

# Economics

(College of Letters and Science)

Giovanni Peri, Ph.D., Chairperson of the Department

**Department Office.** 2216 Social Sciences and Humanities Building  
530-752-9241; <http://www.econ.ucdavis.edu>

## Faculty

Paul Bergin, Ph.D., Professor  
Marianne P. Bitler, Ph.D., Professor  
Andre Boik, Ph.D., Assistant Professor  
Giacomo Bonanno, Ph.D., Professor  
James Bushnell, Ph.D., Professor  
Colin Cameron, Ph.D., Professor  
Scott E. Carrell, Ph.D., Associate Professor  
Andres Carvajal, Ph.D., Associate Professor  
Gregory Clark, Ph.D., Professor  
Katherine Eriksson, Ph.D., Assistant Professor  
Robert C. Feenstra, Ph.D., Professor  
Athanasios Geromichalos, Ph.D., Assistant Professor  
Espen Henriksen, Ph.D., Assistant Professor  
Oscar Jorda, Ph.D., Professor  
Christopher M. Meissner, Ph.D., Professor  
Erich Muehlegger, Ph.D., Assistant Professor  
Marianne E. Page, Ph.D., Professor  
Giovanni Peri, Ph.D., Professor  
Martine Quinzii, Ph.D., Professor  
Dave Rapson, Ph.D., Associate Professor  
Katheryn N. Russ, Ph.D., Associate Professor  
Burkhard C. Schipper, Ph.D., Professor  
Shu Shen, Ph.D., Assistant Professor  
Ina Simonovska, Ph.D., Associate Professor  
Monica Singhal, Ph.D., Associate Professor  
Ann Huff Stevens, Ph.D., Professor  
Derek Stimel, Ph.D., Lecturer  
Deborah Swenson, Ph.D., Professor  
Alan M. Taylor, Ph.D., Professor  
Janine Wilson, Ph.D., Lecturer  
Wing T. Woo, Ph.D., Professor

## Emeriti Faculty

Andrzej Brzeski, Ph.D., Professor Emeritus  
L. Jay Helms, Ph.D., Professor Emeritus  
Kevin D. Hoover, D.Phil., Professor Emeritus  
Hiromitsu Kaneda, Ph.D., Professor Emeritus  
Peter H. Lindert, Ph.D., Professor Emeritus  
*Academic Senate Distinguished Teaching Award*  
Louis Makowski, Ph.D., Professor Emeritus  
Klaus Nehring, Ph.D., Professor Emeritus  
Alan L. Olmstead, Ph.D., Professor Emeritus  
Kevin D. Salyer, Ph.D., Professor Emeritus  
Steven M. Sheffrin, Ph.D., Professor Emeritus  
T. Y. Shen, Professor Emeritus  
Joaquim Silvestre, Professor Emeritus  
Elia H. Tuma, Ph.D., Professor Emeritus  
Gary M. Walton, Ph.D., Professor Emeritus  
Leon L. Wegge, Ph.D., Professor Emeritus

## Affiliated Faculty

Bagher Modjtahedi, Ph.D., Lecturer

## The Major Program

Economics is the study of how individuals, organizations, and societies choose among alternative uses of resources and how these resources are turned into the things people want.

**The Program.** Economics majors complete an introductory course sequence in economics, in addition to several courses in quantitative methods. Intermediate theory and economic history are taken on the upper division level and then students are free to concentrate the remainder of their units in various areas of interest, including more courses in economic theory or history, international economics, labor, industry, alternative economic systems, economic development, public finance, econometrics, or mathematical economics.

**Internships and Career Alternatives.** Internships for economics majors have been arranged at banks, brokerages, other business enterprises, and governmental units. The internships must complement the student's course work. A degree in economics is

excellent preparation for students who want to go on to law school, business school, advanced work in economics, or graduate work in international relations. It is also a good background for careers in management and positions with the government.

## A.B. Major Requirements:

	UNITS
<b>Preparatory Subject Matter..... 17-20</b>	
Economics 1A-1B .....	8
Statistics 13, 32, or 102 .....	3-4
Mathematics 16A-16B or 21A-21B .....	6-8
<b>Depth Subject Matter ..... 44</b>	
Economics 100, 101 .....	8
Economics 102 .....	4
<b>Choose one specialization below:</b>	
<i>Specialization: General</i>	
One course from: Economics 110A, 110B, 111A, 111B.....	4
Select 4 courses from:	
Economics 103, 106, 116, 121A, 121B, 122, 125, 130, 131, 132, 134 (or Agricultural and Resource Economics 171A), 135, 136, 137, 140 (or Agricultural and Resource Economics 106), 145, 151A, 151B, 152, 160A, 160B, 194HA, 194HB, Agricultural and Resource Economics 139, 156, 175, 176.....	16
Additional upper division Economics courses .....	12
<i>Specialization: Behavior and Strategy</i>	
One course from:	
Economics 110A, 110B, 111A, 111B.....	4
Economics 121A or 122.....	4
Select 2 courses from:	
Economics 103, 106, 121A, 121B, 122..	8
Select 1 course from:	
Economics 103, 106, 116, 121A, 121B, 122, 125, 130, 131, 132, 134 (or Agricultural and Resource Economics 171A), 135, 136, 137, 140 (or Agricultural and Resource Economics 106), 145, 151A, 151B, 152, 160A, 160B, 194HA, 194HB, Agricultural and Resource Economics 139, 156, 175, 176.....	4
Additional upper division Economics courses .....	12
<i>Specialization: Data Analytics and Economics Analysis</i>	
One course from:	
Economics 110A, 110B, 111A, 111B.....	4
Economics 140 .....	4
Select 2 courses from:	
Economics 103, 106, 122, and either 132 or 145.....	8
Select 1 course from:	
Economics 103, 106, 116, 121A, 121B, 122, 125, 130, 131, 132, 134 (or Agricultural and Resource Economics 171A), 135, 136, 137, 140 (or Agricultural and Resource Economics 106), 145, 151A, 151B, 152, 160A, 160B, 194HA, 194HB, Agricultural and Resource Economics 139, 156, 175, 176.....	4
Additional upper division Economics courses .....	12
<i>Specialization: International Macro-Finance</i>	
One course from:	
Economics 110A, 110B, 111A, 111B.....	4
Select 3 courses from:	
Economics 110B, 134, 135, 136, 160B, 171 .....	12
Select 3 course from:	
Economics 103, 106, 116, 121A, 121B, 122, 125, 130, 131, 132, 134 (or Agricultural and Resource Economics 171A), 135, 136, 137, 140 (or Agricultural and Resource Economics 106), 145, 151A, 151B, 152, 160A, 160B, 194HA, 194HB, Agricultural and Resource Economics 139, 156, 175, 176.....	12
Additional upper division Economics courses .....	4
<i>Specialization: Policy</i>	

One course from:

Economics 110A, 110B, 111A, 111B..... 4

Select 3 courses from:

Economics 125, 130, 131, 145, 151A, 151B, 160A..... 12

Select 1 course from:

Economics 103, 106, 116, 121A, 121B, 122, 125, 130, 131, 132, 134 (or Agricultural and Resource Economics 171A), 135, 136, 137, 140 (or Agricultural and Resource Economics 106), 145, 151A, 151B, 152, 160A, 160B, 194HA, 194HB, Agricultural and Resource Economics 139, 156, 175, 176..... 4

Additional upper division Economics courses .....

*Specialization: Poverty and Inequality*

One course from:

Economics 110A, 110B, 111A, 111B..... 4

Select 3 courses from:

Economics 115A, 115B, 130, 151B..... 12

Select 3 courses from:

Economics 103, 106, 116, 121A, 121B, 122, 125, 130, 131, 132, 134 (or Agricultural and Resource Economics 171A), 135, 136, 137, 140 (or Agricultural and Resource Economics 106), 145, 151A, 151B, 152, 160A, 160B, 194HA, 194HB, Agricultural and Resource Economics 139, 156, 175, 176..... 12

Additional upper division Economics courses .....

*Specialization: Economic History*

Select 4 courses from:

Economics 110A, 110B, 111A, 111B, one of which may be from History 108, 109B, 110, 110A, 111A-C, 112A, 112B, 112C, 113, 115A-F, 116, 120, 121A-C, 122, 125, 130A-C, 131A-C, 132, 133, 134A, 135A-B, 138A-C, 139A-B, 140, 141, 142A-B, 143, 144A-B, 145, 146A-B, 147A-C, 148A-C, 149, 151A-D, 159, 160, 162, 163A-B, 164, 165, 166A-B, 167, 168, 169A-B, 170A-C, 171A-B, 171D, 172, 172, 173, 174A, 174B, 174C, 174D, 175, 176A-B, 177A-B, 178A-B, 179, 180AN, 181, 182, 183A-B, 184, 185A-B, 188, 189, 190A-D, 191A-J, 193A-D, 194A-E, 195B, 196A-B..... 16

Choose 4 courses from:

Economics 103, 106, 116, 121A, 121B, 122, 125, 130, 131, 132, 134 (or Agricultural and Resource Economics 171A), 135, 136, 137, 140 (or Agricultural and Resource Economics 106), 145, 151A, 151B, 152, 160A, 160B, 194HA, 194HB, Agricultural and Resource Economics 139, 156, 175, 176..... 16

**Total Units for the Major ..... 61-64**

**Recommended.** Students considering graduate study in economics are strongly urged to take Mathematics 21A-21B-21C and 22A.

The Economics Department suggests that Economics 100 and 101 be taken as soon as possible after the introductory courses.

**Major Advisers.** Contact Department office at [ecnuadvisor@ucdavis.edu](mailto:ecnuadvisor@ucdavis.edu) or 530-752-9142.

## Minor Program Requirements:

	UNITS
<b>Economics..... 20</b>	
Economics 100, 101 .....	8
Select 8 units from Economics 103, 106, 116, 121A, 121B, 122, 125, 130, 131, 132, 134 (or Agricultural and Resource Economics 171A), 135, 136, 137, 140 (or Agricultural and Resource Economics 106), 145, 151A, 151B, 152, 160A, 160B; Agricultural and Resource Economics 139, 156, 175, 176.....	8
Select 4 units from upper division Economics courses .....	4

**Preparation.** Economics 1A and 1B; Statistics 13, 32, or 102; Mathematics 16A and 16B or 21A and 21B. Mathematics 16A and 16B or 21A and 21B

**Fall 2011 and on Revised General Education (GE):** AH=Arts and Humanities; SE=Science and Engineering; SS=Social Sciences;

ACGH=American Cultures; DD=Domestic Diversity; OL=Oral Skills; QL=Quantitative; SL=Scientific; VL=Visual; WC=World Cultures; WE=Writing Experience

**Pre-Fall 2011 General Education (GE):** ArtHum=Arts and Humanities; SciEng=Science and Engineering; SocSci=Social Sciences; Div=Domestic Diversity; Wrt=Writing Experience  
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should be completed before taking Economics 100 and 101. Students need to complete Economics 100 and 101 before taking the advanced courses.

**Course Limits.** Except under extraordinary circumstances, not more than two economics courses should be taken in any one quarter. In special cases, the department will accept a limited number of related upper division courses from other departments in satisfaction of the economics upper division course requirements. Approval from a departmental adviser is required in all such cases.

**Graduation with High or Highest Honors.** To be eligible for departmental recommendation for High or Highest Honors in Economics at graduation, a student must take all upper division courses in Economics for a letter grade, earn at least a 3.500 grade point average in those courses, and complete at least eight units of course work that result in the submission of an Honors project. Consult the College of Letters and Science section of this catalog and contact the Department for more information.

**Study Abroad.** The economics department wishes to accommodate students who would like to complement their economics degree with a study abroad experience. Up to 20 units of upper division credit from foreign campuses (excluding Economics 100 and 101) may be used towards the completion of the degree. To ensure that foreign courses will apply towards the economics degree, students need to select courses from the pre-approved list at the UC Davis Study Abroad office or seek pre-approval in the economics department for the foreign courses they wish to complete.

**Graduate Study.** Students who meet the admission requirements of Graduate Studies and the Department of Economics may pursue studies leading to the M.A. and Ph.D. degrees. Fields of emphasis for graduate study include: Economic Theory, Monetary Economics, Economic Development, Economic History, International Economics, Labor Economics, Industrial Organization, Economic Systems, Public Finance, Mathematical Economics, and Quantitative Methods (Econometrics). For information on admission to graduate study, degree requirements, and financial aid, consult the Graduate Announcement and <http://www.econ.ucdavis.edu>.

**Graduate Advisers.** Contact Department office.

**American History and Institutions.** This University requirement can be satisfied by completion of Economics 111A, 111B; see also under University requirements.

## Courses in Economics (ECN)

### Lower Division

#### 1A. Principles of Microeconomics (4)

Lecture—3 hours; discussion—1 hour. Course 1A and 1B may be taken in either order. Analysis of the allocation of resources and the distribution of income through a price system; competition and monopoly; the role of public policy; comparative economic systems. GE credit: SocSci | ACGH, QL, SS.—F, W, S. (F, W, S.)

#### 1B. Principles of Macroeconomics (4)

Lecture—3 hours; discussion—1 hour. Course 1A and 1B may be taken in either order. Analysis of the economy as a whole; determinants of the level of income, employment and prices; money and banking, economic fluctuations, international trade, economic development; the role of public policy. GE credit: GE credit: SocSci | ACGH, QL, SS.—F, W, S. (F, W, S.)

#### 90X. Lower Division Seminar (1-2)

Seminar—1-2 hours. Prerequisite: lower division standing and consent of instructor. Limited enrollment. Examination of a special topic in Economics through shared readings, discussions, and written assignments. May not be repeated for credit.

#### 92. Internship and Field Work (1-12)

Internship—3-36 hours; term paper. Prerequisite: junior or senior standing; availability of internship position or approved field work project; stock-brokerage interns must have completed Management

11A-11B; consent of instructor. Intensive study of practical application of concepts in economics, stressing research methods and empirical analysis. (P/NP grading only.)

#### 98. Group Study for Undergraduates (1-5)

Prerequisite: consent of instructor. Primarily for lower division students. (P/NP grading only.)

#### 99. Individual Study for Undergraduates (1-5)

Prerequisite: consent of instructor. (P/NP grading only.)

### Upper Division

#### 100. Intermediate Micro Theory (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 1A-1B and Mathematics 16A-16B or Mathematics 17A-17B or Mathematics 21A-21B, with a grade of C- or better in each course. Price and distribution theory under conditions of perfect and imperfect competition. General equilibrium and welfare economics. Not open for credit to students who have completed Agricultural and Resource Economics 100A or 100B.—F, W, S. (F, W, S.)

#### 101. Intermediate Macro Theory (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A-1B and Mathematics 16A-16B or Mathematics 17A-17B or Mathematics 21A-21B, with a grade of C- or better in each course. Theory of income, employment and prices under static and dynamic conditions, and long term growth.—F, W, S. (F, W, S.)

#### 102. Analysis of Economic Data (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 1A, 1B, Statistics 13 or 32, Mathematics 16A-16B or 21A-21B, with grade of C- or better in each, or consent of instructor. Analysis of economic data to investigate key relationships emphasized in introductory microeconomics and macroeconomics. Obtaining, transforming, and displaying data; statistical analysis of economic data; and basic univariate and multivariate regression analysis. Only 2 units of credit allowed to students who have completed course 140 or Agricultural and Resource Economics 106. GE credit: VL.—F, W, S. (F, W, S.)

#### 103. Economics of Uncertainty and Information (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Agricultural and Resource Economics 100A and 100B, Mathematics 16A and 16B or Mathematics 17A and 17B or Mathematics 21A and 21B. Optimal decisions under uncertainty, expected utility theory, economics of insurance, asymmetric information, signalling in the job market, incentives and Principal-Agent theory, optimal search strategies and the reservation price principle.

#### 106. Decision Making (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: Mathematics 16A-16B or Mathematics 17A-17B or Mathematics 21A-21B; Statistics 13 or 32, with grade of C- or better in each course, or consent of the instructor. Descriptive and normative analysis of individual decision making, with applications to personal, professional, financial, and public policy decisions. Emphasis on decision making under uncertainty and over time. Heuristics and biases in the psychology of decisions; overcoming decision traps. Offered irregularly.

#### 110A. World Economic History Before the Industrial Revolution (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 1A and 1B. Development and application of analytical models to explain the nature and functioning of economies before the Industrial Revolution. Examples will be drawn from a variety of societies, including England, China, Polynesia, and Pre-Columbian America. GE credit: SocSci | SS.

#### 110B. World Economic History Since the Industrial Revolution (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 1A, 1B and 110A. Development and application of analytical models to explain the nature and functioning of economies since the Industrial Revolution.

Examples will be drawn from a variety of societies, including England, China, Germany, and India. GE credit: SocSci | SS.

#### 111A. Economic History (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A-1B or consent of instructor. Survey of economic change in the United States from Colonial times to 1865; reference to other regions in the Western Hemisphere. GE credit: SocSci | SS.

#### 111B. Economic History (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A-1B, or consent of instructor. Survey of economic change in the United States from 1865 to the post World War II era. GE credit: SocSci | SS.

#### 115A. Economic Development (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A and 1B. Major issues encountered in emerging from international poverty, including problems of growth and structural change, human welfare, population growth and health, labor markets and internal migration. Important issues of policy concerning international trade and industrialization. (Same course as Agricultural and Resource Economics 115A.) GE credit: SocSci, Div | SS, WC.

#### 115B. Economic Development (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A and 1B. Major macroeconomic issues of developing countries. Issues include problems in generating capital, conduct of monetary and fiscal policies, foreign aid and investment. Important issues of policy concerning international borrowing and external debt of developing countries. (Same course as Agricultural and Resource Economics 115B.) GE credit: SocSci | SS, WC.

#### 116. Comparative Economic Systems (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Agricultural and Resource Economics 100A and 100B; Mathematics 16B or 17B or 21B. Economics analysis of the relative virtues of capitalism and socialism, including welfare economics. Marxian exploitation theory, the socialist calculation debate (Hayek and Lange), alternative capitalist systems (Japan, Germany, U.S.) and contemporary models of market socialism. Offered irregularly. GE credit: WC.

#### 121A. Industrial Organization (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A-1B; 100 or Agricultural and Resource Economics 100A-100B, or consent of the instructor. An appraisal of the role of competition and monopoly in the American economy; market structure, conduct, and economic performance of a variety of industries. GE credit: SocSci | SS.

#### 121B. Industrial Organization (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 1A, 1B, 100 or Agricultural and Resource Economics 100A and 100B, or consent of instructor. The study of antitrust and economic regulation. Emphasis on applying theoretical models to U.S. industries and case studies, including telecommunications, software, and electricity markets. Topics include natural monopoly, optimal and actual regulatory mechanisms, deregulation, mergers, predatory pricing, and monopolization. GE credit: ACGH.

#### 122. Theory of Games and Strategic Behavior (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: Mathematics 16A and 16B or 17A and 17B or 21A and 21B or consent of instructor. Introduction to game theory. Explanation of the behavior of rational individuals with interacting and often conflicting interests. Non-cooperative and cooperative theory. Applications to economics, political science and other fields.

#### 125. Efficiency in Energy Markets (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 1A and 1B, Mathematics 16A and 16B and course 102 or consent of instructor; intended for advanced economics undergraduates. Pass One open to Economics and Graduate School of Management majors. Application of theoretical and empirical models to examine efficiency in energy

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production and use. Energy and environmental policy, market structure and power, global climate change, optimal regulation, and real-world applications; e.g., California electricity crisis.

### 130. Public Microeconomics (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Agricultural and Resource Economics 100A and 100B, or consent of instructor. Public expenditures; theory and applications. Efficiency and equity of competitive markets; externalities, public goods, and market failures; positive and normative aspects of public policy for expenditure, including benefit-cost analysis. Topics include consumer protection, pollution, education, poverty and crime.

### 131. Public Finance (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Agricultural and Resource Economics 100A and 100B. Economic burden of taxation; equity and efficiency considerations in tax design; structure and economic effects of the U.S. tax system (including personal income tax, corporation income tax, and property tax); tax loopholes; recent developments; tax reform proposals. Offered irregularly.

### 132. Health Economics (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Agricultural and Resource Economics 100A and 100B; one course from list: course 102, course 140, Agricultural and Resource Economics 106 or Statistics 108; consent of instructor. The health care market, emphasizing the role and use of economics. Individual demand, provision of services by doctors and hospitals, health insurance, managed care and competition, the role of government access to health care. —W. (W.) Cameron

### 133Y. Poverty, Inequality and Public Policy (4)

Web virtual lecture—2 hours; discussion—2 hours. Prerequisite: course 1A or 1B. Class size limited to 99; 3 sections of 33 each. Examination of the economics of poverty and inequality in the United States, including measurement, trends, and related policies. —Stevens

### 134. Financial Economics (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A, 1B, and (100 or Agricultural and Resource Economics 100A and 100B); Mathematics 16A or 17A or 21A; Statistics 13. General background and rationale of corporation; finance as resource allocation over time; decision making under uncertainty and the role of information; capital market and interest rate structure; financial decisions. Students who have completed Agricultural and Resource Economics 171A may not receive credit for this course.

### 135. Money, Banks and Financial Institutions (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or (Agricultural and Resource Economics 100A and 100B), course 101; Statistics 13. Banks and the banking system. Uncertainty and asymmetric information in the lending process; efficiency of competitive equilibrium in lending markets. Regulation and the conduct of monetary policy.

### 136. Topics in Macroeconomic Theory (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 101. Advanced Topics in macroeconomics theory. The course develops the theoretical and empirical analysis of a specific field of macroeconomics. Possible topics include, business cycle theories, growth theory, monetary economics, political economics and theories of unemployment and inflation.

### 137. Macroeconomic Policy (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or (Agricultural and Resource Economics 100A and 100B), course 101; Statistics 13. Theory and practice of macroeconomic policy, both monetary and fiscal.

### 140. Econometrics (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 102, course 100 and course 101; Mathematics 16A and 16B or Mathematics 21A and 21B; Statistics 13, or any upper division Statistics course.

Problems of observation, estimation and hypotheses testing in economics through the study of the theory and application of linear regression models. Critical evaluation of selected examples of empirical research. Exercises in applied economics. Not open for credit to students who have enrolled in or completed Agricultural and Resource Economics 106.

### 145. Transportation Economics (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or (Agricultural and Resource Economics 100A, 100B); Mathematics (16A, 16B) or (17A, 17B); Statistics 13, course 102, 140, Agricultural and Resource Economics 106 or Statistics 108, or consent of instructor. Intended for advanced Economics undergraduates. Examination of fundamental problems of planning and financing transportation "infrastructure" (roads, ports, airports). The economics of the automobile industry, as well as the impact of government regulation and deregulation in the airlines and trucking industries. Offered irregularly.

### 151A. Economics of the Labor Market (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Agricultural and Resource Economics 100A and 100B. Theory of labor supply and demand; determination of wages and employment in the labor market. Policy issues: labor force participation by married women; minimum wages and youth unemployment; effect of unions on wages.

### 151B. Economics of Human Resources (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Agricultural and Resource Economics 100A and 100B. Human resource analysis; introduction to human capital theory and economics of education; the basic theory of wage differentials, including theories of labor market discrimination; income distribution; poverty. Policy issues; negative income tax; manpower training programs; incomes policy.

### 152. Economics of Education (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or (Agricultural and Resource Economics 100A and 100B), course 102; Mathematics 16B or 17B or 21B; Statistics 13 or 32, with grade of C- or better in each course, or consent of the instructor. Application of theoretical and empirical tools of economics to the education sector. Demand for Education; Education Production and Market Structures in Education. Policy applications: class size reduction, school finance equalization, accountability, and school choice. Offered irregularly.

### 160A. International Microeconomics (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or Agricultural and Resource Economics 100A and 100B, or consent of instructor. International grade theory: impact of trade on the domestic and world economies; public policy toward external trade. Only two units of credit allowed to students who have completed course 162.

### 160B. International Macroeconomics (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A, 1B, 100 or (Agricultural and Resource Economics 100A and 100B), course 101, or consent of instructor. Balance of payments adjustment mechanism, international monetary economics issues; international financial institutions and their policies. Only two units of credit allowed to students who have completed course 162.

### 162. International Economic Relations (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A-1B or consent of instructor. International trade and monetary relations, trade policy, exchange rate policy, policies toward international capital migration and investment. Emphasis on current policy issues. Course intended especially for non-majors. Not open for credit to students who have completed course 160A or 160B. GE credit: SocSci | SS, WC.

### 171. Economy of East Asia (4)

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 1A-1B or consent of instructor. Intensive reading, discussion and research on selected topics from the economies of the countries of East Asia. Consult department for course scheduling.

### 190. Topics in Economics (4)

Lecture/discussion—3 hours; discussion—1 hour. Prerequisite: consent of instructor. Selected topics in economic analysis and public policy. Variable content. May be repeated for credit.

### 190X. Upper Division Seminar (1-4)

Seminar—1-4 hours. Prerequisite: courses 100 and 101, and consent of the instructor. In-depth examination at an upper division level of a special topic in Economics. Emphasis on focused analytical work.

### 192. Internship (1-6)

Internship—3-18 hours. Prerequisite: upper division standing; consent of instructor. Internship experience off and on campus in all subject areas offered in the Department of Economics. Supervised by a member of the staff. May be repeated for credit. (P/NP grading only.) GE credit: SE.

### 194HA. Special Study for Honors Students (4)

Independent study—3 hours; seminar—1 hour. Prerequisite: major in Economics with senior standing; consent of instructor and completion of 135 units with a minimum GPA of 3.500 in courses counted toward the major. A program of research culminating in the writing of a senior honors thesis under the direction of a faculty adviser. (Deferred grading only, pending completion of course.)

### 194HB. Special Study for Honors Students (4)

Independent study—3 hours; seminar—1 hour. Prerequisite: major in Economics with senior standing; consent of instructor and completion of 135 units with a minimum GPA of 3.500 in courses counted toward the major. A program of research culminating in the writing of a senior honors thesis under the direction of a faculty adviser. (Deferred grading only, pending completion of course.)

### 197T. Tutoring in Economics (1-5)

Tutorial—3-15 hours. Prerequisite: consent of instructor and chairperson. Undergraduates assist the instructor by tutoring students in one of the department's regularly scheduled courses. May be repeated for up to 10 units of credit. (P/NP grading only.)

### 198. Directed Group Study (1-5)

Prerequisite: consent of instructor. (P/NP grading only.)

### 199. Special Study for Advanced Undergraduates (1-5)

Prerequisite: consent of instructor. (P/NP grading only.)

## Graduate

### 200A. Microeconomic Theory (5)

Lecture—4 hours; discussion—1 hour. Prerequisite: graduate standing. Linear and non-linear optimization theory applied to develop the theory of the profit-maximizing firm and the utility-maximizing consumer. (Same course as Agricultural and Resource Economics 200A.)

### 200B. Microeconomic Theory (5)

Lecture—4 hours; discussion—1 hour. Prerequisite: course 200A. Characteristics of market equilibrium under perfect competition, simple monopoly and monopsony. Emphasis on general equilibrium and welfare economics; the sources of market success and market failure. (Same course as Agricultural and Resource Economics 200B.)

### 200C. Microeconomic Theory (5)

Lecture—4 hours; discussion—1 hour. Prerequisite: course 200B. Uncertainty and information economics. Individual decision making under uncertainty. Introduction to game theory, with emphasis on applications to markets with firms that are imperfect com-

petitors or consumers that are imperfectly informed. (Same course as Agricultural and Resource Economics 200C.)

**200D. Macroeconomic Theory (5)**

Lecture—4 hours; discussion—1 hour. Prerequisite: course 101, Mathematics 21A, 21B, and 21C. Macro static theory of income, employment, and prices.

**200E. Macroeconomic Theory (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200B (may be taken concurrently) and 200D. Macrodynamical theory of income, employment, and prices.

**201A. History of Economic Thought (4)**

Lecture—3 hours; discussion—1 hour. Economic thought from the classical Greece era to modern times. Offered in alternate years.

**201B. History of Economic Thought II (4)**

Lecture—3 hours; discussion—1 hour. Origins and emergence of modern economic analysis. Offered in alternate years.

**203A. Advanced Economic Theory (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200A; 200B. Advanced topics in general equilibrium theory and welfare economics: existence, determinateness and efficiency; intertemporal economies; uncertainty. —W. (W.) Quinzii

**203B. Advanced Economic Theory: Game Theory (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200A, 200B, 200C. Covers the most recent developments in game theory, with the focus changing from year to year. Main topics are: refinements of Nash equilibrium, repeated games, evolution, social situations, bounded rationality, and bargaining theory. —S. (S.) Schipper

**203C. Topics in Economic Theory (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200A, 200B, 200C. Selected topics in contemporary microeconomic theory. May be repeated for credit with the consent of the Graduate Studies Committee.

**210A. Economic History (4)**

Lecture/discussion—4 hours. Economic history of the eastern hemisphere in the modern period. Medieval Europe or other regions may be studied, depending on student interest.

**210B. Economic History (4)**

Lecture/discussion—4 hours. The United States from Colonial times to the present. Other areas of the western hemisphere may be studied, according to student interest.

**210C. Economic History (4)**

Seminar—4 hours. Prerequisite: a graduate course in economic history. Selected topics and issues, emphasis on current research. (Quarter offered to be flexible.) —W. (W.) Meissner

**214. Development Economics (4)**

Lecture—4 hours. Prerequisite: Agricultural and Resource Economics 100A, 100B, course 101; Agricultural and Resource Economics/Economics 204 and course 160A-160B recommended. Review of the principal theoretical and empirical issues whose analysis has formed development economics. Analysis of economic development theories and development strategies and their application to specific policy issues in developing country contexts. (Same course as Agricultural and Resource Economics 214.)

**215A. Microdevelopment Theory and Methods I (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200A or 204; course 240A recommended. Agricultural development theory, with a focus on microeconomics. Agricultural household behavior with and without market imperfections and uncertainty. Analysis of rural land, labor, credit and insurance markets, institutions, and contracts. (Same course as Agricultural and Resource Economics 215A.)

**215B. Open Macroeconomics of Development (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: Agricultural and Resource Economics/Economics 200A or 204, 200D or 205, and 214 or 215A.

Models and policy approaches regarding trade, monetary and fiscal issues, capital flows and debt are discussed in the macroeconomic framework of an open developing country. The basic analytical focus is real exchange rate and its impact on sectoral allocation of resources. (Same course as Agricultural and Resource Economics 215B.)

**215C. Microdevelopment Theory and Methods II (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 215A. Extension of development theory and microeconomic methods. Agricultural growth and technological change; poverty and income inequality; multisectoral, including village and regional models. Computable general equilibrium methods and applications. (Same course as Agricultural and Resource Economics 215C.)

**215D. Environment and Economic Development (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 200A, 204 or Agricultural and Resource Economics 275. Interdisciplinary course drawing on theoretical and empirical research on interactions between environmental resource use and economic development processes. Analysis of issues emerging at the interface of environmental and development economics. (Same course as Agricultural and Resource Economics 215D.) Offered irregularly.

**221A. The Theory of Industrial Organization (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200A, 200B, 200C. Game theory is used to analyze strategic interaction of firms in industries. Topics include models of competition, product differentiation, entry-detering strategies, contractual arrangements, vertical control and antitrust issues. Offered irregularly.

**221B. Empirical Analysis in Industrial Organization (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 221A and 240B. Recent empirical work in industrial organization. Topics include empirical analysis of cartels, product differentiation, innovation and technological change, and imperfect competition in international markets. Offered irregularly.

**221C. Industrial Organization and Regulation (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 221A and 240B. Optimal regulation of natural monopoly. Topics include regulatory mechanisms for single and multiple output firms under symmetric and asymmetric information, optimality without regulation, the economic theory of regulation, and empirical studies of regulation and deregulation.

**230A. Public Economics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200C. Measures of deadweight loss and consumer surplus; optimal commodity and income taxation; tax incidence; policy issues in personal taxation, corporate taxation, and social insurance; the evaluation of effective tax rates.

**230B. Public Economics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 240A, 240B. Effects of government policies on economic behavior; labor supply, program participation, investment, consumption and savings. Offered irregularly.

**230C. Public Economics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200C and 240B. Advanced topics in economics of the public sector, with emphasis on current research. Topics may vary from year to year.

**235A. Macroeconomics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200D or consent of instructor. Frontiers of applied/empirical macroeconomics. Evidence and

lessons from macroeconomic history for The Great Depression, financial crises, efficient markets, parity conditions, capital flows, default, financial crises, exchange rates, growth, and other current empirical research topics. —F. (F.) Taylor

**235B. Macroeconomics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200D or consent of instructor. Search theory, theory of real-world markets characterized by search frictions, with applications: Labor economics: models of unemployment and wages differentials; Financial economics: determination of asset prices in OTC financial markets; Monetary Economics: foundations for money as a medium of exchange. —W. (W.) Geromichalos

**235C. Macroeconomics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200D or consent of instructor. Basic numerical methods for analytically intractable problems in economics. Techniques presented applicable in a wide range of fields including macroeconomics, econometrics, resource economics, labor economics, economic theory, international trade, finance, game theory, public finance, contract theory, and others. —S. (S.) Henriksen

**239. Econometric Foundations (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: graduate standing or consent of instructor. The course will prepare students for econometric theory and empirical work by examining the statistical foundation of econometrics. Special attention is paid to problems specific to non-experimental data common to social sciences. Topics from matrix algebra are also covered. (Same course as Agricultural & Resource Economics 239.) —F. (F.)

**240A. Econometric Methods (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: Statistics 133 and a course in linear algebra or the equivalent. Least squares, instrumental variables, and maximum likelihood estimation and inference for single equation linear regression model; linear restrictions; heteroskedasticity; autocorrelation; lagged dependent variables. (Same course as Agricultural and Resource Economics 240A.)

**240B. Econometric Methods (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 240A. Topics include asymptotic theory and instrumental variables, pooled time-series cross-section estimation, seemingly unrelated regression, classical hypothesis tests, identification and estimation of simultaneous equation models, cointegration, error-correction models, and qualitative and limited dependent variable models. (Same course as Agricultural and Resource Economics 240B.)

**240C. Time Series Econometrics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 240B or consent of instructor. Probability theory; estimation, inference and forecasting of time series models; trends and non-standard asymptotic theory; vector time series methods and cointegration; time series models for higher order moments and transition data; state-space modeling and the Kalman filter. (Same course as Agricultural and Resource Economics 240C.) —W. (W.)

**240D. Cross Section Econometrics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 240B or consent of instructor. Estimation and inference for nonlinear regression models for cross-section data; models for discrete data and for limited dependent variables; models for panel data; additional topics such as bootstrap and semiparametric regression. (Same course as Agricultural and Resource Economics 240D) —F. (F.)

**240E. Topics in Time Series Econometrics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 240C or consent of instructor. Modern econometric techniques for time series data. Expand on topics covered in Economics 240A, 240B and 240C. Contents may vary from year to year. (Same course as Agricultural and Resource Economics 240E.) Offered irregularly.

**240F. Topics in Cross Section Econometrics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 240D or consent of instructor. Modern econometrics techniques for cross-section data. Expand on topics covered in Economics 240A, 240B and 240D. Contents may vary from year to year. (Same course as Agricultural and Resource Economics 240F.) Offered irregularly.

**250A. Labor Economics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 150A-150B or the equivalent. Philosophy, theory and history of American and foreign labor movements; union structure, organization and collective bargaining under changing labor market conditions; current labor market issues. —F. (F.) Stevens

**250B. Labor Economics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 151A or consent of instructor; course 204 or 200A recommended. Microeconomic theory of labor supply and labor demand, estimation of labor supply and demand functions; human capital theory; labor market analysis. —W. (W.) Page

**260A. International Economics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200A or 204. Theory of trade determinants; gains from trade; tariffs and effective protection; economic unions.

**260B. International Economics (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: courses 200D and 200E. Balance of payments adjustment mechanisms; foreign exchange markets' theories of balance of payments policy and international monetary mechanisms. Offered irregularly.

**260CN. International Investment and Trade (4)**

Seminar—4 hours. Prerequisite: course 260A. Analysis of foreign investment and its links to trade; theories of the firm as they relate to firm's export and investment decisions; and an introduction to the political economy of trade policies.

**260D. Topics in International Macroeconomics (4)**

Seminar—4 hours. Prerequisite: course 260B or consent of instructor. Survey of current literature in international macroeconomic theory. Offered irregularly.

**260E. Topics in International Trade (4)**

Seminar—4 hours. Prerequisite: course 260A, 260B. Current literature in international trade theory.

**260F. International Macroeconomic Policy (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 260B. Theory and practice of international macroeconomic policy. Topics include exchange rate regimes, international financial institutions, crises and current topics.

**270A. Economics of Growth (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200D and 200E. Modern theories and empirics of economic growth beginning with the neoclassical theories up to current endogenous growth models. Emphasis on the analysis of human capital and growth, technological innovation, its diffusion and empirical evidence on growth.

**270B. Economics of Growth (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200D and 200E. Empirical analysis of growth patterns and growth models. Emphasis on the relationship between macroeconomic management and long-term growth; the use of foreign capital in accelerating growth and its occasional mishaps; the comparison of growth performance in East Asia and Latin America since WW2; the experiences of centrally-planned economies and transitions to market-based growth; and the transformation from an industrial economy to a knowledge economy.

**270C. Economics of Growth (4)**

Lecture—3 hours; discussion—1 hour. Prerequisite: course 200D and 200E. Institutional bases; politics; contracts and commitment; money and finance; maltrusian dynamics; modern economic growth; transi-

tion of industrialization; dual economies, core and periphery; sources of convergence and divergence; openness and growth; resources, demography, and geography; institutions, imperialism, and class conflicts.

**280. Orientation to Economic Research (2)**

Discussion—2 hours. Course tries to bridge the gap between students' classwork and their subsequent research. It deals with topics such as the origination of a research project, some mechanics of empirical research and hints on the submission of research papers. (S/U grading only.)

**290. Topics in Economics (4)**

Seminar—4 hours. Prerequisite: consent of instructor. Selected topics in economic analysis and public policy, focusing on current research. May be repeated for credit.

**291. Contemporary Economics Seminar (2)**

Seminar—2 hours. Prerequisite: graduate standing in Economics. Seminar series on topics of current interest. May be repeated for credit. (S/U grading only.)—F. S. (F, S.)

**298. Group Study (1-5)**

Discussion—1-5 hours. Prerequisite: graduate standing and consent of instructor. (S/U grading only.)

**299. Individual Study (1-12)**

Prerequisite: consent of instructor and graduate standing. (S/U grading only.)

**299D. Dissertation Research (1-12)**

(S/U grading only.)

**Professional****397. Teaching of Economics (2)**

Lecture/discussion—2 hours. Prerequisite: graduate standing in economics. Teaching of economics: methods of instruction, organization of courses, examination and evaluation procedures. (S/U grading only.)

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ACGH=American Cultures; DD=Domestic Diversity; OL=Oral Skills; QL=Quantitative; SL=Scientific; VL=Visual; WC=World Cultures; WE=Writing Experience

Pre-Fall 2011 General Education (GE): ArtHum=Arts and Humanities; SciEng=Science and Engineering; SocSci=Social Sciences; Div=Domestic Diversity; Wrt=Writing Experience  
Quarter Offered: F=Fall, W=Winter, S=Spring, Su=Summer; 2017-2018 offering in parentheses