of game-theoretic concepts, applications, and experiential learning. The bulk of the applications are to business situations including investment and entry, bargaining, managerial incentive contracts, network effects, product location, and two-sided markets. However, given the ubiquitous presence of strategic situations in human societies, applications will extend to politics, war, sports, history, crime, theology, and every day life, and cover the existence of God, steroid use in sports, racial discrimination, land conflict, trench warfare in World War I, and the Medieval Law Merchant. Students will regularly participate in experiments involving strategic reasoning, and form teams to compete in a simulated industry environment.

Taught by: Joseph Harrington

One-term course offered either term

Activity: Lecture

1.0 Course Unit

**BEPP 289 Nations, Politics, and Market**

This course is intended to deepen understanding of the major contemporary issues in the world economy. The focus is on the 'big picture' of global economic developments and the evolution of economic thought over the last one hundred years. The topics include: financial market booms and busts; business cycles; monetary and fiscal policies; inequality; the social welfare state; technological change and economic growth; and international trade and financial arrangements. The time period covers: the Roaring Twenties; the Great Depression, the post war Golden Age (1945-1973); the stagflation of the 1970s; the Washington Consensus era of the market liberalization (1980-2007); and the 2008 financial crisis and Great Recession of 2007-2010 and its aftermath.

The course also explores different schools of thought. The course will chronicle and compare economic policy and performance of the United States, Europe, Japan and emerging markets (Asia, Latin America, Africa).

Taught by: Stephen Golub

Course usually offered in spring term

Also Offered As: BEPP 789

Prerequisite: ECON 002

Activity: Lecture

1.0 Course Unit

**BEPP 299 Independent Study**

One-term course offered either term

Activity: Independent Study

1.0 Course Unit

**BEPP 305 Risk Management**

The last financial crisis and subsequent recession provide ample evidence that failure to properly manage risk can result in disaster. Individuals and firms confront risk in nearly all decisions they make. People face uncertainty in their choice of careers, spending and saving decisions, family choices and many other facets of life. Similarly, the value that firms create by designing and marketing good products is at risk from a variety of sources. The bankruptcy of a key supplier, sharp rise in cost of financing, destruction of an important asset, impact of global warming, or a liability suit can quickly squander the value created by firms. In extreme cases, risky outcomes can bankrupt a firm, as has happened recently to manufacturers of automobile parts and a variety of financial service firms. The events since the Global Financial Crisis also offer stark reminders that risk can impose significant costs on individuals, firms, governments, and society as a whole. This course explores how individuals and firms assess and evaluate risk, examines the tolls available to successfully manage risk and discusses real-world phenomena that limit the desired amount of risk-sharing. Our focus is primarily on explaining the products and institutions that will serve you better when making decisions in your future careers and lives.

One-term course offered either term

Also Offered As: BEPP 805

Prerequisite: BEPP 250 AND FNCE 100 AND STAT 100

Activity: Lecture

1.0 Course Unit

**BEPP 322 Business Insurance and Estate Planning.**

This course presents an analysis of overall private wealth management. This includes planning for disposition of closely-held business interests; the impact of income taxes and other transfer costs on business interests and other assets; integration of life insurance, disability insurance, medical benefits, and long-term care insurance in the financial plan; planning for concentrated asset (e.g. common stock) positions, diversification techniques, and asset allocation strategies; distribution of retirement assets; lifetime giving and estate planning; and analysis of current developments in the creation, conservation, and distribution of estates. Attention also is given to various executive compensation techniques (including restricted stock and stock options) and planning for various employee benefits. The course also covers sophisticated charitable giving techniques and methods for financing education expenses. Reading consist of textbooks, case studies, and bulk pack articles.

Taught by: Victor Hallman.

One-term course offered either term

Also Offered As: BEPP 823

Activity: Lecture

1.0 Course Unit

**BEPP 401 Public Policy Analysis**

BEPP 401 fulfills the Wharton capstone requirement with a hands-on approach to addressing a key public policy question. We will partner with the City of Philadelphia, state government, federal agency or other key influencer group to address an important and topical public policy question each year. At the city level, potential questions include the economic and distributional impact of raising the minimum wage, implementing a soda tax, providing universal pre-K, mandating paid sick leave, and other issues related to urban policy and planning. At the state level, potential policies include changes in occupational licensing requirements, business regulations, and Medicaid cost share restructuring. At the national level, potential questions include the implementation of a national electric grid for automobile charging, reforms to disaster preparedness systems, and immigration reform. Students will be provided with a 'core' data set appropriate for addressing the defining question to the capstone course.

Taught by: Robert Inman

Course not offered every year

Prerequisite: BEPP 250

Activity: Lecture

0.5 Course Units

**BEPP 451 Fundamentals of Actuarial Science I**

This course is the usual entry point in the actuarial science program. It is required for students who plan to concentrate or minor in actuarial science. It can also be taken by others interested in the mathematics of personal finance and the use of mortality tables. For future actuaries, it provides the necessary knowledge of compound interest and its applications, and basic life contingencies definition to be used throughout their studies. Non-actuaries will be introduced to practical applications of finance mathematics, such as loan amortization and bond pricing, and premium calculation of typical life insurance contracts. Main topics include annuities, loans and bonds; basic principles of life contingencies and determination of annuity and insurance benefits and premiums. This course may be taken concurrently with the prerequisite with instructor permission.

Taught by: Lemaire

Course usually offered in fall term

Also Offered As: BEPP 851, STAT 451, STAT 851

Prerequisite: MATH 104 AND STAT 430

Activity: Lecture

1.0 Course Unit

**BEPP 452 Fundamentals of Actuarial Science II**

This specialized course is usually only taken by Wharton students who plan to concentrate in actuarial science and Penn students who plan to minor in actuarial mathematics. It provides a comprehensive analysis of advanced life contingencies problems such as reserving, multiple life functions, multiple decrement theory with application to the valuation of pension plans. This course may be taken concurrently with the prerequisite with instructor permission.

Taught by: Lemaire

Course usually offered in spring term

Also Offered As: BEPP 852, STAT 452, STAT 852

Prerequisite: STAT 451 OR BEPP 451

Activity: Lecture

1.0 Course Unit

**BEPP 453 Actuarial Statistics**

This course covers models for insurer's losses, and applications of Markov chains. Poisson processes, including extensions such as non-homogeneous, compound, and mixed Poisson processes are studied in detail. The compound model is then used to establish the distribution of losses. An extensive section on Markov chains provides the theory to forecast future states of the process, as well as numerous applications of Markov chains to insurance, finance, and genetics. The course is abundantly illustrated by examples from the insurance and finance literature. While most of the students taking the course are future actuaries, other students interested in applications of statistics may discover in class many fascinating applications of stochastic processes and Markov chains. This course may be taken concurrently with the prerequisite with instructor permission.

Taught by: Lemaire

Course usually offered in fall term

Also Offered As: BEPP 853, STAT 453, STAT 853

Prerequisite: STAT 430

Activity: Lecture

1.0 Course Unit

**BEPP 620 Behavioral Economics, Markets and Public Policy**

Behavioral economics has revealed a variety of systematic ways in which people deviate from being perfectly selfish, rational, optimizing agents. These findings have important implications for government policy and firm behavior. This course will explore these implications by answering two main questions: (1) what does behavioral economics imply for when and how the government should intervene in markets? (2) What does behavioral economics imply for firms' pricing and production decisions? The course will present the standard economic approaches to answering these questions and then explore how answers change when we consider that people act in behavioral ways. Towards the end of the course, we will investigate specific policy questions, allowing us to debate solutions while hearing from policy makers operating in a world of behavioral agents.

Taught by: Judd Kessler

Course usually offered in spring term

Activity: Lecture

1.0 Course Unit

**BEPP 708 Housing Markets**

This course is designed for students interested in the economics and operations of housing markets. It is primarily a U.S. focused course, but does include a limited amount of international material for comparative purposes. The class is divided into four sections: (1) supply and demand for housing, including the operations of homebuilders and rental landlords; (2) house prices, including cycles and price dynamics; (3) international comparisons; and (4) public policy analysis applied to a current housing markets-related issue. This course presumes knowledge of intermediate economics, as we will apply that knowledge throughout the semester. For Wharton students, this means you must have passed BEPP 250 (undergrads) or MGEC 611 and 612 for MBA's. Non-Wharton students should have taken the equivalent course in the College. Lecture with discussion required.

Taught by: Gyourko

Course usually offered in spring term

Also Offered As: BEPP 208, REAL 208, REAL 708

Prerequisite: MGEC 611 AND MGEC 612

Activity: Lecture

1.0 Course Unit

Notes: Lecture with discussion required.

**BEPP 710 Firms, Markets and Public Policy.**

Many dimensions of firms' strategies including agreements with suppliers and competitors, mergers and acquisitions, pricing and technology standards development, among others, are subject to the oversight of regulatory bodies and governmental agencies. This course studies how public policy impacts firms' strategic choices in a host of economic environments. We will analyze pricing strategies including versioning and bundling; product standardization decisions; the management of complementarities between products; the role of network effects and platform competition; and how firms can take advantage of the regulatory environment they operate in when making such decisions. We will study, for example, why Sony won the Blu-Ray format war against the widely supported HD-DVD format; how the FCC plans to incentivize television broadcasters to return spectrum holdings for auction to wireless broadband providers; and how contracts with content providers affect firms' strategic interactions in the e-reader market. To understand how firm strategy and public policy interact, the course will rely on a mix of simple but rigorous analytical models and case studies.

Taught by: Katja Seim.

Also Offered As: BEPP 210

Prerequisite: MGEC 611 AND MGEC 612

Activity: Lecture

1.0 Course Unit

**BEPP 761 Risk Analysis and Environmental Management**

This course will introduce students to concepts in risk governance. We will delve into the three pillars of risk analysis: risk assessment, risk management, and risk communication. The course will spend time on risk financing, including insurance markets. There will be particular emphasis on climate risk management, including both physical impact risk and transition risk, although the course will also discuss several other examples, including management of environmental risks, terrorism, and cyber-security, among other examples. The course will cover how people perceive risks and the impact this has on risk management. We will explore public policy surrounding risk management and how the public and private sector can successfully work together to build resilience, particularly to changing risks.

One-term course offered either term

Also Offered As: BEPP 261, BEPP 961, ESE 567, OIDD 261, OIDD 761

Activity: Lecture

1.0 Course Unit

**BEPP 763 Energy Markets & Policy**

Over the last several decades, energy markets have become some of the most dynamic markets of the world economy. Traditional fossil fuel and electricity markets have been seen a partial shift from heavy regulation to market-driven incentives, while rising environmental concerns have led to a wide array of new regulations and 'environmental markets'. The growth of renewable energy could be another source of rapid change, but brings with it a whole new set of technological and policy challenges. This changing energy landscape requires quick adaptation from energy companies, but also offers opportunities to turn regulations into new business. The objective of this course is to provide students with the economist's perspective on a broad range of topics that professionals in the energy industry will encounter. Topics include the effect of competition, market power and scarcity on energy prices, the impact of deregulation on electricity and fossil fuel markets, extraction and pricing of oil and gas, geopolitical uncertainty and risk in hydrocarbon investments, the environmental impact and policies related to the energy sector, environmental cap-and-trade markets, energy efficiency, the economics and finance of renewable energy, and recent developments in the transportation sector.

Taught by: Arthur Van Benthem

Also Offered As: OIDD 763

Activity: Lecture

1.0 Course Unit

**BEPP 770 Public Finance and Policy**

This course explores the economics and politics of public policy to provide an analytic framework for considering why, how, and with what success/failure government intervenes in a variety of policy areas. Particular attention will be paid to important policy issues relating to taxation, social security, low-income assistance, health insurance, education (both K-12 and higher ed), the environment, and government deficits. The costs and benefits of alternative policies will be explored along with the distribution of responsibilities between the federal, state, and local governments. While the course will focus primarily on U.S. policies, the topics covered (e.g. tax reform, deficits versus austerity, etc.) are currently at the center of the policy debate in many other industrialized countries as well.

Taught by: Deniz Selman

Two terms. student may enter either term.

Also Offered As: BEPP 201

Activity: Lecture

1.0 Course Unit

**BEPP 773 Urban Fiscal Policy**

This course will examine the provision of public services for firms and people through cities. Why cities exist, when fiscal policy fails, investments in infrastructure, realities of local governments such as inequality, crime, corruption, high cost of living, congestion, and unfunded pensions and debt, will be covered. We will pay special attention to recent topics, such as partnerships with the private sector, enterprise zones, the role of technology, environmental challenges, and real estate policies that promote housing affordability, such as rent control and inclusionary zoning.

Taught by: Fernando Ferreira

Course usually offered in fall term

Also Offered As: FNCE 730, REAL 730

Activity: Lecture

1.0 Course Unit

**BEPP 780 APPLIED DATA ANALYSIS**

This course will examine how and when data can be used specifically to infer whether there is a causal relationship between two variables. We will emphasize (a) the critical role of an underlying economic theory of behavior in interpreting data and guiding analysis, as well as (b) a range of advanced techniques for inferring causality from data, such as randomized controlled trials, regression discontinuity, difference-in-difference, audit study (mystery shopping) approaches and stock-market event studies. The issue of causality, and the relevance of thinking about models and methods for inferring causality, is just as central and important for 'Big Data' as it is when working with traditional data sets in business and public policy. The emphasis will not be on proofs and derivations but rather on understanding the underlying concepts, the practical use, implications and limitations of techniques. Students will work intensively with data, drawing from examples in business and public policy, to develop the skills to use data analysis to make better decisions. All analysis will be conducted using R. The goals of the course are for students to become expert consumers able to interpret and evaluate empirical studies as well as expert producers of convincing empirical analysis themselves.

Taught by: Staff.

Also Offered As: BEPP 280

Activity: Lecture

1.0 Course Unit

**BEPP 789 Nations, Politics, and Markets.**

This course is intended to deepen understanding of the major contemporary issues in the world economy. The focus is on the 'big picture' of global economic developments and the evolution of economic thought over the last one hundred years. The topics include: financial market booms and busts; business cycles; monetary and fiscal policies; inequality; the social welfare state; technological change and economic growth; and international trade and financial arrangements. The time period covers: the Roaring Twenties; the Great Depression, the post war Golden Age (1945-1973); the stagflation of the 1970s; the Washington Consensus era of the market liberalization (1980-2007); and the 2008 financial crisis and ensuing Great Recession; and the recent rise of populism. This course also explores different schools of thought. The course will chronicle and compare economic policy and performance of the United States, Europe, Japan and emerging markets (Asia, Latin America, Africa).

Taught by: Steve Golub.

One-term course offered either term

Also Offered As: BEPP 289

Prerequisite: MGEC 611 AND MGEC 612

Activity: Lecture

1.0 Course Unit

**BEPP 805 Risk Management**

The last financial crisis and subsequent recession provide ample evidence that failure to properly manage risk can result in disaster. Individuals and firms confront risk in nearly all decisions they make. People face uncertainty in their choice of careers, spending and saving decisions, family choices, and many other facets of life. Similarly, the value that firms create by designing and marketing good products is at risk from a variety of sources. The bankruptcy of a key supplier, sharp rise in cost of financing, destruction of an important asset, impact of global warming, or a liability suit can quickly squander the value created by firms. In extreme cases, risky outcomes can bankrupt a firm, as has happened recently to manufacturers of automobile parts and a variety of financial service firms. The events since the Global Financial Crisis also offer stark reminders that risk can impose significant costs on individuals, firms, governments, and society as a whole. This course explores how individuals and firms assess and evaluate risk, examines the tools available to successfully manage risk, and discusses real-world phenomena that limit the desired amount of risk-sharing. Our focus is primarily on explaining the products and institutions that will serve you better when making decisions in your future careers and lives.

One-term course offered either term

Also Offered As: BEPP 305

Activity: Lecture

1.0 Course Unit

**BEPP 811 Risk and Crisis Management.**

The growing connectivity of global economies and financial markets has produced widespread risk contagion, resulting in increased volatility and an ever-increasing demand for risk capital. This course focuses on understanding the drivers of risk contagion and ways to restore confidence in worldwide markets for pure and financial risk. The class begins with an evaluation of recent financial and pure risk events: for example, the sovereign debt crisis, Japanese earthquake, and BP Deepwater Horizon. We explore how these events are being financed in innovative ways via the capital and insurance markets. Next we emphasize the role of risk management in the preservation and creation of value, helping firms identify, measure, monitor and manage/finance risk. Doing so results in risk-adjusted returns (or return on risk-adjusted capital) that exceed the cost of capital. We devote substantial focus on the practical implementation of effective risk management/financing, given evolving regulatory and governance standards. In addition, we explore opportunities for corporate growth as well as public/private partnerships. The course will conclude with a discussion of emerging markets and the role of risk management in developing a middle class needing new forms of risk transfer/financing.

One-term course offered either term

Activity: Lecture

0.5 Course Units

**BEPP 812 Markets for Pure Risk**

The increased frequency and severity of pure risk events hinders corporations' abilities to execute strategy and deliver sustainable financial results to stakeholders. Prominent recent examples include disruptions from Hurricane Katrina, Japan's earthquake/nuclear disaster/supply chain breakdowns, Thai floods, U.S. wildfires, and global terrorist attacks. At the same time, both industrialized and emerging economies understand that the management and financing of pure risk is critical to the success of their economies. Consequently, the rising demand for risk capital has ushered in several capital market innovations and public/private partnerships necessary for managing and financing pure risk. This course investigates these issues, beginning with an introduction to pure risks, their centers of gravity and global consequences for corporations, consumers, and the macroeconomy. Next we move on to traditional sources of risk capital provided to corporations and governments via insurance and reinsurance mechanisms. The course concludes with a discussion of new sources of risk capital provided by capital markets including catastrophic risk bonds, securitization of mortality and liability risk, and other forms of insurance-linked securities. Our focus is on the supply of risk capital to corporations and economies, recognizing the unique position of emerging economies in this nexus. Throughout, the class emphasizes current real-world cases to illustrate the competitive differences in strategies taken by hedge funds, private equity pools, and insurers, as they address the increasing need for risk capital around the world. This course complements BEPP 811, Risk and Crisis Management, which focuses on how firms can use various types of hedging instruments to manage pure risks (that is BEPP811's emphasis is primarily on the demand side of markets for pure risks whereas BEPP 812 examines the supply side of these markets). However, BEPP 811 is not required as a prerequisite. Format: Lecture and discussion, midterm and final.

One-term course offered either term

Activity: Lecture

0.5 Course Units

**BEPP 823 Business Insurance and Estate Planning.**

This course presents an analysis of overall private wealth management. This includes planning for disposition of closely-held business interests; the impact of income taxes and other transfer costs on business interests and other assets; integration of life insurance, disability insurance, medical benefits, and long-term care insurance in the financial plan; planning for concentrated asset (e.g., common stock) positions, diversification techniques, and asset allocation strategies; distribution of retirement assets; lifetime giving and estate planning; and analysis of current developments in the creation, conservation, and distribution of estates. Attention also is given to various executive compensation techniques (including restricted stock and stock options) and planning for various employee benefits. The course also covers sophisticated charitable giving techniques and methods for financing education expenses. Readings consist of textbook, case studies, and bulk pack articles. This course should be attractive to most students to help them plan for their own or their families' financial affairs. It also should be particularly attractive to students specializing in entrepreneurship, wealth management finance, and law.

Taught by: Victor Hallman.

One-term course offered either term

Also Offered As: BEPP 322

Activity: Lecture

1.0 Course Unit

**BEPP 836 International Housing Comparisons**

This course analyzes housing finance systems and housing market outcomes across the globe. In the US, the course focuses on the development of securitization markets and addresses the current challenges of housing finance reform, including the future of Fannie Mae and Freddie Mac. Internationally, the course covers issues of access to housing and housing informality in developing countries, financial crises arising out of the housing sector, and market-oriented and public policy solutions. The course features a wide array of speakers in finance, government and academia who contribute their perspectives to pressing issues of mortgage market design.

Taught by: Susan Wachter

Course usually offered in spring term

Also Offered As: BEPP 236, REAL 236, REAL 836

Prerequisite: FNCE 613

Activity: Lecture

1.0 Course Unit

**BEPP 851 Fundamentals of Actuarial Science I**

This course is the usual entry point in the actuarial science program. It is required for students who plan to concentrate or minor in actuarial science. It can also be taken by others interested in the mathematics of personal finance and the use of mortality tables. For future actuaries, it provides the necessary knowledge of compound interest and its applications, and basic life contingencies definition to be used throughout their studies. Non-actuaries will be introduced to practical applications of finance mathematics, such as loan amortization and bond pricing, and premium calculation of typical life insurance contracts. Main topics include annuities, loans and bonds; basic principles of life contingencies and determination of annuity and insurance benefits and premiums. Prerequisite: One semester of calculus.

Taught by: Lemaire

Course usually offered in fall term

Also Offered As: BEPP 451, STAT 451, STAT 851

Activity: Lecture

1.0 Course Unit

**BEPP 852 Fundamentals of Actuarial Science II**

This specialized course is usually only taken by Wharton students who plan to concentrate in actuarial science and Penn students who plan to minor in actuarial mathematics. It provides a comprehensive analysis of advanced life contingencies problems such as reserving, multiple life functions, multiple decrement theory with application to the valuation of pension plans.

Taught by: Lemaire

Course usually offered in spring term

Also Offered As: BEPP 452, STAT 452, STAT 852

Prerequisite: STAT 851 OR BEPP 851

Activity: Lecture

1.0 Course Unit

**BEPP 853 Actuarial Statistics**

This course covers models for insurer's losses, and applications of Markov chains. Poisson processes, including extensions such as non-homogeneous, compound, and mixed Poisson processes are studied in detail. The compound model is then used to establish the distribution of losses. An extensive section on Markov chains provides the theory to forecast future states of the process, as well as numerous applications of Markov chains to insurance, finance, and genetics. The course is abundantly illustrated by examples from the insurance and finance literature. While most of the students taking the course are future actuaries, other students interested in applications of statistics may discover in class many fascinating applications of stochastic processes and Markov chains. Prerequisite: Two semesters of statistics.

Taught by: Lemaire

Course usually offered in fall term

Also Offered As: BEPP 453, STAT 453, STAT 853

Activity: Lecture

1.0 Course Unit

**BEPP 893 Advanced Study Projects**

The ASP is intended to generate an interchange of ideas and perspectives and to provide the student with an opportunity to pursue a narrow topic in depth. ASP topics will be chosen by the student with advice from the instructor. The seminar instructor will act as coordinator for the projects. Other members of the department will serve as unofficial advisers to students according to expertise and interests.

Taught by: Bailey

One-term course offered either term

Activity: Independent Study

1.0 Course Unit

**BEPP 900 Research Seminar**

Of the many ways that doctoral students typically learn how to do research, two that are important are watching others give seminar presentations (as in Applied Economics Seminars) and presenting one's own research. The BEPP 900 course provides a venue for the latter. Wharton doctoral students enrolled in this course present applied economics research. Presentations both of papers assigned for other classes and of research leading toward a dissertation are appropriate in BEPP 900. This course aims to help students further develop a hands-on understanding of the research process. All doctoral students with applied microeconomic interests are encouraged to attend and present. Second and third year Applied Economic Ph.D. students are required to enroll in BEPP 900 and receive one-semester credit per year of participation.

Taught by: Shing-yi Wang and Corinne Low

Two terms. student may enter either term.

Activity: Seminar

0.5 Course Units

Notes: Permission of instructor required.

**BEPP 904 Experimental Economics**

This course will help prepare you to run your own economics laboratory and field experiments. Experimental methods have been widely adopted by economists to develop new insights, and some economic theories and hypotheses are uniquely well-suited for testing with experimental tools and data. Achieving high internal and external validity requires careful experimental design. Substantive areas of application in the course will include market equilibrium, asset bubbles, learning in games, public good provision, and labor market relationships. Additional topics may include biases in individual decision-making; field experiments in development economics; and happiness, neuroeconomics, and behavioral/experimental welfare economics. Economists' typical interests in strategic and market-based interactions raise particular methodological challenges and opportunities.

Course not offered every year

Also Offered As: OIDD 904

Activity: Lecture

1.0 Course Unit

**BEPP 911 Empirical Public Policy**

This course examines econometric research on a variety of topics related to public policy, with the goal of preparing students to undertake academic-caliber research. The course is not an econometrics or statistics course per se; rather, it focuses on research designs with observational data and how econometric techniques are applied in practice. The course aims to train students to do applied economic research that involves measuring effects of theoretical or practical interest. It proceeds in two major parts. The first part examines endogeneity and inference about causal relationships, instrumental variables methods and critiques, and panel data methods. The second part of the course addresses 'structural' econometric modeling. Topics covered in this part include sorting and selection, entry models, and counterfactual analyses of policy changes. The course proceeds by analyzing, in detail, approximately 24 well-known empirical research papers in applied economics or related fields. These include public economics and tax policy, labor economics, law and economics, health care policy, industrial organization and competition, transportation demand and policy, and others.

Taught by: Ulrich Doraszelski

Course usually offered in spring term

Activity: Lecture

1.0 Course Unit

**BEPP 915 Behavioral Economics and Policy Analysis**

In this course we will be surveying the ways in which behavioral economics ideas are influencing economic analysis in different 'applied micro' fields. A guiding focus of the course will be studying the role of behavioral economics when conducting welfare or policy analysis. The course will begin with a high-level overview of the common themes seen across all the fields we will discuss, and then we will proceed through a series of modules in which we examine the specifics in different applications. Over the course of the semester, we will dive into public finance, health economics, market design, labor economics, and industrial organization.

Taught by: Alex Rees-Jones

One-term course offered either term

Activity: Lecture

1.0 Course Unit

**BEPP 931 Numerical Methods in Economics**

The objective of this course is to introduce graduate students to computational approaches for solving economic models. We will formulate economic problems in computationally tractable form and use techniques from numerical analysis to solve them. Examples of computational techniques in the current economics literature as well as discuss areas where these techniques may be useful in future research will be disclosed. We will pay particular attention to methods for solving dynamic optimization problems and computing equilibria of games. The substantive applications will cover a wide range of problems including industrial organization, game theory, macroeconomics, finance, and econometrics.

Taught by: Ulrich Doraszelski

One-term course offered either term

Activity: Lecture

1.0 Course Unit

**BEPP 932 Contract Theory and Applications**

The course provides an advanced introduction to the theory of contracts and its mixture of foundational theories and applications to fields such as labor, reguindustrial organization.

Course usually offered in spring term

Activity: Lecture

1.0 Course Unit

**BEPP 933 Public Economics: Social Insurance and Government Expenditures**

The first part of this course will examine the rationale for and economic impact (e.g. on saving, labor supply, etc.) of social insurance programs such as social security, unemployment insurance and disability insurance. The next major part of the course will explore these same issues for government interventions in health insurance markets. The course will then cover research on public goods, externalities, fiscal federalism, and economic stimulus (including the government's recent response to the 'Great Recession') before proceeding to an exploration of the government's role in K-12 and high education. Both theoretical and empirical evidence will be covered along with a mix of classic studies and more cutting-edge research. Throughout the course we will discuss the tradeoffs - for example between the protection and distortion of social insurance programs -- that influence government's optional role. While the focus will be on evidence from the U.S., some research from other industrialized and developing countries will also be covered.

Activity: Lecture

0.5 Course Units

**BEPP 941 Development Economics**

This course will cover current microeconomic issues of developing countries including poverty, risk, savings, human capital, and institutions. We will also explore the causes and consequences of market failures that are common in many developing countries with a focus on credit, land, and labor markets. The course is designed to introduce recent research with focus on empirical methods and testing theories with data.

Taught by: Shing-yi Wang/Robert Jensen

One-term course offered either term

Activity: Lecture

1.0 Course Unit

**BEPP 950 Managerial Economics**

Public goods, externalities, uncertainty, and income redistribution as sources of market failures; private market and collective choice models as possible correcting mechanisms. Microeconomic theories of taxation and public sector expenditures. The administration and organization of the public sector.

Taught by: Postlewaite

One-term course offered either term

Also Offered As: BEPP 250

Prerequisite: MGEC 611 AND MGEC 612 OR (ECON 701 AND ECON 703)

Activity: Lecture

1.0 Course Unit

**BEPP 952 Economics and Law**

Activity: Lecture

1.0 Course Unit

**BEPP 961 Risk Analysis and Environmental Management**

This course will introduce students to concepts in risk governance. We will delve into the three pillars of risk analysis: risk assessment, risk management, and risk communication. The course will spend time on risk financing, including insurance markets. There will be particular emphasis on climate risk management, including both physical impact risk and transition risk, although the course will also discuss several other examples, including management of environmental risks, terrorism, and cyber-security, among other examples. The course will cover how people perceive risks and the impact this has on risk management. We will explore public policy surrounding risk management and how the public and private sector can successfully work together to build resilience, particularly to changing risks.

One-term course offered either term

Also Offered As: BEPP 261, BEPP 761, ESE 567, OIDD 261, OIDD 761

Activity: Lecture

1.0 Course Unit

**BEPP 962 Applied Economics Seminar**

The goal of this course is to help doctoral students develop critical thinking skills through both seminar participation and writing of referee reports. To this end students will attend the Wharton Applied Economics each Wednesday at noon seminar when it meets; prepare two written referee reports on WAE papers per semester, due before the seminar is presented. After attending the seminar and the ensuing discussion of the paper, students will prepare follow-up evaluations of their referee report reports, due one week after the seminar.

Taught by: Gilles Duranton

Two terms. student may enter either term.

Also Offered As: REAL 962

Activity: Seminar

0.5 Course Units

**BEPP 971 Market Design**

The course covers Market Design, the analysis and engineering of market rules and institutions. In the last 60 years practitioners and academics have deliberately engineered the rules of an increasing number of markets, with classic examples including medical resident matching (e.g., NRMP), spectrum auctions (e.g., FCC auctions), and organ donation exchanges. In the last few years, very large markets have been created from scratch, such as eBay, Adwords, and smaller markets like odesk.com and sittercity.com. These designs use a broad set of tools, including economic theory, empirical analysis and experiments (and a fair dose of trial-and-error). With this experience, useful principles have emerged, on what market failures typically have to be addressed, and on which rules work and which do not.

Taught by: Eduardo Azevedo

Activity: Lecture

1.0 Course Unit

**BEPP 987 Industrial Organization and Competition Policy**

This course focuses on empirical methods and applications of research topics in Industrial Organization. Although not exclusively, the course will focus mostly on the application of econometric techniques used to study specific markets and antitrust policies. The topics that will be covered include the evaluation of market power and mergers, product differentiation, investment and innovation, collusion, price discrimination, vertical relations, entry and product positioning, and the dynamics of industries. The course will also discuss research methodologies related to microeconomic theory, computational methods, and econometric analysis. The applicability of the techniques goes beyond the field of Industrial Organization, and include the Labor, Health, Trade and Public economics.

One-term course offered either term

Prerequisite: (ECON 701 AND ECON 703) OR (ECON 681 AND ECON 682)

Activity: Lecture

1.0 Course Unit