

Economics

The Department of Economics at Washington University has a strong reputation for preparing high-quality PhD students for academic positions as well as for private- and public-sector jobs. We accept qualified students from any field who possess strong analytical abilities in mathematics and statistics to complete a challenging **Doctor of Philosophy (PhD) degree in Economics**. The department offers students financial support while they remain in good academic standing for the duration of the program length.

The Department of Economics also offers two standalone Master of Arts (AM) programs. The **Accelerated AM in Economics** is available only to qualified Washington University undergraduates. The **AM in Economics** is available to all qualified students from any field. These programs provide students with the analytical background to prepare them for a diverse set of careers, from positions in government, business, and nonprofit organizations to further graduate studies.

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Faculty

Chair

George-Levi Gayle

John H. Biggs Distinguished Professorship in Economics
PhD, University of Pittsburgh
Econometric theory; contract theory; labor economics; personnel economics; corporate governance

Associate Chair

Francisco (Paco) Buera

Sam B. Cook Professor of Economics
PhD, University of Chicago
Macroeconomics; macroeconomic development

Director of Graduate Studies — Doctoral Program

Jonathan Weinstein

Professor
Director Graduate Studies - Doctoral Program
PhD, Massachusetts Institute of Technology
Microeconomic theory, game theory

Director of Graduate Studies — Master's Program

Brian Rogers

Professor
PhD, California Institute of Technology
Microeconomic theory; fields of network formation; social learning; applied game theory

Associate Director of Graduate Studies — Master's Program

Grace J. Yan Johnson

Lecturer
PhD, Oklahoma State University

Director of Undergraduate Studies

John Nachbar

Professor
PhD, Harvard University
Economic theory

Department Faculty

Md Nazmul Ahsan

Lecturer
PhD, University of Southern California

Gaetano Antinolfi

Professor
Weidenbaum Center Research Fellow
PhD, Cornell University
Macroeconomics; monetary and international economics

Gaurab Aryal

Associate Professor
PhD, Pennsylvania State University
Industrial organization; empirical industrial organization

Costas Azariadis

Edward Mallinckrodt Distinguished Professor in Arts & Sciences
Weidenbaum Center Research Fellow
PhD, Carnegie Mellon University
Macroeconomic dynamics; economic development; monetary and fiscal policy

Ana Babus

Associate Professor
PhD, Erasmus University Rotterdam
Microeconomic theory; finance

Sudeshna Bandyopadhyay

Teaching Professor
PhD, University of Maryland

Marcus Berliant

Professor
PhD, University of California, Berkeley
Public finance; mathematical economics; urban economics

Michele Boldrin

Joseph Gibson Hoyt Distinguished Professor in Arts & Sciences
PhD, University of Rochester
Economic theory; economic growth; macroeconomics

Maria Canon

Senior Lecturer
PhD, University of Rochester

Steven Fazzari

Bert A. and Jeanette L. Lynch Distinguished Professor of Economics
PhD, Stanford University
Macroeconomics; Keynesian economics; investment and finance

Ian Fillmore

Assistant Professor
PhD, University of Chicago
Intersection of industrial organization; labor economics; econometrics;
economics of education; education markets

Sanghmitra Gautam

Assistant Professor
PhD, University College London
Development economics; applied microeconometrics; public
economics

Martín García-Vázquez

Assistant Professor
PhD, University of Minnesota
Labor economics; public finance; macroeconomics; econometrics

Limor Golan

Laurence H. Meyer Professor of Economics
PhD, University of Wisconsin–Madison
Labor economics; applied microeconomics; applied econometrics

Philipp Grübener

Assistant Professor
PhD, European University Institute
Quantitative macroeconomics; macro labor economics; macro public
finance

Andrew Jordan

Assistant Professor
PhD, University of Chicago
Labor markets; discrimination; criminal justice

Sukkoo Kim

Associate Professor
PhD, University of California, Los Angeles
Economic history; urban and regional economics; trade and
development

SangMok Lee

Associate Professor
PhD, California Institute of Technology
Microeconomics

Rodolfo Manuelli

James S. McDonnell Distinguished University Professor
Graduate Admissions Officer
PhD, University of Minnesota
Economic growth and development economics; macro and monetary
economics

Molly Moore

Lecturer
PhD, Harvard University

Ismael Mourifié

Professor
PhD, University of Montréal
Microeconomics (theory and applications)

Werner Ploberger

Thomas H. Eliot Distinguished Professor in Arts & Sciences
PhD, Vienna University of Technology
Statistics; econometric methodology; time-series econometrics

Robert Pollak

Hernreich Distinguished Professor of Economics
PhD, Massachusetts Institute of Technology
Environmental economics; microeconomics/industrial organization;
business and government; political economy

Yongseok Shin

Douglass C. North Distinguished Professor of Economics
PhD, Stanford University
Macroeconomics; economic growth

Ping Wang

Seigle Family Professor in Arts & Sciences
NBER Research Associate
PhD, University of Rochester
Growth/development; money/macro; economic theory; spatial/health
economics

M. Bumin Yenmez

Professor
PhD, Stanford Graduate School of Business
Microeconomic theory, mechanism and market design, choice theory

Affiliated Faculty

Mariagiovanna Baccara

PhD, Princeton University

Scott A. Baker

JD, University of Chicago
PhD, University of North Carolina at Chapel Hill

Serdar Birinci

PhD, University of Minnesota

James Bullard

PhD, Indiana University

Maximiliano Dvorkin

PhD, Yale University

Philip H. Dybvig

PhD, Yale University

Miguel Faria-e-Castro

PhD, New York University

Leonard Green

PhD, State University of New York

Barton Hamilton

PhD, Stanford University

Julian Kozlowski

PhD, New York University

Oksana Leukhina

PhD, University of Minnesota

Glenn MacDonald

PhD, University of Rochester

Fernando Martin

PhD, University of Pennsylvania

Serdar Ozkan

PhD, University of Pennsylvania

Camillo Padoa-Schioppa

PhD, Massachusetts Institute of Technology

Paulia Restrepo-Echavarría

PhD, University of California, Los Angeles

Juan Sanchez

PhD, University of Rochester

Guillaume Vandenbroucke

PhD, University of Rochester

Michael Zdinak

PhD, Washington University in St. Louis

Professors Emeriti

Lee K. Benham

PhD, Stanford University

David Levine

John H. Biggs Distinguished Professor Emeritus

PhD, Massachusetts Institute of Technology

Wilhelm Neufeind

PhD, Universität Bonn

Robert Parks

PhD, Purdue University

Bruce C. Petersen

Bert and Jeanette Lynch Distinguished Professor Emeritus

PhD, Harvard University

Degree Requirements

- Economics, Accelerated AM
- Economics, AM
- Economics, PhD

Courses

Visit online course listings to view semester offerings for L11 Econ.

L11 Econ 5001 Intermediate Microeconomic Theory

Analytic theory of consumer and producer behavior under perfect and imperfect competition. Coverage of demand theory (indifference curves and utility functions) and preferences under uncertainty, including expected utility and risk aversion. Development of general equilibrium under pure exchange, including the concepts of competitive equilibrium and Pareto efficiency. Discussion of the role of time as it pertains to interest rates, discounting and net present value. Analysis of standard monopoly and simple oligopoly problems. Development of non-cooperative game theory, including strategic and extensive-form equilibria and Nash and sub-game perfect equilibria. Thorough training in intermediate theory would require both Econ 4011 and Econ 4021. Prerequisites: Econ 1011, Math 132, and concurrent enrollment in, or prior completion of, either Math 233 or Econ 493 ("Mathematical Economics").

Same as L11 Econ 4011

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 5002 Intermediate Macroeconomic Theory

National income and labor market measurement. Business cycle facts and consideration of alternative explanations for business cycle phenomena. Development of Solow growth model, along with theories of endogenous growth and an examination of reasons for differences in growth rates across countries. General equilibrium description of firms and consumers in labor and product markets. Implementation of monetary and fiscal policy, and exploration of the impact of policy changes on the macroeconomy. Prerequisites: Econ 1021 and Econ 4011.

Same as L11 Econ 4021

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 501 Macroeconomics I

The first of a two semester sequence on graduate macro theory. The focus is on determination of aggregate income, employment, and prices with emphasis on static theory and the microfoundations of macroeconomics, including consumption and investment behavior, static models of income and price determination, problems of unemployment and inflation, and alternative theories of the roles of fiscal and monetary policy.

Credit 3 units. EN: S

L11 Econ 5011 Macroeconomics (MA)

The objective of this course is to introduce you to the study of macroeconomics at the advanced level. This means that we will use rigorous models and employ (dynamic) optimization techniques to present and analyze macroeconomic theories. A common theme across the models we will study is that economic aggregates are the equilibrium result of the optimizing decisions made by rational agents at the individual level. We will employ this rigorous approach, not as an end in itself, but as a means to obtain disciplined insights into the important questions that trouble macroeconomists. The topics

we will cover include economic growth, business cycle fluctuations, employment and unemployment, and fiscal and monetary policy. Prerequisite: Admission to the A.M. program in Economics or instructor permission.
Credit 3 units.

L11 Econ 502 Macroeconomics II

The second in a two-semester sequence on graduate macro theory. Dynamic problems are emphasized, particularly stability analysis, formal models of the business cycle, the role of macroeconomic policy in dynamic and stochastic models, and models of economic growth.
Credit 3 units.

L11 Econ 503 Microeconomics I

The first of a two-semester graduate sequence in microeconomic theory. The first semester considers production and costs, supply of output and demand for inputs, demands for final products, choice under uncertainty, introduction to market structure and game theory, time and capital. Prerequisite: Econ 508 (taught in August prior to the Fall term) and Econ 511 (to be taken concurrently), or with permission of instructor.
Credit 3 units. EN: S

L11 Econ 5031 Microeconomics (MA)

This course is designed to provide the foundational tools and theory of microeconomic analysis, presented at a graduate level. In the first half of the course, we will begin with consumer theory including utility theory, consumer demand, properties of demand systems, income and substitution effects, etc. We will then cover producer theory including profit maximization, cost functions, supply curves, and derived factor demand. We will then combine consumer and producer theory in the context of competitive markets and monopoly. In the second half of the course, we will consider situations where strategic interactions are of central importance. Game theory is the primary tool that economists use for understanding strategic interactions. After covering the essentials of game theory, we will consider several applications of game theory in different economic settings. After covering a few more advanced topics in pricing, we will discuss decision-making under uncertainty. Finally, we will introduce general equilibrium theory. Prerequisite: Admission to the A.M. program in Economics or instructor permission.
Credit 3 units.

L11 Econ 504 Microeconomics II

The second of a two-semester sequence in microeconomic theory. The course surveys noncooperative game theory, imperfect competition, and information economics. The course also covers some topics in competitive general equilibrium theory. Prerequisite: Econ 511 or permission of instructor.
Credit 3 units.

L11 Econ 506 Topics in Advanced Economic Theory

The application of modern mathematical economics to the existence of a general equilibrium, the equivalence of competitive equilibrium and Pareto optimality, and problems in welfare economics, economic dynamics and uncertainty.
Credit variable, maximum 3 units.

L11 Econ 506A Topics in Advanced Theory I

Topics covered are chosen by the instructor from competitive general equilibrium and/or decision theory.
Credit 3 units.

L11 Econ 506B Topics in Advanced Theory II

Topics covered are chosen by the instructor from game theory and information economics.
Credit 3 units.

L11 Econ 507 Behavioral Economics

The course surveys research at the intersection of psychology and economics. Topics include: prospect theory, reference dependence, present-biased preferences, self control, other-regarding behavior, and mental accounting. The course devotes equal attention to theoretical models and their empirical applications, including both lab experimental methods and analysis using field data. Prerequisites: Econ 503 and Econ 504.
Credit 3 units.

L11 Econ 508 Mathematics for Economics

Elementary set theory and point set topology. Continuous functions: Weierstrass Theorem; Intermediate Value Theorem. Linear spaces and elementary linear algebra. Calculus of a single variable; Mean Value Theorem. Calculus of several variables; Inverse and Implicit Function Theorems. Convexity; separation theorems. Unconstrained optimization. Constrained optimization; Kuhn-Tucker Theorem.
Credit 3 units.

L11 Econ 511 Quantitative Methods I

Topics in mathematics of particular relevance for economics. The first half of the course provides an introduction to real analysis. The second half consists of modules on special topics. In recent years, modules have included: an introduction to Lebesgue measure and integration, support and separation theorems for convex sets, fixed point theorems, and monotone comparative statics.
Credit 3 units.

L11 Econ 512 Quantitative Methods in Economics II

Introduction to mathematical statistics designed to provide a background for the study of econometrics. Selection of topics will usually include the following: probability introduction to distribution theory, including limiting distributions and distributions of quadratic terms, Bayes Theorem, and hypothesis testing.
Credit 3 units.

L11 Econ 5121 Advanced Quantitative Methods in Economics

The main goal and requirement of this class is that each student develops, and ultimately applies, the necessary computational and statistical tools to study the quantitative implications of a structural model of choice. The second objective is to discuss important issues at the research frontier of the numerical solution and estimation of dynamic models. Specifically, we will study key challenges in the analysis of models with economic frictions. Finally, we will study recently developed robust algorithms and generalized asymptotic methods that give foundations to the simulation and testing of this type of model.
Credit 3 units.

L11 Econ 513 Introduction to Econometrics

Classical multiple regression analysis and an introduction to generalizations useful in empirical research in economics, including a framework for dealing with problems of multicollinearity, specification error, heteroskedasticity, serial and contemporaneous correlation, identification and consistent estimation in simultaneous equation models.
Credit 3 units.

L11 Econ 514 Advanced Topics in Econometric Theory

We will study the econometric methods that are used to solve estimation and measurement problems that arise in the analysis real world problems. The class will be mostly theoretical and will cover, asymptotic theory, estimation methods, and applications to linear and non-linear models including, discrete choice models, duration models, panel data models and cross-section linear models. We will also cover non-parametric techniques.

Credit 3 units.

L11 Econ 5141 Advanced Microeconometrics

The focus of the class is in identifying causal relations in social sciences. We revisit the linear model, its asymptotic properties and the usual tests of hypothesis researchers conduct in assessing the model. We also study robust inference; bootstrap methods; M-estimators and models with generated regressors; instrumental variables estimators; GMM and system linear estimators; models for panel data with emphasis in non-linear models; instrumental variables for non-linear models; semi-parametric and non-parametric estimators; models for sample selection and attrition and standard methods commonly used in the evaluation of program and policies: Randomized trials; randomized inference; matching methods; regression discontinuity design; difference-in-Differences and establishing bounds of parameters. We will emphasize the theory of each topic and we will also illustrate them discussing applications from papers published in the recent literature. Prerequisite: Econ 513

Credit 3 units.

L11 Econ 5145 Advanced Theoretical Econometrics

We will discuss two types of problems in this class: 1. Asymptotics: We will derive limiting distributions for ML and GMM estimators, and show that in certain cases these estimators do not have a Gaussian limiting distribution. We also will discuss techniques to use these distributions to get tests. 2. Optimality: We will use the limiting results to characterize admissible estimator or tests (A procedure is called admissible if it is not dominated for all values of the parameter). We will make use of concepts like contiguity to derive local results.

Credit 3 units.

L11 Econ 5146 An Introduction to the Theory and Application of Stochastic Calculus and Diffusion Processes

We will discuss the theory and some applications of stochastic calculus and the theory of diffusion processes. We will start with the basic theory of Martingales, and then investigate Brownian motions and other continuous Martingales. We will define the Ito-Integral and prove Ito's formula and applications. Like Girsanov's theorem. We will discuss stochastic differential equations and strong and weak solutions and the relation of the partial differential equations (Feynman-Kac formula). We will discuss some applications such as option pricing, Black-Scholes or other examples from economics or finance.

L11 Econ 515 Bayesian Econometrics

Survey of Bayesian statistical inference and its application to econometric models. Topics include an introduction to Bayesian inference and computations; applications to time series, discrete choice, regime-switching, SUR systems, and simultaneous equation. Credit 3 units.

L11 Econ 5151 Applied Econometrics

Introduction to econometrics as it is applied in microeconomics. Emphasis is on hands-on implementation of the models covered in the course. Topics related to the analysis of microeconomic data include cross-section and panel data linear models and robust inference;

instrumental variables estimation; simultaneous equation models; models for discrete choice; and truncation, censoring and sample selection models. Prerequisite: Econ 4011 and Econ 413 (Math 309 is recommended). Students should co-enroll in the "A" subsection. Same as L11 Econ 4151

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 5160 Topics in Econometrics: Microeconometrics

This is a topics class in econometrics but with a strong focus on microeconometrics. This course has two main objectives: (i) Teach students various advanced theoretical econometric tools to the students and (ii) guide them through the process of writing a research paper that explores an empirical research question in economics using adequate econometrics tools. We will study theory and application of methods of data analysis developed for microdata pertaining to individuals, households and firms. More, precisely, We will study recent development of theory and methods for analyzing selective samples and analyzing discrete choice models. Prerequisites: Econ 4011 and (Econ 413, Econ 413W, or Econ 536). Math 309 recommended. Students should co-enroll in the "A" subsection. 3 units.

Same as L11 Econ 4160

Credit 3 units. A&S IQ: SSC

L11 Econ 5161 Applied Econometrics

Introduction to econometrics as it is applied in microeconomics and macroeconomics (modular). Topics related to the analysis of microeconomic data include maximum likelihood estimation and hypothesis testing; cross-section and panel data linear models and robust inference; models for discrete choice; truncation, censoring and sample selection models; and models for event counts and duration data. Topics related to the analysis of macroeconomic data include basic linear and nonlinear time series models; practical issues with likelihood-based inference; forecasting; structural identification based on timing restrictions and heteroskedasticity; and computational methods for hypothesis testing and model comparison. Prerequisite: Econ 512.

Credit 3 units.

L11 Econ 517 Applied Microeconometrics: Identification and Causality in Empirical Models

Econometric methods used to solve estimation and measurement problems that arise in real-world applied microeconomic problems. These include applications of regression analysis, instrumental variables estimators, panel data models, discrete choice models and duration analysis. We will emphasize both econometric theory and applications. We will also focus on how institutions and theory inform empirical specification, paying careful attention to identification of causality and structural relationships.

Credit 3 units.

L11 Econ 5175 Structural Microeconometrics

In the course you will learn how to use microdata to estimate the primitive parameters of structural econometric models. Methods for structural estimation are increasingly used in several areas of empirical microeconomics. Students interested in all applied areas in microeconomics are encouraged to take this class. Methods will be illustrated with applications drawing from several fields (Labor Economics, Family Economics, Development Economics, Empirical Industrial Organization, Health Economics, Law & Economics, Urban Economics, Empirical Public Economics, Environmental Economics, Economics of Education, etc). and representing the research interests of the audience. We will cover the estimation of static models, but we will emphasize the use of dynamic structural models. We will cover frontal methods (i.e., methods that involve solving the economic problem inside a estimation routine) as well as the methods that avoid the computational burden associated with a full-solution approach to

estimation. We will also go over methods to estimate the parameters of static and dynamic games. There is no final exam. Grades are based on computational problem sets and research paper proposal using methods covered in class.

Credit 3 units.

L11 Econ 518A Seminar in Applied Econometrics I: Cross Section and Panel Data

Survey and application of econometric techniques and problems associated with the use of survey and panel data characterized by large numbers of micro observations, diffuse information sets, and qualitative responses. Topics include properties of binary and mixed binary-continuous independent variables; treatment of unobservables, error component models; sample selectivity bias; heterogeneity and state dependence; Markov and semi-Markov models; limited dependent variable functions; conditional multinomial, and simultaneous logit models; and path analysis. Students will undertake applied microeconomic projects utilizing the National Longitudinal Survey, Michigan Panel on Income Dynamics, and other panel data sets currently available at Washington University.

Credit 3 units.

L11 Econ 518B Seminar in Applied Econometrics II: Time Series Analysis and Macroeconometrics

Survey of time series econometric techniques, with applications in macroeconomics, international finance, and finance. Topics include ARMA models, the Box-Jenkins methodology, and forecasting; VARs and impulse response functions; time trends, unit roots, and structural breaks; spurious regressions; trend/cycle decomposition methods, including Kalman filtering; spurious cycles; cointegration; ARCH models of volatility, and Markov-switching models.

Credit 3 units.

L11 Econ 519 Empirical Research Seminar

Seminar to exchange ideas and improve the quality of empirical research. Each student will present research to the seminar at least once during the semester. The instructor and other students will comment on the technique and results of the work presented. Students are encouraged to present their own research, but students early in their graduate studies may present empirical work from relevant literature in an area of their interest. Students with interests in empirical topics in both macro and micro economics are welcome in the seminar.

Credit 3 units.

L11 Econ 527 Graduate Seminar in Western Economic History

Emphasis is on description and explanation of the industrialization of Britain and the continental powers. Various arguments regarding development and economic growth are reexamined from the perspective of recent work of the new economic history, stressing increased use of formal economic reasoning and econometric tests.

Credit 3 units.

L11 Econ 528 Graduate Seminar in American Economic History

Explores the causes and consequences of industrialization in America from the perspective of recent developments in economic history. The course emphasizes the applications of explicit economic models and quantitative methods to the study of history.

Credit 3 units.

L11 Econ 529 Topics in New Institutional Economics

Focus on methodological principles underlying research in the New Institutional Economics (NIE) and their implications for improving our understanding of economies over time. Topics will include the relationship of the NIE to conventional economic theory, criticisms of the standard behavioral assumptions, the role of transaction costs, the importance of force, the evolution of institutions, the significance of time, and extensions of this work to economic history, political economy, and development.

Credit 3 units.

L11 Econ 5301 Financial Markets and the Macroeconomy

The objective of this class is to study the deep interconnections that link financial markets and the macroeconomy. We will cover three sets of topics: (1) Equilibrium asset pricing theory in endowment and in production economies. We will study issues such as (a) What is the relation between growth expectations and asset price movements?, and (b) Under what conditions can we see bubble-like phenomena? (2) Theories of long-run movements in the US stock market. Some of the questions we will consider are (a) Can technological revolutions generate stock market crashes?, and (b) How do changes in taxes and regulations impact stock market valuations? (3) Financial market frictions and their implications for economic fluctuations. We will investigate topics such as (a) How may shocks propagate through the financial system into the overall economy?, and (b) How do limited enforcement and informational asymmetries shape the debt and financial decisions of firms and individuals?

Credit 3 units.

L11 Econ 530A Financial Economics

This course provides an introduction to macro-finance and economic research. We start with the basic macro-finance frameworks and follow up with some topics such as bank runs, financial crisis, and liquidity. Prerequisites: admission to the master's program in Economics, or instructor permission.

Credit 3 units.

L11 Econ 531 Program Evaluation

We will study the econometric methods that are used to solve estimation and measurement problems that arise in the evaluation of program and policies. Although we will cover econometric methods, the focus of the class will be on applications. These include applications of regression analysis, matching techniques, randomized experiments and quasi-experiments, instrumental variables estimators, regression discontinuity designs and panel data models.

Credit 3 units.

L11 Econ 532 Monetary Theory

Theoretical and empirical analysis of the supply and demand for money and the channels through which monetary forces affect income and prices. Alternative perspectives of the influence and modelling of monetary influences including income-expenditure, monetarist, and new classical approaches. Topics related to the conduct of monetary policy include intermediate targets, alternative operating procedures for controlling the money supply, and reforms to enhance the effectiveness of monetary policy.

Credit 3 units.

L11 Econ 536 Econometrics

This course is an introductory econometrics course for the first-year master's students in economics. It is designed to teach students basic econometric methods while also developing a theoretical understanding of those methods. Econometrics bridges the gap between economic theories and the real data. With econometrics, we can test hypotheses about theories and policies, as well as forecast

future economic activities. Our course begins with a review of basic statistics and probability, and then covers fundamentals of linear regressions. Further topics include regressions with panel data, a binary dependent variable, and instrumental variables. Students will use statistical software, such as STATA, for hands-on econometric exercises and research projects that are designed to provide experience working with the techniques covered in class. By the end of the course, the students should possess the skills and knowledge needed to understand applied economic research and to conduct their own empirical research. Prerequisites: admission to the master's program in Economics, or instructor permission.

Credit 3 units.

L11 Econ 5361 Computational and Empirical Methods in Economics

This course is divided into two parts. The first part focuses on learning about empirical methods and gaining familiarity with widely-used microeconomic data sources. Importantly, students will learn how to apply these methods and tools on microdata to establish empirical patterns and causal relationships. The second part focuses on learning about computational methods to solve macroeconomic models. The objective here is to gain theoretical insights that are testable against microeconomic data and useful to inform policy makers.

Credit 3 units.

L11 Econ 538 Economics of Education

This course deals with the economics of schooling and the accumulation of human capital. The sub-topics include public financing of education (e.g., vouchers), residential sorting based on school quality, income distribution, college loans and default rates.

Credit variable, maximum 3 units.

L11 Econ 539 Topics in Human Capital

This course deals with advanced research topics in human capital.

Credit 3 units.

L11 Econ 540 Bias and Decisions in Economics

In this course, we will read and discuss economic research on bias and the criminal justice system. There are two central questions in the course. First: how to define and uncover unwarranted bias in a strategically complex setting with information constraints. Second: how to apply these methods to the particular setting and data of criminal justice. In addressing these questions, we will weigh the value of different definitions of bias and different econometric approaches to the criminal justice system. Topics include: outcome tests, judge instruments, binary classification analysis, and modeling the incentives of citizens, police, prosecutors, judges, and parole/probation officers.

Prerequisite: Econ 503, Econ 504, Econ 512, Econ 5161.

Credit 3 units.

L11 Econ 542 Growth Theories and Growth Models

This is a course in growth theory, which means it is a course about coherent mathematical formalizations of how some people think economic growth has come around. There are too many theories, though, and most of them have little to do with anything we have ever observed in human history. Some theories are elegant and parsimonious, even beautiful, but they belong to the science fiction section: they talk about the economic growth that could have possibly happened on some planet, but did not happen on ours. One should learn about their existence, and make a memo to never again walk along those paths to try understanding economic growth on planet Earth. Other theories, e.g. those assuming exogenous growth, are really not theories but useful accounting frameworks from where one should start asking the modeling questions. The course is structured along a "history of economic thought" line: it begins with the classical

economists (Ricardo, Malthus and Marx) as they had theories about the necessary absence of economic growth in the long run, and it ends with the current theories about increasing returns, widespread externalities and the weightless economy. The approach is fairly rigorous, but it assumes that participants read the original articles/books and go through the proofs themselves. As we go along we try to separate good theories from bad theories and, more important, we try to separate theories from models, the latter being theories that have some qualitative and quantitative consistency with observed facts. It is models, at the end, that we want to learn about.

Credit 3 units.

L11 Econ 543 Public Economics

Topics in welfare economics and public choice including classical welfare theorems, market failure and externalities, cost benefit analysis, public goods, Lindahl equilibrium, Coase's theorem, voting models of allocation, and other topics as time and interest allows.

Credit 3 units.

L11 Econ 544 Taxation

An economic analysis of principles and approaches to taxation, with emphasis on the major forms of taxation employed in the federal and state-local tax structures. Specific problems relating to efficiency, equity, shifting, and incidence are among the topics covered.

Credit 3 units.

L11 Econ 545 Social Choice and Welfare

Introduction to social choice theory which studies the aggregation of individual preferences in economic, political and social contexts, in an attempt to provide an integrated framework with which to evaluate collective decision making. Applications of the theory in the formal modelling of economic and political choice. 3 class hours a week.

Credit 3 units.

L11 Econ 5451 Public Finance

The study of fundamental forms of market failure that provide the economic rationale for government action. The first third of the class examines market failure when an economy contains externalities and public goods and the general nature of public policies that address these issues. The second third addresses particular public policies, with a focus on their intended and unintended consequences and their costs. The final third addresses taxation. Topics include the measurement and evaluation of tax burdens, the federal personal income tax, tax evasion, and proposals for fundamental tax reform. We use a small amount of microeconomic theory and elementary calculus (all of which we review) to reveal the common core of ideas behind these discussions, but the focus of the course is on applications.

Prerequisite: Econ 401.

Credit 3 units.

L11 Econ 547 Empirical Public Finance

The course will consider empirical and institutional aspects of public finance. Topics in local public finance, such as intergovernmental relations, the Tiebout hypothesis, and property taxation will be studied from an applied point of view. Topics in national public finance include the personal income tax, corporate taxation, social security, and tax reform. Public deficits and debt will be examined, as will applied general equilibrium models.

Credit 3 units.

L11 Econ 551 Seminar in Political Economy

This research seminar will introduce the student to recent work on the political economy of democracy. We shall start with a historical account of the development of democratic institutions in Britain and the United States, and then continue with recent work on modeling elections. We shall compare elections in countries that make use of proportional electoral systems, such as Israel, with those like the United States and Britain that are highly majoritarian. Finally we shall discuss the forces of democratization and globalization. The required work for the seminar is a research paper approximately 20pp (double spaced) in length.

Same as L32 Pol Sci 4551

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 552 Contract Theory

This course will cover the major models used to analyze contracting behavior and contract law. As law professors, some attention will be paid to the legal rules governing enforcement and interpretation. The course is designed for advanced graduate students in economics, political science, and law. As a prerequisite, we require the initial sequence in microeconomics.

Credit 3 units.

L11 Econ 555 Economics of Industrial Organization I

Industrial organization is the study of competition between firms in the same industry. This course will survey topics in IO, including models of oligopoly and cartel behavior, pricing, vertical relationships, and antitrust policy. The course will also survey common empirical methods with an emphasis on their applications to questions in industrial organization. By the end of the course, students will begin to formulate and pursue their own research questions.

Credit 3 units.

L11 Econ 5551 Economics of Industrial Organization

Focus on economics and politics of regulation from theoretical and empirical perspectives. Concepts of strategic behavior, imperfect information and agency theory used to examine various regulatory issues and the incentives created by regulatory policy; evaluation of empirical papers which analyze the effects of regulation in different industries. Study of the impacts of political forces on the development, design and implementation of regulatory policy. Econ 555 is strongly recommended.

Credit 3 units.

L11 Econ 5552 Theory of the Firm

Course examines the theory and evidence concerning the organization of firms and markets. We begin with the Ronald Coase paper on "Theory of the Firm" and follow the subsequent literature of various schools, including the works of Oliver Williamson, Armin Alchian, and Harold Demsetz. This course will focus heavily on research strategies to improve our knowledge of the institutions of market exchange.

Credit 3 units.

L11 Econ 5553 Topics in Empirical Industrial Organization

This course will focus upon empirical research investigating the relationships between the structure of industry, firm conduct, and industry performance. Topics will include the study and inference of firm costs, tests for market power and collusion, and the study of industries with differentiated products. Special attention will be paid to the actual implementation of relevant econometric techniques.

Credit 3 units.

L11 Econ 5554 Firms, Markets, and Institutions

We begin with the Ronald Coase paper on "Theory of the Firm" and follow the subsequent literature of various schools, including the works of Oliver Williamson, Armin Alchian, and Harold Demsetz. This course will focus heavily on research strategies to improve our knowledge of the institutions of market exchange.

Credit 3 units.

L11 Econ 558 Matching and Assignment

This course introduces you to formal modeling in two-sided matching and assignment problems and suggests some interesting directions for future research. We will discuss de-centralized matching markets (e.g., the marriage market), matching markets through institutions (e.g., medical labor market and school choice problem), and assignment problems (e.g., housing allocation). We study existing or new market institutions, understand their properties, and think about whether they can be reengineered or improved. This course assumes knowledge of the first-year economics PhD sequence, especially microeconomic theory.

Credit 3 units.

L11 Econ 5591 Elements of Experimental Methodology in Economics

The course will discuss: How experiments designed to falsify theory are on more solid ground than experiments designed to test alternative policies, with examples. How insights into subjects' divergence from theoretically predicted behavior may be related to replicable experience(s), as opposed to postulated nonstandard preferences. Aspects of how laboratory methodologies differ from field methodologies.

Credit 1 unit.

L11 Econ 568 Research Seminar in Health Economics

Introduction to research that uses economics to explore health and medical care. Overview of the major topics in health economics, including adverse selection, moral hazard, asymmetric information, health insurance, health outcomes and treatment effects, hospital organization, and Medicare/caid. Students will develop the ability to critique current research and policy proposals in the field. This objective will be accomplished through in-depth discussions of journal articles and a research project.

Credit 3 units.

L11 Econ 5711 Development Economics

This course covers advanced topics in development economics. We will integrate state-of-the-art microeconomic tools and quantitative macro theory. First, we will discuss development facts from latest household cross-sectional and panel data from developing countries as well as macro development facts from aggregate data. Second, we will introduce consumption theory (intertemporal choice and P/LCH models with borrowing constraints) and discuss its applications to development. Third, we will study consumption risk and insurance in village economies and introduce the cases of endogenous incomplete markets. Here, we will pay particular attention to Sub-Saharan African countries and China. Fourth, we will move beyond villages and make a first attempt to link individual risk and insurance to aggregate development. To do so we will introduce macro models with heterogeneous agents and show their solution under aggregate risk and non-stationary development processes. Specifically, we will analyze how to embed individual risk into models of structural transformation. Fifth, we will discuss missallocation issues arising from policies on firms, policies on land and gender-biased social norms. Sixth, we will revisit the relationship between fertility and income/land in developing countries. Seventh, we will study health behavior and risk

to understand the effects of disease (e.g. HIV, malaria) and assess the role of prevention strategies and palliative policies. Eighth, we will study how to integrate field experiments and structural modeling to evaluate policy
Credit 3 units.

L11 Econ 572 Economic Growth

The objective of this course is to provide an introduction to the mathematical techniques necessary to study stochastic dynamic economies with particular emphasis on models of growth and asset pricing. The first part of the course will cover basic results in continuous time stochastic process, and develop the essentials of stochastic calculus. In the second part, those tools will be used to analyze a variety of issues related to growth and asset pricing. A partial sample of the questions that will be discussed includes: " The effects of policy and real instability on growth paths. " The impact of tax and fiscal policies on economic performance. " The equilibrium determination of asset prices and their relationship with real shocks. " The connection between aggregate quantities and the price of fixed income securities.
Credit 3 units.

L11 Econ 5725 Quantitative Macroeconomic Theory

This course follows the first year macro sequence: 501 and 502. Our goal in this course is to learn tools that help us to relate models to data, that is, we aim to learn how to answer quantitative questions and we will learn to do so via intensive computational work by students. We will learn how to construct and characterize equilibrium allocations of representative agent models, overlapping generations models and heterogeneous agents economies. We will learn the computational tools to solve those artificial economies in stationary and non-stationary environments such as business cycles or development processes taking good care of distributions and aggregate consistency. Much emphasis of this course is on the calibration process: we will spend much time discussing the mapping from theory to data. The grade will be a weighted average of regular homeworks, class presentations and a referee report.
Credit 3 units.

L11 Econ 577 International Finance and Open Economy Macroeconomics

Graduate seminar in international macroeconomics. Topics include exchange rates, international trade and capital flows, monetary policy coordination, and currency unions.
Credit 3 units.

L11 Econ 578 International Macroeconomics

The aim of this course is to cover several topics related to international macroeconomics, such as open economy real business cycle models, small open economy models, sovereign default models, and models of international capital flows. The course is intended to provide students with a battery of tools that will help them to identify relevant questions and the right approach (methodology) to solving them; students will also learn different quantitative methods for solving the models that we study throughout the semester. For the student, the goals are to start thinking about possible research questions, to learn how to develop a research plan, and to transmit ideas in an effective way.
Credit 3 units.

L11 Econ 581 Seminar in Growth and Development

This course is designed to discuss frontier research in economic growth and development. Topics are chosen by the instructor from empirical and theoretical research in the areas. Issues to be studied vary but may include the foundation of modern theory, the dynamic process of industrial transformation, technological progress, human and

physical capital accumulation, financial development, as well as the role of government and institutional factors in advancing a market economy. Student participation in class discussions of research papers is essential.
Credit variable, maximum 1.5 units.

L11 Econ 582 Seminar on Work, Family, and Public Policy

This course examines various topics in labor economics and the economics of the family, including but not limited to, the allocation of time, family bargaining, and the economics of health. The course meets once a week (every Monday, 12:00 - 1:30) for both the fall and spring semesters. To receive credit, students are required to attend all course meetings for both semesters. The course will be integrated with a biweekly workshop series. Thus, there will an outside speaker every other Monday. Students will be expected to read and report on papers in the literature. Students will also be expected to write a paper and present it during the spring semester.
Credit 3 units.

L11 Econ 582A Seminar on Work, Family, and Public Policy I

This course is a continuation of Econ 582, which examines various topics in labor economics and the economics of the family, including but not limited to, the allocation of time, family bargaining, and the economics of health. The course meets once a week (every Monday, 12:00 - 1:30) for both the fall and spring semesters. To receive credit, students are required to attend all course meetings for both semesters. The course will be integrated with a biweekly workshop series. Thus, there will an outside speaker every other Monday. Students will be expected to read and report on papers in the literature. Students will also be expected to write a paper and present it during the spring semester. Econ 582 and 582A may be both taken for credit, in either order.

L11 Econ 583 Topics in Labor Economics I

The course proceeds in four parts. First, a number of main themes in labor economics is covered, including labor demand, labor supply, and life-cycle models. The second section is a chronology of the female labor supply literature, which traces the development of research on women's labor supply from the early 1960s to the present. The third section is an economic analysis of unions, collective bargaining, and strikes. The final section is a detailed analysis of an assortment of recent papers, which represent the best current research in labor economics.
Credit 3 units.

L11 Econ 5830 Mathematical Economics

The objective of this course is to develop the mathematical tools necessary for the study of intermediate micro- and macro-economic theory and the advanced electives in economics. The principal focus will be the calculus of multivariate functions (including total and partial differentiation), unconstrained and constrained optimization of multivariate functions, and implicit and inverse function rules. Time permitting, additional topics will be introduced. Economics majors and minors must take this course (or Math 233) prior to, or concurrently with, Econ 4011. Students who have taken, or are taking, Math 233 are encouraged to take this course as well. Prerequisites: Econ 1011 and Econ 1021, and Math 132.
Same as L11 Econ 493
Credit 1 unit. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 584 Topics in Labor Economics II

Course will examine three topics in labor economics: human capital (including the demand for education and the determinants of earnings); economics of the family (including models of the marriage market and bargaining models of marriage); formation of preferences (including "habit formation" and "rational addiction"). All three topics are closely associated with Gary Becker. Course will examine his contributions and the view of his critics.
Credit 3 units.

L11 Econ 586 Seminar in Macro and Monetary Economics

Topics chosen by instructor from modern empirical and theoretical research papers in macroeconomics. Student participation in class discussions of research papers is essential. Topics vary, but may include the link between capital markets, consumption and investment, imperfect competition and macroeconomic fluctuations, real business cycles models, and post-Keynesian macroeconomics.
Credit 1.5 units.

L11 Econ 586C Topics in Monetary Economics and Macroeconomics

Topics for this course to be determined by the instructor.
Credit 3 units.

L11 Econ 586D Seminar on Macro and Monetary Economics

The purpose of this seminar is to expose advanced graduate students to people doing cutting-edge research in broadly-defined dynamic economics. Outside visitors and department staff will lecture and lead discussions on a variety of current research topics including macroeconomic theory, financial markets and fiscal policy, money and monetary policy, asset pricing, international finance, growth and business cycles, development macroeconomics and other areas of interest. Prerequisites are Econ 501 and 502 or their equivalent.
Credit 3 units.

L11 Econ 5875 Financial Markets, Institutions, and the Regulatory Challenge

Graduate students will attend the same lectures and complete the same assignments as the advanced undergraduates in Econ 4875. Graduate students will read additional papers, write referee reports on these papers, and practice discussing them in academic-conference style to develop these important professional skills.
Credit 3 units.

L11 Econ 589 Seminar in Dynamic Economics

The purpose of this seminar is to expose advanced graduate students to people doing cutting-edge research in broadly-defined dynamic economics. Outside visitors and department staff will lecture and lead discussions on a variety of current research topics including macroeconomic theory, financial markets and fiscal policy, money and monetary policy, asset pricing, international finance, growth and business cycles, development macroeconomics and other areas of interest. Prerequisites are Econ 501 and 502 or their equivalent.
Credit variable, maximum 1.5 units.

L11 Econ 598 Research in Economics

Individual programs of intensive readings for Ph.D. candidates in Economics. Students must register for a particular section with a specific faculty member, and consult with the faculty member about course requirements at the time of registration.
Credit variable, maximum 6 units.

L11 Econ 5991 Money and Macroeconomics Workshop

This is a two-semester workshop covering contemporary topics in money and macroeconomics with presentations by economics department faculty and scholars from other institutions. Students are expected to participate in the seminar discussion and may be asked to read research papers and present their contents to the class.
Credit 3 units.

L11 Econ 5992 Money and Macroeconomics Workshop

This is a two-semester workshop covering contemporary topics in money and macroeconomics with presentations by economics department faculty and scholars from other institutions. Students are expected to participate in the seminar discussion and may be asked to read research papers and present their contents to the class. This is to be used when graduate students have accumulated a total of 72 units of study. Audit only.

L11 Econ 5993 Economic Theory Workshop

This is a two-semester workshop covering contemporary topics in economic theory with presentations by economics department faculty and scholars from other institutions. Students are expected to participate in the seminar discussion and may be asked to read research papers and present their contents to the class. Credit 3 units.
Credit 3 units.

L11 Econ 5994 Economic Theory Workshop

This is a two-semester workshop covering contemporary topics in economic theory with presentations by economics department faculty and scholars from other institutions. Students are expected to participate in the seminar discussion and may be asked to read research papers and present their contents to the class. This number is to be used by graduate students who have reached the maximum of 72 units. Credit 0 units. Audit only.

L11 Econ 5995 Applied Economics Workshop

This is a two-semester workshop covering topics in applied economics with presentations by economics department faculty and scholars from other institutions. Students are expected to participate in the seminar discussion.
Credit 3 units.

L11 Econ 5996 Applied Economics Workshop

This is a two-semester workshop covering topics in applied economics with presentations by economics department faculty and scholars from other institutions. Students are expected to participate in the seminar discussion. This is to be used when graduate students have accumulated a total of 72 units of study. Audit only. Credit 0 units.

L11 Econ 5997 Development & Public Policy Workshop

This is a two-semester workshop covering topics in applied economics with presentations by economics department faculty and scholars from other institutions. Students are expected to participate in the seminar discussion.
Credit 3 units.

L11 Econ 5998 Development and Public Policy Workshop

This is a two-semester workshop covering topics in applied economics with presentations by economics department faculty and scholars from other institutions. Students are expected to participate in the seminar discussion. This is to be used when graduate students have accumulated a total of 72 units of study. Audit only. Credit 0 units.

L11 Econ 6210 Topics in Financial Economics

The objective of the course is to develop the basic economic models that can be used to study the valuation of different financial assets and to discuss how to confront the theory with the evidence from financial markets. The course will develop the basic model of investment under uncertainty and discuss portfolio choices in static and dynamic settings as well as market equilibria and the impact of news on the forecast-ability of excess returns. The course will describe valuation in incomplete asset markets (e.g. arbitrage pricing theory) and the extension to the valuation of firms and real estate assets. Prerequisites: Econ 4011, Econ 4021 and Econ 413. 3 units.

Same as L11 Econ 4210

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6211 Topics in Financial Economics: Investments

This course surveys recent developments in investments and portfolio management. The course aims to provide students with a structure for thinking about investment decisions from the perspective of a portfolio manager. We start by understanding fundamental concepts for investment theory: modern asset valuation and portfolio selection under uncertainty. We will proceed to investigate various sources of risk which financial institutions are exposed to, such as interest rate risk, credit risk and liquidity risk, and study how financial institutions manage these risks. The course will also introduce student to investment evaluation techniques. We will explore recent innovations in financial markets, as well as various frictions that arise in markets. Students will have the opportunity to apply concepts learned in class on a virtual investment and trading platform, StockTrak. Prerequisites: Econ 4011, Math/SDS 2200 (or Math/SDS 3200, Math/SDS 3211, QBA 120 and QBA 121, ESE 326.) or PolSci 363 with permission from instructor. Same as L11 Econ 4211

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6240 Money & Monetary Policy

We will explore several classic questions in the theory of money. What is money? What forms does money take? Why is money necessary-why is there a demand for money? What determines the supply of money? What is the debate on central versus free banking? Should banking be regulated, and, if so, why and how? What determines inflation? Should nations enter into fixed exchange rate regimes, or should they let the value of their monies be market-determined? What are the tensions that arise in fixed exchange rate regimes and common currency areas? How should policymakers view cryptocurrencies? Is a central bank digital currency desirable? These, and other questions, are explored within the context of theories that model the microfoundations of monetary exchange explicitly. PREREQUISITES: Econ 4011 and Econ 4021. 3 units.

Same as L11 Econ 448

Credit 3 units. A&S IQ: SSC EN: S

L11 Econ 6310 Behavioral Economics and Experimental Economics

Behavioral economics is an effort to incorporate ideas from psychology into economic models of behavior. We will focus on popular experimental anomalies, including the Allais and Rabin paradoxes, ultimatum bargaining, the centipede and public goods contribution games. We will examine the extent to which these are consistent with standard economic theory and how they may contradict it. The primary focus will be a critical examination of psychological theories of non-standard preferences including loss aversion, probability weighting, reciprocity, fairness and present bias. Theories of incorrect beliefs and systematic biases such as money illusion and procrastination will be covered. The class will include an introduction to experimental methods in economics, including hands-on experience in the MISSEL laboratory. A sound grounding in economic theory is essential to the

course. You must have successfully completed Economics 4011, and should be acquainted with basic optimization theory, expected utility theory, risk aversion, discounting and basic game theory including dominance, Nash equilibrium and subgame perfection.

Same as L11 Econ 404

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6315 Market Design

The objective of this course is to study how to design mechanisms to allocate scarce resources and how to create successful marketplaces. We will primarily consider two topics: (1) two-sided matching markets, such as the National Resident Matching Program and the Kidney Exchange for transplants, and (2) auctions used by Google, Facebook, etc. Time permitting, a third topic will be the problem of designing and regulating market "platforms," such as the e-commerce markets run by eBay, Amazon, and Craigslist, and applications marketplaces run by Apple, Google, etc., as well as the electronic financial trading platforms run by the NYSE. Prerequisite: Econ 4011. 3 units.

Same as L11 Econ 407

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6335 Industrial Organization

Theoretical and empirical analysis of the presence and value of competitive forces in the United States economy. Theories of industrial organization and development of criteria for performance of noncompetitive industries. Prerequisite: Econ 4011.

Same as L11 Econ 452

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6340 Auction Theory and Practice

This course will use the theoretical and empirical tools of economics to study auctions, which are one way of buying and selling goods (or services). The course begins with a consideration of optimal bidding in different types of auctions. We will explore how to design auction rules that maximize the seller's revenue, or minimize the buyer's cost (such as in the case of government procurement). We will also study how to design auction rules that improve efficiency by reducing collusion by bidders. The course will conclude by using econometrics to analyze "real-world" auction data to estimate preferences and cost distributions; to determine optimal reserve prices; and to answer some questions related to auction design. Familiarity with computer programming/estimation, such as with MATLAB, R, or Julia, will be helpful. Prerequisites: Econ 4011 and Econ 413 or Econ 413W.

Same as L11 Econ 4567

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC

L11 Econ 6345 Labor Economics

Economic analysis of labor markets. Theory and evidence on supply of and demand for labor, explanation of wage and income differentials; impact of education on human skills and productivity. Prerequisite: Econ 401 and Econ 413.

Same as L11 Econ 480

Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6390 Economics of Education

The "economics of education" involves analysis of the economic and social determinants and consequences of education. Because each person's education is an investment in human capital which allows the individual to contribute to society in a productive way, education becomes a crucial determinant of an economy's ability to achieve high growth with high wages, low unemployment and strong social cohesion. This course will address three essential topics from the wide-ranging field of the economics of education. The first is demand-side oriented and includes: (i) the measurement of the returns to education in the labor market (human capital theory; the central idea

of education as human capital investment); and (ii) a characterization of the education production function, which relates the various inputs affecting a student's learning (schools, families, peers, neighborhoods, etc.) to measure outputs including labor market success, graduation rates and standardized test scores. The second important topic involves political economy and the supply side: the financing and provision of education. The third part of the course is devoted to the links between education and economic development, including cross-country differences in schooling, returns to schooling and per-capita income. Prerequisites: Econ 4011, Econ 4021, and Econ 413. Same as L11 Econ 483. Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6410 Macroeconomics of Inequality

In this course, we study the driving forces of inequality across countries, across time, and across individuals within a country. We will define and measure inequality using standard measures of economic well-being, such as income, wealth, and consumption of market goods, and we will also consider broader measures such as health outcomes. Historical cross-country data, microdata, and specific case studies will be used to evaluate theories of the sources of inequality. Key variables to be evaluated include physical capital investment, education and human capital investment, technological progress, robotization, international trade, and financial markets, among others. Prerequisites: Econ 4011 and Econ 4021. Same as L11 Econ 410. Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6420 Computational Macroeconomics

This course provides a more in depth look into quantitative methods used in contemporary macroeconomic analysis. We will cover numerical methods used in dynamic optimization. In practice, we will apply these methods to solve two major models used in macroeconomic analysis, using both Excel and Matlab. The Neoclassical Growth Model and its variants are used to study aggregate trends and aggregate effects of government policy. The lifecycle model is used to examine questions involving decision-making over the lifecycle. We will learn how to use empirical observations for the purpose of calibrating model parameters and how to conduct policy evaluation in the context of calibrated models. Our policy evaluation will focus on fiscal policy (taxes) and social security issues. Prerequisites: Econ 4011 and Econ 4021. Same as L11 Econ 484. Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6480 Current Macroeconomic Issues

Review and extension of macroeconomic models from Econ 4021 from a comparative perspective and use of these models to analyze current macroeconomic and policy issues. Topics include recession and recovery, long-term growth, saving and social security, investment, and monetary policy. Multiple writing assignments that emphasize critical analysis of theoretical perspectives and readings applied to current macroeconomic topics. Writing will be revised to improve logical structure, clarity, and style. Enrollment limited to 15 students with priority given to senior economics majors. Prerequisite: Econ 4021. All students who pre-register will be put on the wait list. Students will receive an email immediately after pre-registration requesting more information. Same as L11 Econ 448W. Credit 3 units. A&S IQ: SSC, WI Arch: SSC Art: SSC EN: S

L11 Econ 6520 Topics in Growth and Development

This course highlights important empirical facts concerning growth and development in various countries at different development stages. Fundamental growth theory is then provided for explaining these facts systematically and for evaluating the consequences of

commonly adopted development policies. Topics vary, but may include population, human capital and labor market development, R&D and innovation, finance and growth, modernization and industrial transformation, world income disparities and poverty problems, institutions and political economy issues, environmental and social factors, and international trade and economic integration. Prerequisites: Econ 4011 and Econ 4021. Credit: 3 units. Same as L11 Econ 472. Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6710 Game Theory

This course covers advanced applications of Game Theory in economics. Topics include expected utility, strategic-form and extensive-form games with perfect information, Bayesian games, infinitely repeated games, dominance, Nash equilibrium and its refinements. We apply these tools to study strategic situations in industrial organization, auctions, bargaining, voting, and signaling games. Prerequisites: Econ 4011 and SDS 2200. Same as L11 Econ 467. Credit 3 units. A&S IQ: SSC Arch: SSC Art: SSC EN: S

L11 Econ 6840 Introduction to Stata

This short course introduces students to the data analysis and statistical software tools used in upper-level econometrics and applied economics courses. The course is designed to serve as a bridge between introductory econometrics and practical work with real-world databases. The course will be held in the computer classroom so that students can obtain hands-on experience with data preparation, workflow, and modeling using the Stata statistical software package. Emphasis throughout the course is placed on examples of applications in economics. PLEASE NOTE: 1. This course must be taken for a letter grade; the P/F and audit grade options are not available. 2. Students cannot use WebStac to add or drop this course after the first session -- contact dottie@wustl.edu for scheduling issues. 3. The final exam will occur on the last day of class, per the course syllabus. Prerequisites: prior completion of, or concurrent enrollment in, Econ 413. Same as L11 Econ 494. Credit 1.5 units.

L11 Econ 6841 Economic Analysis with Excel

This mini course offers students the opportunity to master the advanced functionality of Microsoft Excel, and to apply those skills to common economic, statistical, and financial problems. Even those familiar with the basic functioning of Excel may be surprised to learn how little of its full capability most users access. Though basic functions will be covered, our focus will be on leveraging Excel's more advanced functions, analytical tools, reporting templates, and linking features to manage multiple workbooks, manipulate data across files, automate tasks, and produce publication quality charts, tables, and graphs. In addition to providing hands-on experience using Excel's advanced capabilities, the course is designed to serve as a bridge between introductory econometrics and practical work with real-world datasets. The course will be held in the computer classroom so that students can obtain practical experience preparing data, managing workflow, and presenting results. Added emphasis throughout the course will be placed on examples with applications in economics. Prerequisites: prior completion of, or concurrent enrollment in, Econ 413 (or equivalent). Same as L11 Econ 4941. Credit 1.5 units.

L11 Econ 7100 Teaching Practicum in Economics (MA)

Opportunity for Master's candidates to assist in course instruction, tutoring, and preparation of problems, readings, and exam materials under supervision of faculty. Credit variable; maximum 3 units. Credit variable, maximum 3 units.

L11 Econ 7110 Readings in Economics

Individual programs of intensive readings for Master's candidates in Economics. Students must register for a particular section with a specific faculty member, and consult with the faculty member about course requirements at the time of registration.

Credit variable, maximum 6 units.

L11 Econ 7120 Research in Economics

Individual programs of intensive readings for Master's candidates in Economics. Students must register for a particular section with a specific faculty member, and consult with the faculty member about course requirements at the time of registration.

Credit variable, maximum 6 units.

L11 Econ 8212 Financial Infrastructure

This course explores recent developments on the interaction between market power and financial markets. Market power is pervasive across all sectors of economic activity. In financial markets, market power is essentially an outcome of market structure. Thus decentralized trading, either in over the counter or fragmented markets, is inherently associated with market power. Implications of market power are wide-ranging. Market power can be a source of market incompleteness. As a consequence, market power directly affects financial products brought to the market. Thus, misallocation can arise due to market power. We will start the course with properly introducing the concept of market power and various ways of measuring it. We will then proceed to understand the particularities of market power in financial markets. We will pay attention to the implication of financial infrastructure for innovation in financial products. We will conclude with a set of lectures that address questions at the intersection between financial markets and products markets and identify open areas for research.

Prerequisites: Econ 501, Econ 502, Econ 503, Econ 504. 1.5 units

Credit 1.5 units.

L11 Econ 8740 Topics in Microeconomic Theory

This class covers select topics in microeconomics including choice theory, market design, and mechanism design using tools from discrete mathematics such as matroids and lattices. Special emphasis will be on affirmative action and diversity policies. Prerequisites: Econ 503 and Econ 504. 3 units.

Credit 3 units.
