ECONOMICS

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Visiting Associate Professors: Linda Bell, John Earle
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The department's purposes are to acquaint students with the economic aspects of modern society, to familiarize them with techniques for the analysis of contemporary economic problems, and to develop in them an ability to exercise judgment in evaluating public policy. There is training for the general student as well as for those who plan careers as economists in civil service, private enterprise, teaching, or research.

The undergraduate program provides an excellent background for those going on to graduate work in the professional schools (for example, business and law) and may also be structured to prepare students for a Ph.D. program in economics. The department's curriculum is an integral part of Stanford's programs in International Relations, Public Policy, and Urban Studies.

The primary objective of the graduate program is to educate students as research economists. In the process, students also acquire the background and skills necessary for careers as university teachers and as practitioners of economics. The curriculum includes a comprehensive treatment of modern theory and empirical techniques. Currently, 25 to 30 students are admitted each year.

The faculty represent a wide spectrum of interests and conduct research on a broad range of topics. Most fields of economics are covered, including comparative institutional analysis, econometrics, economic development, economic history, industrial organization, international trade, labor, macro- and microeconomic theory, mathematical economics, and public finance.

UNDERGRADUATE PROGRAMS

BACHELOR OF ARTS

The department established a new curriculum for the undergraduate program in September 1998 to strengthen students' quantitative skills and their knowledge of the analytical core of economics.

The total number of units required for the major has increased from 60 to 75. Economics 102B is now required for all majors. Students are encouraged to take Economics 102A and 102B before their senior year. The required number of field courses has increased from two to four. There is now greater flexibility in the choice of electives, including upper-division math and statistics.

Of the 75 units required for the major, at least 50 of which must be taken at Stanford, California. Students cannot declare Economics as their major until they have completed Economics 1 with a grade of 'C+' or better.

Students who declared Economics as their major prior to September 1, 1998 may opt to complete their Economics major under the old requirements (see the 1997-98 *Stanford Bulletin*) or under the new requirements listed below.

REQUIREMENTS FOR THE ECONOMICS MAJOR (75 units)

1. Economics 1 (5 units): principles of economics.
2. Economics 102A (5 units): it is recommended that students satisfy this basic statistics requirement before proceeding with the rest of the program. Prerequisite: Mathematics 41 or equivalent.
3. Economics 50 (5 units): basic price theory. Prerequisite: 1 and Economics 50M or Mathematics 51, or passed diagnostic test (administered at the beginning of Economics 50) on multi-variable calculus.
4. Economics 51 and 52 (10 units): intermediate micro- and macroeconomics. Prerequisite: Economics 50.
5. Economics 102B (5 units): econometrics. Prerequisites: Economics 50 and 102A.

Field Courses (must be taken at Stanford, CA) (20 units)—Four courses must be chosen from among Economics 111, 118, 121, 140, 141, 145, 149, 150, 154, 155, 156, 157, 160, 165 (5 units each).

Policy Writing Course (5 units)—This may be taken only after completing Economics 51 and 52, 102B, and at least two field courses.

Electives (20 units)—Choose from Economics courses numbered up to 198, excluding 90 (190) and 91 (191). Up to 10 units may be satisfied by basic math and statistics courses beyond that required in the basic economics courses. For example: Mathematics 41, 43, 51, 52, 53, 103, 104, 113, 114, 115; or Statistics 116 and 200.

OTHER REQUIREMENTS

No courses receiving Department of Economics credit under the preceding requirements may be taken credit/no credit.

A grade point average (GPA) of 'C' or better must be received for all units applied toward the preceding requirements.

To use transfer credit in partial satisfaction of the requirements, the student must obtain written consent from the department's Associate Director of Undergraduate Study, who establishes the amount of credit to be granted toward the department requirements (see the *Information Book for Economics Majors*).

The time limit for satisfactory completion of a course is one year from the date an "incomplete" is given. Students are responsible for seeing that all grades of incomplete are cleared within the time limit.

SAMPLE PROGRAMS

Sample listings of upper-division economics electives may be examined in the department's *Information Book for Economics Majors,* available in the Economics Building, room 136. Sample programs are provided for the following areas of emphasis: (1) liberal arts, (2) pre-business, (3) quantitative, (4) international, (5) political economy and regulation, and (6) preparation for graduate school in economics.

MINORS

Note—The curriculum for the minor in Economics was revised effective September 1, 1998 and the total number of units has increased from 30 to 35.

The minor in Economics has two main goals. The first is to acquaint students with the rudiments of micro- and macroeconomic theory that are required of all majors. The second is to allow students to build basic competence in the application of this theory to two fields of economics of their choosing, and the opportunity to specialize further in any one of

these fields by taking one additional advanced course in the Department of Economics.

COURSE WORK

1. Economics 1 (5 units): principles of economics.
2. Economics 50 (5 units): basic price theory. Prerequisites: 1 and 50M or Mathematics 51, or passed diagnostic test (administered at the beginning of Economics 50) on multi-variable calculus.
3. Economics 51 and 52 (10 units): intermediate micro- and macroeconomics. Prerequisite: Economics 50.
4. Two field courses (10 units) may be chosen from the following list: Economics 102B, 111, 118, 121, 140, 141, 145, 149, 150, 154, 155, 156, 157, 160, 165.
5. One elective (5 units) from Economics courses numbered up to 198, excluding 90 (190) and 91 (191).

OTHER REQUIREMENTS

If the candidate's major requires basic Economics courses (items 1 to 4 above), then half the units that count toward this minor must be made up by taking additional Economics courses towards the minor under items 5 and 6 above.

At least 20 out of the 35 units for the minor must be taken at Stanford in California.

No courses receiving Department of Economics credit under the preceding requirements may be taken credit/no credit. A grade point average (GPA) of 'C' or better must be received for all units applied toward the minor.

Two quarters before degree conferral, students must complete their declaration of the minor no later than the last day of the preceding quarter.

HONORS PROGRAM

The honors program offers an outstanding opportunity for independent research, creativity, and achievement. It is designed to encourage a more intensive study of economics than is required for the normal major, with course and research work of exceptional quality. Honors students participate in an Honors Research Symposium during Spring Quarter, with those nominated for prizes making oral presentations. The honors program requires:

1. Completing all requirements for the major, including Economics 103.
2. Achieving a grade point average (GPA) of at least 3.5 for the 75 units required of the Economics major. See details in the *Information Book for Economics Majors.*
3. Demonstrating completion of those lecture courses (at least two beyond Economics 102B and 103) most relevant for the proposed topic of the honors thesis. (These can be included in the basic 75 units.)
4. Candidates must write an honors thesis in their senior year for up to 10 units of credit (199D). The thesis must be of very high quality and written under the direction of a member of the department or its affiliated faculty. Units of 199D do not count toward the course work requirements for the basic economics major, or in the computation of the GPA requirement for honors. However, the requirement for Economics 101 may be replaced by 5 units of credit for the honors thesis to leave honors students with a total of at least 80 units overall.

Juniors interested in the honors program are urged to attend an informational meeting scheduled by the honors program director each Winter Quarter. At this meeting, students receive information on organizing an honors project and are given details on the Honor's College. Prospective candidates for the honors program must submit an application to the director no later than the end of the second full week of the third quarter before graduation (typically Autumn Quarter of the senior year). Also required, later in the same quarter, is a three-page prospectus that must be approved by the thesis adviser.

GRADUATE PROGRAMS

Graduate programs in economics are designed to ensure that students receive a thorough grounding in the methodology of theoretical and empirical economics, while at the same time providing specialized training in a wide variety of subfields and a broad understanding of associated institutional structures. Toward these ends, the program is arranged so that the student has little choice in the curriculum at the outset but considerable latitude later on.

Students admitted to graduate standing in the department are expected to have a strong background in college-level economics, mathematics, and statistics. Preparation ordinarily consists of a college major in economics, a year-long calculus sequence that includes multivariate analysis, a course in linear algebra, and a rigorous course in probability and statistics.

MASTER OF ARTS

University requirements for the master's degree are described in the "Graduate Degrees" section of this bulletin.

The department does not admit students who plan to terminate their graduate study with the A.M. degree. Students may (but need not) elect this degree in preparation for the Ph.D. degree. A master's option is also available to Ph.D. candidates from other departments.

Admission—Prospective students must have completed the Stanford requirements for an A.B. in Economics or approximately equivalent training. Since students are required to take some of the same courses as Ph.D. candidates, similar preparation in mathematics and statistics generally is expected. Prospective applicants should submit their credentials together with a plan of study to the Director of Graduate Study for approval.

Requirements—A master's program must satisfy the following criteria:

1. Completing, at Stanford, at least 45 units of credit beyond those required for the bachelor's degree, of which at least 40 units must be in the Department of Economics. Economics courses must include 202, 210, and at least two other 200-level courses. Undergraduate courses must be numbered 105 or higher. No seminar courses numbered 300 or above can be counted.
2. Demonstrating competence in empirical methodology at the level of Economics 270. Normally, this is done by including that course in the program of study.
3. Submitting two term papers (or a thesis of sufficient quality). At least one of these papers must be deemed to represent graduate-level work. Normally, this means that it is written in connection with a 200-level course. A maximum of 10 units of credit can be earned for a thesis toward the 45-unit degree requirement.
4. A grade point average (GPA) of 'B' must be maintained for all master's level work. In addition, a grade of 'B-' or better must be earned in each of the two graduate theory courses. All courses must be taken for a letter grade.

DOCTOR OF PHILOSOPHY

University requirements for the Ph.D. are described in the "Graduate Degrees" section of this bulletin.

Admitted students must be adequately prepared in calculus, linear algebra, and statistics (see above). When deemed appropriate, a student may be required to complete the necessary background preparation at Stanford. All students take a common core curriculum at the outset and later branch out into the desired fields of specialization. Well-prepared students should anticipate spending, with some overlap, approximately two years in course work and another two years in seminars, independent study, and dissertation research. The goal is to complete the program in four years, although some types of research programs may require at least five years to complete. The department has a strong commitment to guiding students through the program expeditiously.

Questions and petitions concerning the program and the admissions process should be addressed to the Director of Graduate Study, who has responsibility for administering the graduate program.

Specific requirements are best discussed in two stages, the first consisting of requirements for admission to candidacy and the second involving further requirements for earning the degree.

Admission to Candidacy for Ph.D.—A student may apply for admission to candidacy when the following minimal requirements are met:

1. Successful results on comprehensive examinations in "core economics" (the examinations based on material from Economics 202, 203, 204, and 210, 211, 212), and "Econometrics" (the examination based on material from Economics 270, 271, 272).
2. Completing the requirements in two additional fields from the list below or one such field together with a substantial amount of work toward a minor in a related department approved by the Director of Graduate Study. Advanced fields include comparative institutional analysis, econometrics, economic development, economic history, industrial organization, international economics, labor economics, mathematical economics, monetary theory and advanced macroeconomics, and public finance.

   Each field listed above can be satisfied by completing two courses, although students in some fields may be advised to add a third course, which can then be counted toward the distribution requirement discussed later. All courses (or comprehensive exams, when offered) must be passed with a grade 'B' or better.
3. Completing a "candidacy paper," normally written in conjunction with one of the special fields selected above.

It is expected that the student will meet, and indeed exceed, the above standard by the beginning of the third year of residency. When this is not possible for any reason, the Director of Graduate Study should be consulted as early as possible during the second year. Once it is deemed that the above standards have been met, the student should complete the Application for Candidacy for Degree of Doctor of Philosophy. After approval, candidacy remains valid for five years (although it can be terminated earlier by the department if progress is deficient); it can be renewed or extended beyond this period only under unusual circumstances.

Further Requirements for the Ph.D. Degree—

1. *Additional Course Work:* four other graduate-level courses must be completed. One of these must be from the area of economic history unless that field has already been selected above and, in any event, these courses must be "distributed" in such a way that at least two fields not selected above are represented. In addition, if the special fields consist of econometrics together with mathematical economics, the distribution courses must include at least two from outside these areas. With the approval of the Director of Graduate Study, some of the distribution courses may be drawn from a minor subject, for those choosing that option.
2. *Teaching Experience:* each student must serve as a teaching assistant for at least one quarter. It is strongly recommended that this requirement be satisfied before the final year of residence.
3. *Seminar Participation:* each student is expected to participate in at least two all-year research seminars by the end of the fourth year of residence. Normally, participation in a seminar requires one or more oral presentations and the submission of a research paper (which, however, need not be completely separate from dissertation research).
4. *Ph.D. Dissertation:* the process involves selecting a topic, choosing an appropriate adviser, submitting a prospectus (signed by the adviser) outlining proposed research, selecting a three-member reading committee (usually all from the Department of Economics, although exceptions can be made under certain circumstances), passing the University oral examination at which these three faculty (and two other members of the Academic Council) ask questions about the completed research, and submitting a final draft of the work signed by all members of the reading committee. The student is advised to initiate this process as early as possible.

Ph.D MINOR

To be recommended for the Ph.D. degree with Economics as a minor subject, a student must qualify in three fields of economics, at least one of which must be in the "core economics" sequence. Qualification in these fields is tested in the department's comprehensive written examinations given annually. The standard of achievement in these examinations is the same for minor as for major candidates.

JOINT DEGREE PROGRAMS

The Department of Economics and the School of Law offer a joint program leading to the Ph.D. in Economics and the J.D. degree in Law. See the Stanford University bulletin *Law School* for descriptions of its participation in the joint program.

To qualify, the student's program objectives must clearly justify such a joint program. Decisions are made by the Director of Graduate Study. A student's program in economics must satisfy the same standards as a Ph.D. degree in Economics taken with a minor in Law. It is expected that dissertation research will cross department lines and that members of the dissertation committee will be drawn from both faculties.

Students normally spend the first year full time either in economics or in law and the second year full time in the other department. After the second year, courses in economics and law may be pursued simultaneously.

Other joint programs may be arranged; for example, the Ph.D. in Economics combined with one or two years of study in the School of Law, leading either to the nonprofessional Master of Legal Studies (M.L.S.) degree or the nonprofessional Master of Jurisprudence (J.M.). See the bulletin *Law School* for the requirements. Conversely, a student taking the J.D. in the School of Law may apply for an A.M. in Economics.

FELLOWSHIPS AND ASSISTANTSHIPS

The department awards a number of fellowships for graduate study. Some first-year students are awarded full fellowships, including a stipend and tuition. All students whose record justifies continuation in the program may be assured support for the second through fourth years in the form of employment as a teaching or research assistant. These half-time appointments provide a stipend and tuition allowance. Entering students are not normally eligible for research or teaching assistantships.

Applications should be submitted before January 1 to the department admissions committee.

COURSES

(WIM) indicates that the course meets the Writing in the Major requirements.

1. Elementary Economics—Introduction to the economic way of thinking and the functioning of a modern market economy. The behavior of consumers and firms. Markets for goods and inputs. Analysis of macroeconomic variables: output, employment, inflation, interest rate. Determination of long-run growth and short-term fluctuations. The role of government: regulation, monetary, and fiscal policy. Limited enrollment. GER:3b (DR:9)

5 units, Aut (Taylor)
Win (Clerici-Arias)
Spr (Taylor, Clerici-Arias)

50. Economic Analysis I—Individual consumer and firm behavior under perfect competition. The role of markets and prices in a decentralized economy. Monopoly in partial equilibrium. Economic tools are developed from multi-variable calculus, using partial differentiation and techniques for constrained and unconstrained optimization. Prerequisites: 1, and 50M or Mathematics 51, or passed diagnostic test (administered at the beginning of Economics 50) on multi-variable calculus. GER:2c (DR:4)

5 units, Aut (Levin)
Win (Tendall)

50M. Mathematical Preparation for Economics—(Graduate students register for 150M.) Mathematics preparation for 50 and 102A, for students who either did not pass the diagnostic test for Economics 50 (see above) or who have not taken Mathematics 51. Elements of multivariable calculus, constrained optimization, and matrix algebra. Prerequisite: 1 and Mathematics 41.

5 units, Aut (Russell)
Win (Asmundson)
Spr (Facchini)

51. Economic Analysis II—(Graduate students register for 151G.) Introduction to neoclassical analysis of general equilibrium, welfare economics, imperfect competition, externalities and public goods, intertemporal choice and asset markets, risk and uncertainty, game theory, adverse selection and moral hazard. Multivariable calculus is used. Prerequisite: 50.

5 units, Aut (Meyer)
Win (Russell)
Spr (Kubler)

52. Economic Analysis III—(Graduate students register for 152G.) Growth and fluctuations in the economic system as a whole. National income accounts and aggregate relationships among stocks and flows in markets for goods, labor, and financial assets. Economic growth, inflation, and unemployment. The role of macroeconomic policies in the short and long run. Prerequisite: 50.

5 units, Win (D. Krueger)
Spr (Paal)

90. Introduction to Financial Accounting—(Graduate students register for 190.) Develops the students' ability to read, understand, and use corporate financial statements. Oriented towards the use of financial accounting information (rather than the preparer), and emphasizes the reconstruction of economic events from published accounting reports.

5 units, Aut (Nelson)
Win (Tasker)

91. Introduction to Cost Accounting—(Graduate students register for 191.) The use of internal financial data for managerial decision making.

5 units, Spr (Staff)

93Q. Stanford Introductory Seminar: World of Finance—Preference to sophomores. Focus is on the operation of the world capital markets: stock markets in modern industrialized nations, markets in the NICs (newly industrialized countries), and in emerging market countries (former Third World nations). Financial institutions in the U.S. (stock markets, mutual funds) and how they relate to international markets. Inflation, interest rate trends, U.S. government agencies, and the impact of the Federal Reserve Bank on capital markets and flows. The macroeconomic factors that drive capital flows on a global level.

3 units, Win (Marotta)

99Q. Stanford Introductory Seminar: State, Market, and Development—Preference to sophomores. Development problems in Asia, Latin America, and Africa; development thinking by economists; and the policy relationships between the public and private sector. Focus is on the analytical techniques used by development economists.

5 units, Win (Meier)

101. Economic Policy Analysis—Develops skills in economic policy analysis, writing, and oral presentation. Topics vary with instructor. Limited enrollment. Prerequisites: requirements 4 and 5 above. (WIM)

5 units, Aut (Topper, Bell, David)
Win (Bell, Gould, Smetters)
Spr (Cukierman, Tendall, Perry, Gould)

102A. Introduction to Statistical Methods—Introduction to statistical methods relevant to economics. Emphasis is on the description and examples of the use of statistical techniques. Probability: basic rules of probability, conditional probability, Bayes' rule, discrete and continuous probability distributions. Point estimation, tests of hypotheses, confidence intervals, and linear regression model. Prerequisite: Mathematics 41 or equivalent. GER:2c (DR:4)

5 units, Aut (Slavov)
Win (Amemiya)

102B. Introduction to Econometrics—Descriptive statistics. Regression analysis. Hypothesis testing. Analysis of variance. Heteroskedasticity, serial correlation, errors in variables, simultaneous equations. Prerequisites: 50, 102A or equivalent. Recommended: computer experience.

5 units, Win (Vytlacil)
Spr (Bresnahan)

102C. Advanced Topics in Econometrics—Identification and estimation of the effect of human capital variables on earnings (e.g., the return to education, tenure, etc.), and identification and estimation of labor supply models, focusing on microeconomic data. Topics: instrumental variable estimation, limited dependent variable models (probit, logit, and tobit models), and panel data techniques (fixed effect and random effect models, dynamic panel data models).

5 units, Spr (Pistaferri)

103. Applied Economic Analysis—The construction and use of econometric models for analyzing economic phenomena. Students complete individual projects and core material. Topics vary with the instructor. Limited enrollment. Prerequisites: 52, 102B.

5 units, Aut (Pistaferri)
Win (Rothwell)
Spr (Chun)

106. The World Food Economy—The interrelationships among food, population, resources, and economic development. The role of agricultural and rural development in achieving economic and social progress in low-income nations. Emphasis is on the public sector decision making as it relates to food policy.

5 units, Win (Falcon, Naylor)

111. Money and Banking—The structure of financial markets. The monetary system in the U.S. and other countries. The microeconomics of banking, and the macroeconomic role of banks. Theories of money demand, monetary policy, and monetary models of the macro-economy. Prerequisites: 50, 52.

5 units, Win (Kumhof)
Spr (Cukierman)

113. Technology and Economic Change—The economic causes and consequences of technological change. The historical experience of advanced industrial countries and the more recent experience of less developed economies. Topics: the origins of modern industry in the U.S. and Europe, technology and the growth of large-scale organizations, late-comers to industrialization (Japan and newly industrializing countries), economic growth and slowdown in mature industrial countries, and present concerns and future prospects (the influence of technology on employment, civilian "spillover" from military R&D, and coping with rapid technological change). GER:3b (DR:9)

5 units, not given 2000-01

115. European Economic History—Economic changes and growth in Western Europe from the medieval period to the present. The transformation of Europe from an economically and culturally backward part of the world to the center of the world economy pre-WW I. Topics: attitudes toward technology and science, demography, institutional changes, politics and military technology, and production technology. GER:3b (DR:9)

5 units, Aut (Greif)

116. American Economic History—The history of the U.S. economy from colonial times to the present. The application of economic analysis to historical issues, and the role of historical context in economics. Topics: American economic growth in international perspective; the economics of slavery and regional divergence; the origins and consequence of the "American system" of technology and business organization; recent U.S. economic performance in historical perspective. Prerequisite: 1. GER:3b,4b (DR:3 or 9)

5 units, Win (Wright)

118. The Economics of Development—The economic problems and policy concerns of developing economies. Theories of economic growth and development, inequality and poverty, agriculture and rural development, fertility, education, the economic role of family. Focus is on economic models rather than case studies. Prerequisite: 51. GER:4a (DR:2)

5 units, Aut (Chun)

120. Socialist Economies in Transition—Privatization, restructuring, and institutional change in Eastern Europe and the former Soviet Union. Analysis of property rights, corporate governance, incentives, and resource allocation in socialist and transitional economies. Emphasis is on liberalization and privatization policies (including mass and voucher programs) as the primary instruments to induce changes in behavior.

5 units, Aut (Earle)

121. Development Economics, with Special Reference to East Asia—The macroeconomic aspects of economic development: structural transformation, resource utilization, mobilization, and allocation; the sources of economic growth; intersectoral transfers; the role of the external sector; money and finance in development; stabilization in closed and open economies; strategies for economic development; the role of intangible capital; and endogenous technical progress. Illustrations from the economic development experience of E. Asia, including Japan, China, Hong Kong, S. Korea, Singapore, Taiwan, Indonesia, Malaysia, Philippines, Thailand, etc. Prerequisite: 52. GER:4a (DR:2)

5 units, Spr (Lau)

124. The Economy of Japan—Analysis of the economic institutions of the Japanese economy in comparative and historical perspective. Firms, the employment system, corporate governance and financial institutions, the political economy. Elementary applications of game theory and other analytical tools. Prerequisite: 50. GER:4a (DR:2)

5 units, not given 2000-01

137. Information and Incentives—Focus is on the provision of incentives in situations where one part has more information than another. A part may have better information about things that it controls (moral hazard), or about things that are outside of its control (adverse selection). In the former, well-structured contracts give the party incentives to exercise control in a mutually beneficial way. In the latter, contracts should give the party incentives to reveal its private information truthfully. The general structure of incentive problems and the design of contracts and institutions to deal with such problems. Applications (time permitting): executive and employee compensation in firms, sharecropping, financial contracts and credit rationing, insurance, markets with unobservable quality, monopolistic price discrimination, regulation of natural monopolies, income taxation and redistribution, the provision of public goods, and auctions. Prerequisite: 51.

5 units, Spr (Segal)

138. Risk and Insurance—Insurance affects a large part of the American economy: life insurance and pension funds provide financial capital for the private sector; health insurance funds the 14 percent of GNP spent on medical services. Economic analysis, theoretical and empirical, provides an understanding of how the insurance markets function, how and why they are regulated, and how they might be improved. The organization of the various parts of the insurance industry and the public policy issues concerning earthquake, health, auto, and environmental risk insurance. Insurance-like devices consumers use to affect risk, such as product guarantees, or preventive and precautionary activities. Prerequisite: 50.

5 units, Win (Smetters)

139D. Directed Reading and Research

1-10 units (Staff)

140. Financial Economics—Introduction to modern portfolio theory and corporate finance. Topics: properties of various financial instruments, including financial futures, mutual funds, the "Capital Asset Pricing Model," and models for pricing options and other contingent claims. Prerequisites: 50, at least one course in regression analysis.

5 units, Aut (Shoven)
Spr (Kubler)

141. Public Finance and Fiscal Policy—What role should and does government play in the economy? What are the effects of government expenditure, borrowing, and taxation? Policy topics: budget surpluses/deficits; tax reform; social security, public goods, and externalities; fiscal federalism; public investment; and cost-benefit analysis. Prerequisites: 51, 52.

5 units, Aut (Smetters)
Spr (Boskin)

142. The Political Economy of the Federal Budget—(Enroll in Public Policy 196.)

5 units, Win (Cogan)

143. Ethics in Economics: Equity, Efficiency, and Rights—Introduction to ethical decision theory from an economist's viewpoint, emphasizing the role of markets in an economic system. Concepts of equity, efficiency, and rights. Measuring economic performance. Formulating objectives for economic policy. The benefits and costs of market liberalization. Prerequisites: 50M, 50, 51, or Mathematics 51.

5 units, Spr (Hammond)

145. Economics of Labor—Analysis and description of labor markets. Determination of employment, unemployment, hours of work, wages. Welfare programs and work effort. Wage differentials by schooling, experience, gender, and race. Economics of discrimination. Earnings inequality and changes in inequality. Employment contracts, labor unions, and bargaining. International comparisons. Prerequisites: 50, 102B. GER:4c (DR:†)

5 units, Win (Pencavel)

147. Economics of Human Resources—Investments in human capital including education, on-the-job training, government training, and health. The effects of human capital accumulation on wages and wage growth and on wage differentials by gender and race. Sample selections. Experimental data. Poverty and inequality. Optional research project for public policy organization on labor market/human resources issues. Prerequisite: 51.

5 units, not given 2000-01

148. Urban Economics—The economics of urban areas. Costs and benefits of cities, city location, land rent and land use, suburbanization, zoning, poverty, housing and segregation, homelessness, local government finance, transportation, schools, and crime. Prerequisites: 50, 102A.

5 units, not given 2000-01

149. The Firm in Theory and Practice—Theoretical and institutional analysis of modern corporate firms: industrial relational, motivational, financial, information structural, managerial, and legal. The role of various hybrid institutional forms between the market and the integrated firm: subcontracting, franchising, R&D cooperatives, and consortia. Practices in American, Western European, and Japanese firms. Prerequisite: 51.

5 units, not given 2000-01

150. Economic Analysis I—(Same as Public Policy 104.) The relationship between microeconomic analysis and public policy making. How economic policy analysis is done and why political leaders regard it as useful but not definitive in making policy decisions. Economic rationales for policy interventions, methods of policy evaluation and the role of benefit-cost analysis, economic models of politics and their application to policy making, and the relationship of income distribution to policy choice. Readings: the theoretical foundations of policy making and

policy analysis, and applications to the adoption and implementation of programs in several areas. Prerequisite: 51.

5 units, Win (Noll)

150M. Mathematical Preparation for Economics—See 50M.

151. Economic Analysis II—See 151.

152. Economic Analysis III—See 152.

153. Economics of the Internet—Applications of microeconomic theory to Internet businesses: auctions, online transactions, entry barriers, valuation, pricing of facilities, policy for broadhand communications, network economics, standards, economics of information. Prerequisites: 51 and at least one of 102B, 103, 104, 113, 135, 137, 140, 149, 157, or 160.

5 units, Aut (Hall, Rosston)

154. Economics of Legal Rules and Institutions—Description and analysis of the existence, design, and consequences of legal rules. Topics: common ideas that run through diverse areas of law, including individual rationality, economic efficiency, conventional and Coasian analyses of externalities, enforcement, costs, and market consequences of legal restrictions on contract terms. Private vs. public enforcement of law, the tradeoff between certainty and severity of punishment, the choice between ex post and ex ante sanctions, and the choice between property and liability rules. Applications: property, intellectual property, contract, criminal, tort, family, and environmental law. Prerequisite: 51.

5 units, Aut (Polinsky)

155. Environmental Economics and Policy—(Same as Earth Systems 112.) The economic sources of environmental problems and the alternative policies for dealing with them (technology standards, emissions taxes, and marketable pollution permits). An evaluation of the policies addressing regional air pollution, global climate change, water allocation in the western U.S., and the use of renewable resources. The connections between population growth, economic output, environmental quality, and human welfare. Prerequisite: 50.

5 units, Spr (Goulder)

156. Economics of Health and Medical Care—(Graduate students register for 256; same as Health Research and Policy 256, Biomedical Informatics 256.) Graduate students with research interests should take 248. Institutional, theoretical, and empirical analysis of the problems of health and medical care. Topics: institutions in the health sector; measurement and valuation of health; nonmedical determinants of health; medical technology and technology assessment; demand for medical care and medical insurance; physicians, hospitals, and managed care; international comparisons. Prerequisite: 50 and 102A or equivalent statistics, or consent of instructor. Recommended: 51.

5 units, Win (McClellan)

157. Imperfect Competition—Extends and develops the basic tools of price theory in the context of U.S. industrial market structure. The application of theoretical models and concepts to the behavior of firms and markets when the conditions of perfect competition are not satisfied. Topics: monopoly, oligopoly, monopolistic competition, concentration measures, international competition, advertising, innovation, externalities, economies of scale, and the role of information in markets. Prerequisite: 51.

5 units, Aut (Bajari)

158. Antitrust and Regulation—The history, economics, and legal background of the institutions under which U.S. industry is subject to government control. Topics: antitrust law and economics; the economics and practice of public utility regulation in the communications, transportation, and energy sectors; and the effects of licensing. Emphasis is on the application of economic concepts in evaluating the performance and policies of government agencies.

5 units, Spr (Noll, Bresnahan)

160. Game Theory and Economic Applications—Mathematically rigorous introduction to game theory and its applications to economics. Topics: strategic and extensive form games, Nash equilibrium, subgame-perfect equilibrium, Bayesian equilibrium, and Perfect Bayesian Equilibrium. The theory is applied to repeated games, auctions, and bargaining. Examples from economics and political science. Prerequisites: 51 and one rigorous course in calculus, or consent of instructor.

5 units, Win (Tadelis)

162. Monetary Economics—Dynamic analysis of the role of money and monetary policy in the macro economy, using calculus. Topics: the exchange process and the role of money; inside and outside money; inflation and the inflation tax; international monetary systems; the indeterminacy of floating exchange rates; policies to fix the exchange rate and inflationary incentives; currency crises and speculative attacks; money and interest-bearing government debt; the government's budget constraint and the coordination of monetary and fiscal policies; hyperinflations and stabilizations; the effect of the national debt on consumption, savings, investment and output; time consistency of government policies. Prerequisites: 51, 52, 111.

5 units, Aut (Paal)

165. International Economics—Comparative advantage in production and trade among nations; trade policy; increasing returns, imperfect competition and trade; the international monetary mechanism; domestic monetary, fiscal, and exchange rate policies and their relationship to foreign trade; global financial crises and trade. Prerequisites: 1, 51, 52.

5 units, Win (Kumhof)
Spr (Razin)

169. International Financial Markets and Monetary Institutions—(Graduate students register for 269.) How nations interact to ensure that international trade is monetized and multilateral rather than bartered and bilateral. Hedging exchange and interest rate risks: selection of currencies of invoice and trade credit; parity relationships among futures, swaps, and options contracts. The exchange rate and the trade balance. Regulating excess volatility in exchange rates and capital flows. Alternative international monetary standards from gold to the dollar to the European Monetary System. Prerequisite: 165. Recommended: knowledge of money and banking.

5 units, Spr (McKinnon)

170. Intermediate Econometrics I—(Same as 270.)

5 units, Aut (Amemiya)

171. Intermediate Econometrics II—(Same as 271.)

5 units, Win (Goldberger)

172. Intermediate Econometrics III—(Same as 272.)

5 units, Spr (MaCurdy)

181. Optimization and Economic Analysis—The development of optimization techniques, including calculus, linear and nonlinear programming, the calculus of variations, and control theory. Emphasis is on concepts and results rather than techniques and proofs. Examples: static and dynamic theories of the household and the firm, and problems in aggregative planning and control. Prerequisites: 51 and 102A, Mathematics 51 or equivalent.

5 units, Win (Hammond)

190. Introduction to Financial Accounting—See 90.

191. Introduction to Cost Accounting—See 91.

198. Junior Honors Seminar
5 units, Spr (Rothwell)

199D. Directed Reading and Research—Honors. In-depth study of an appropriate question and completion of a thesis of very high quality. Normally written under the direction of a member of the Department of Economics (or a member of some closely related department). See description of honors program. Register for at least 1 unit for at least one quarter. Meets first week of Autumn Quarter (see *Stanford Daily* for details).
1-10 units, Aut, Win, Spr (Rothwell)

PRIMARILY FOR GRADUATE STUDENTS

350. A.M. Thesis
by arrangement

400. Ph.D. Dissertation
by arrangement

A. CORE ECONOMICS

202. Core Economics I—Theory of the consumer and the implications of constrained maximization; uses of indirect utility and expenditure functions; theory of the producer, profit maximization, and cost minimization; behavior under uncertainty; partial equilibrium analysis and and introduction to models of general equilibrium. Prerequisite: thorough understanding of the elements of multivariate calculus and linear algebra. Limited enrollment. Prerequisite for advanced undergraduates: consent of instructors.
5 units, Aut (Rangel, Kubler)

203. Core Economics III—Noncooperative game theory including normal and extensive forms, solution concepts, games with incomplete information, and repeated games. Externalities and public goods: an introduction to mechanism design. The theory of imperfect competition: static Bertrand and Cournot competition, dynamic oligopoly, entry decisions, entry deterrence, strategic behavior to alter market conditions. Limited enrollment.
5 units, Win (Bernheim)

204. Core Economics V—The theory of resource allocation over time, competitive equilibrium and intertemporal efficiency, capital asset pricing models, equilibrium with securities, pricing of securities and arbitrage. Overlapping generations models with incomplete market structure and sunspots. Limited enrollment. Prerequisite: 203.
5 units, Spr (Kurz)

210. Core Economics II—Dynamic economics applied to aggregate economic fluctuations and economic growth. Solving dynamic, stochastic rational expectation models using discrete time dynamic programming. Growth theory (neoclassical models, growth accounting, technical change, endogenous growth) using optimal control theory. Limited enrollment.
5 units, Aut (D. Krueger)

211. Core Economics IV—Monetary theory: evidence on the nature of economic fluctuations, the role of money (overlapping generations, cash in advance, money in the utility function), the dynamic impact of changes in money on the economy, the natural rate of unemployment and job creation/destruction, exchange rate determination, international transmission of money, dynamic stochastic general equilibrium models. Macroeconomic policy: theoretical rationale or central bank independence, time inconsistency, the impact of public debt, rules vs. discretion, interest rate vs. money rules, international monetary policy coordination, rational expectations econometric policy evaluation. Limited enrollment.
5 units, Win (Hall)
Spr (Tadelis)

212. Core Economics VI—The theory of contracts, emphasizing contractual incompleteness and the problem of moral hazard. Incentive regulation. Competition with imperfect information, including signaling and adverse selection. Investment theory and empirics, including adjustment costs and the q theory; consumption theory and empirics, focusing on the life-cycle model; and the labor market. Limited enrollment.
5 units, Spr (Taylor)

301A,B,C. Workshop in Microeconomics
10 units (Staff)

310A,B,C. Workshop in Macroeconomics
10 units (Staff)

B. ECONOMIC DEVELOPMENT

To receive comprehensive credit in the field, students must complete any two from 214, 216, and 217 and submit an additional paper. Students wishing to do research in the field are strongly advised to take all three courses in development, as well as courses in international economics, such as 266, and comparative institutional analysis.

214. Microeconomic Issues in Economic Development—Micro-economic problems of developing economies, emphasizing the rural agrarian. Topics: determination of income, models of savings, role of the household, and issues relating to health, nutrition, and education. Emphasis is on empirical tests of theoretical models and empirical evidence on these issues.
5 units, Win (A. Krueger)

216. The Macroeconomics of Economic Development and Growth—The historical experience of economic development; patterns of economic growth; sources of economic growth; models of economic development (two-gap models, dual economy models, open economy models, "new" growth models), savings and capital accumulation; the role of money and finance; inflation; taxation; stabilization in closed and open economies with incomplete and/or imperfect markets; human and other forms of intangible; capital infrastructural capital and externalities; income distribution; numerical general equilibrium models.
5 units, Spr (Lau)

217. Money and Finance in Economic Development—Banking systems, interest rates, regulatory policies, and the productivity of capital in developing countries. Controlling inflation: fiscal and monetary policies for macroeconomic stability. Currency crises, exchange rates, and the liberalization of foreign trade. Further applications to transitional socialist economies in Asia and Eastern Europe.
5 units, Aut (McKinnon)

267. Special Topics in International Economics—See section 'H' below.
5 units, Spr (A. Krueger)

315A,B,C. Workshop in Economic Development
10 units (Staff)

C. ECONOMIC HISTORY

The requirements for the field are: (1) a comprehensive exam in Spring Quarter based on material from at least two of the courses listed below, and (2) one research paper on a subject approved by one of the faculty teaching any of the following five courses.

224. Science and Technology in Economic Growth—Upper-division undergraduates may attend with consent of instructor. The roles played by the growth of scientific knowledge and technical progress in the development of industrial societies. Emphasis is on the interactions between science and technology, and the organizational factors which have influenced their effectiveness in contributing to productivity growth.
5 units, not given 2000-01

225. Technology, Economy, and Society—Determinants and consequences of technological innovations in the economic history of the West from the 9th to the 19th centuries. Selected "clusters" of technical innovations in production and warfare are examined for the determinants of the rate and bias of innovative activity, economic and cultural conditions governing diffusion, and the problems of identifying and measuring primary and second-order economic consequences.

5 units, not given 2000-01

226. Problems in American Economic History—The American economy from colonial times to the present. The role of economic history as a distinctive intellectual approach to the study of economics. Topics: American growth record and its determinants, the origins and character of U.S. technology, slavery, the Great Depression, recent U.S. performance in historical perspective.

5 units, Aut (David)

227. European Economic History—Economic growth and development in Western Europe from the 11th to the 20th centuries, emphasizing the formative period up to the 19th century. Emphasis is on the experiences of Britain, France, Germany, and Italy. The interrelations between the growth and distribution of output, demographic trends, technological and organizational changes in trade and industry, and the changing formal and informal institutions governing political and economic activity.

5 units, not given 2000-01

228. Institutions in Economic History: Form, Function, and Evolution—See 294.

5 units, Win (Greif)

325A,B,C. Workshop in Economic History

10 units (Staff)

D. MONETARY THEORY AND ADVANCED MACROECONOMICS

Requirements for the field are successful completion of 233 and 234.

233. Advanced Macroeconomics I—Topics in the theory of fluctuations and growth.

5 units, Aut (Stiglitz)

234. Advanced Macroeconomics II—Topics in the theory of fluctuations and growth.

5 units, Spr (Paal)

235. Advanced Macroeconomics III—Topics in the theory of fluctuations and growth.

5 units, Win (D. Krueger, Pistaferri)

E. PUBLIC FINANCE

To receive credit for the field, students must complete 241 and 242 by passing the final examinations, and submit an acceptable research paper on a topic approved by the instructor for either course.

241,242. Public Finance and Taxation I and II—Normative and positive tax policy. Tax incidence and efficiency, corporation financial policy, expenditure evaluation, social insurance, and public goods.

241. *5 units, Win (Boskin, Rangel)*

242. *5 units, Spr (Rangel, Shoven)*

243. Economics of the Environment—Upper-division undergraduates may attend with consent of instructor. Analysis of the sources of environmental problems in market economies and of policy options for addressing these problems. Topics: choice of policy instruments (taxes, standards, tradeable permits), environmental risk assessment, valuation of non-marketed commodities (environmental amenities, biodiversity), environmental policy making under uncertainty, the optimal mix of corrective and distortionary tax instruments, and the dynamics of economic growth in the presence of non-reproducible natural resources.

5 units, Aut (Goulder)

341A,B,C. Workshop on the Economics of the Public Sector—Issues in measuring and evaluating the economic performance of government tax, expenditure, debt, and other policies; their effects on private economic activity, saving, investment, labor supply, etc.; alternative policies and methods of evaluation. Workshop format combines student research, faculty presentations, and guest speakers. Prerequisite: 241 or consent of instructor.

10 units (Staff)

354A,B,C. Workshop in Law and Economics

6 units, Win, Spr

F. ECONOMICS OF LABOR

To receive credit for the field, students must successfully complete two from 246, 247, and 248.

246. Labor Economics I—The demand for workers and hours of work, substitution among different types of labor in production, technological change, adjustment costs, restrictions on layoffs. The supply of labor, hours of work, participation, life-cycle models of behavior, welfare programs. Wage differentials by schooling, age, cohort, gender, and race. Changes in these wage differentials and differences across countries. Economics of discrimination. Employment contracts and turnover. Models of labor union behavior. Bargaining. Worker-owned enterprises. Unemployment and mobility. International comparisons.

5 units, Win (Pencavel, MaCurdy)

247. Labor Economics II—The economics and econometrics of program evaluation. The impact of public policies on labor demand, labor supply, human capital and wage determination. Social, natural, and quasi-experiments.

5 units, Spr (Pistaferri)

248. Health, Medical Care, and Aging—Introduction to current research and policy issues in the economics of health, medical care, and aging. Topics: technological change; demand for medical care; behavior of physicians, hospitals, and health plans; analysis of insurance markets; effects of health and health insurance on labor supply; health risks and individual behavior; economic demography; political economy of the health care sector. Emphasis is on the development and estimation of microeconomic models.

5 units, not given 2000-01

345A,B,C. Workshop on Economics of Factor Markets

10 units (Staff)

G. ECONOMICS OF INDUSTRY

To receive credit for the field, students must successfully complete 257 and 258 and submit one research paper, the subject of which has been approved in advance by one of the faculty teaching 257, 258, or 260.

256. Economics of Health and Medical Care—See 156.

257,258. The Economics of Industry, Regulation, and Firm Organizations I and II—Theoretical and empirical analyses of the determinants of market structure; firm behavior and market efficiency in oligopolies; theory and practice of pro-competitive government policies; the relationship of product quality and technological innovation to market structure; government regulation of business; public utilities, regulated competition, licensing, product and worker safety, environmental protection; the political economy of business policies.

257. *5 units, Aut (Wolak)*

258. *5 units, Win (Noll, Bresnahan)*

260. Special Topics in Industrial Organization and Regulation—Focused, in-depth study of issues of current research and policy interest: empirical tests of oligopoly theories; dynamics of change in regulatory policy; theory of economic institutions; antitrust status of joint ventures; and use of capacity, innovation, and product variety as a barrier to entry. Significant research issues that remain unresolved and promising ways to attack them.

5 units, Spr (Bernheim, Noll, Wolak)

262. Experimental Methods of Institutional Analysis—Use and design of laboratory methods to test theories of individual behavior in various institutional settings, including markets, small groups, and political processes. Readings/lectures on methods of experimental research and the current state of research findings, and individual research projects in which students design and run an experiment.

3 units, not given 2000-01

303A,B,C. Workshop in the Economics of Science and Technology—Sponsored by the department and the Center for Economic Policy Research. Focus is on applied studies and policy issues relating to the resource allocation and organization of basic science and engineering research, commercialization of scientific knowledge, diffusion of technological and organizational innovations, and impacts on productivity and economic welfare in the U.S. and other industrially advanced economies.

10 units, Aut, Win, Spr (Staff)

355A,B,C. Workshop in Industrial Organization, Regulation, and Applied Microeconomics—Working seminar on current research in the field by visitors, presentations by students, and structured discussion of recent papers. Students are required to write an original research paper, make a formal seminar presentation, and lead a structured discussion.

10 units, Aut, Win, Spr (Staff)

358A,B,C. Workshop in Political Economics and Collective Choice—Offered in collaboration with the Graduate School of Business and the Department of Political Science. Multidisciplinary working seminar on current topics in the mechanisms of social choice, political processes, and the politics of economic policy. Participants are required to undertake an original research project, approved by the instructors, and to make an oral presentation.

10 units, Aut, Win, Spr (Staff)

H. INTERNATIONAL ECONOMICS

To receive comprehensive credit in this field, students must complete 265 and 266 and one additional paper. Special topics courses 267 and 269 are strongly recommended. For students doing research in the field, further supporting courses are found in the fields of economic development, industrial organization, and public finance.

265. Open Economy Macroeconomics—Empirical evidence on purchasing power, parity, and capital mobility. The intertemporal approach to the current account. Monetary economies under fixed or flexible exchange rates, and under flexible, sticky, or backward indexed domestic prices. Sterilization. Capital controls. Currency substitution and dollarization. Balance of payments crises, fundamentals driven or self-fulfilling. Empirical models of floating exchange rates. Exchange rate target zones. Continuous time stochastic models of flexible exchange rates.

5 units, Aut (Kumhof)

266. International Trade Theory—The determinants of trade and comparative advantage. Trade with imperfectly competitive markets. Income distribution and the gains from trade. Commercial policies: tariffs and quotas. Political economy of trade.

5 units, Win (Razin)

267. Special Topics in International Economics—Financial/currency crises. Intertemporal trade and growth. Exchange rate regimes, capital flows, and growth.

5 units, Spr (A. Krueger)

269. International Financial Markets and Monetary Institutions—See 169.

5 units, Spr (McKinnon)

365A,B,C. Workshop in International Economics

10 units (Staff)

I. ECONOMETRICS

All Ph.D. students are required to take 270, 271, and 272.

To receive credit in the econometrics field, students must complete 273, and either 274 or 275.

270. Intermediate Econometrics I—Probability, random variables, and distributions; large sample theory; theory of estimation and hypothesis testing. Prerequisites: math and knowledge of probability at the level of Chapter 2, Paul G. Hoel, *Introduction to Mathematical Statistics*, 5th ed. Limited enrollment.

5 units, Aut (Amemiya)

271. Intermediate Econometrics II—Linear regression model, relaxation of classical-regression assumptions, simultaneous equation models, linear time series analysis. Limited enrollment. Prerequisite: 270.

5 units, Win (Wolak)

272. Intermediate Econometrics III—Continuation of 271. Nonlinear estimation, qualitative response models, limited dependent variable (Tobit) models. Limited enrollment. Prerequisite: 271.

5 units, Win (MaCurdy)

273. Advanced Econometrics—Parametric large sample theory for M-estimators; semi-parimetic and non-parametric methods; simulation; estimation. Prerequisites: 272, Mathematics 113.

5 units, Aut (Wolak)

274. Limited Dependent Variables—Discrete choice models; Tobit models; Markov chain and duration models. Prerequisite: 273 or consent of instructor.

5 units, Win (Vytlacil)

275. Time Series—Stochastic processes in the time and frequency domain. Time and frequency domain estimation. Unit roots, co-integration, time-varying conditional second moment models, instrumental variables estimation of dynamic models.

5 units, Spr (Sargent)

276. Special Topics in Econometrics—Possible subjects: robust estimation, stochastic control, prediction theory, Bayesian analysis, factor analysis, pooling of time series and cross section data. Prerequisite: 273.

5 units

370A,B,C. Workshop in Econometrics

10 units (Staff)

J. MATHEMATICAL ECONOMICS

To receive credit in the mathematical economics field, students must complete two courses from 280, 281, 282, 284, 286, or 287.

280. Welfare Economics—Social choice theory with and without interpersonal comparisons, Pareto efficiency with public goods, externalities, and non-convexities, potential Pareto improvements. Private information, incentive constraints, and mechanism design. Welfare measurement, cost benefit analysis, and analysis of economic policy reform.

5 units, Win (Hammond)

281. Economics of Uncertainty—Decisions under uncertainty with objective and subjective probabilities: the Savage, Anscombe-Aumann, and consequentialist approaches. State dependence. Application to game theory. Nonexpected utility and other alternative models. The role of security markets in the general equilibrium allocation of risk. Models of insurance markets.

5 units, not given 2000-01

282. Economics of Information—Incompleteness of insurance and financial markets. Restricted participation. Existence, indeterminacy, and constrained inefficiency of competitive equilibrium. Sunspots. Asymmetric information: moral hazard, adverse selection, and signaling in market environments. Common knowledge and the absence of trade. Prerequisites: 202, 203, 204, or consent of instructor.

5 units, not given 2000-01

284. Topics in Dynamic Economics—The principle of optimality, discounted dynamic programming under certainty and uncertainty, and applications in economics. Bayesian models of learning and expectation formation. Theory of Rational Beliefs and Endogenous Uncertainty. Develops the extensive mathematical tools used in applications.

5 units, Win (Kurz)

286. Game Theory and Economic Application—Non-cooperative games, games in extensive and normal forms, games with incomplete information, Nash equilibrium, rationalizability, and refinements. Applications and current selected research.

5 units, Spr (Levin)

287. General Equilibrium Theory—Existence, efficiency, and Walrasian equilibrium in exchange economies. Production, financial markets, incomplete markets, sequence economies with infinitely-lived agents. Prerequisites: 202, 203, 204, or consent of instructor.

5 units, Aut (Kubler)

288. Computational Economics—Computational approaches to solving economic problems. Overview of numerical analysis. Economic problems in computationally tractable forms, and the use of numerical analysis techniques to solve them. Examples of problems solved numerically (general equilibrium models, optimal taxation, dynamic programming, economic growth, life-cycle models, intervention in commodity markets, Bayesian econometrics, equilibria of dynamic and repeated games, and nonlinear rational expectations equilibria with asymmetric information). Prerequisite: equivalent of first-year graduate core economics sequence.

5 units, Aut (Judd)

290. Multiperson Decision Theory—Review of working papers, emphasizing methods of game theory and topics in mathematical economics that use game-theoretic models. The effects of differences in information, limitations on observability and contracts, etc., on strategic behavior. Prerequisites: two courses from the Choice Theory/Mathematics Economics sequences, or consent of instructor.

5 units, not given 2000-01

385A,B,C. Workshop in Mathematical Economics

10 units (Staff)

386. Interdisciplinary Seminar on Conflict Resolution—(Same as Law 611, Management Science and Engineering 459, Psychology 283.) Addresses problems of conflict resolution and negotiation from an interdisciplinary perspective. Presentations by faculty and by scholars from other universities.

1-2 units, Win (Alexander, Arrow, Ross, Wilson)

K. COMPARATIVE INSTITUTIONAL ANALYSIS

To receive credit for this field, students are required to take 291 and then select at least one of: 292, 293, or 294. Students expecting to make Comparative Institutional Analysis their primary field are also required to take the workshop (391).

291. Contracts and Organizations—General issues and recent developments in the theory of contracts. Topics: mechanism design, hidden information and hidden action models; contracting with many agents; problems with dynamic agency, renegotiation and commitment; incomplete contracts, and applications of contract theory to theories of the firm and organizational design. Prerequisites: 202 and 203, or consent of instructor.

5 units, Aut (Segal)

292. Comparative Analysis of Institutions and Organizations—Game theoretic (classic and evolutionary analysis of institutions as multiple equilibria. Norms, social embeddedness, organizations as conventions, contract enforcement and corporate governance mechanisms, and states. Institutional complementaries and diachronic institutional linkage.

5 units, not given 2000-01

293. Advanced Topics in Contracts and Organizations—Recent developments and promising research directions in contracts and organizations. Topics: reputational concerns, implicit contracts in long-term relationships, contractual solutions to the hold-up problem, property rights and the theory of the firm, multilateral contracting. Prerequisite: 291 or consent of instructors.

5 units, Spr (Segal, Tadelis)

294. Institutions and Organizations in Historical Perspective—(Same as 228.) Description and analysis of institutions and organizations in the Western historical experience, emphasizing the formative period from the 11th to the 18th centuries. Discussion of the formation, function, and evolution of institutions highlights alternative conceptual frameworks (neoclassical, transaction cost economics, institutionalism, and Marxism and neo-Marxism), while utilizing game theory, mechanism design, contract theory, etc. Topics: institutions related to trade organization, the organization of production, feudalism, mercantilism, and the state.

5 units, Win (Greif)

391A,B,C. Seminar in Comparative Institutional Analysis

10 units (Staff)

OVERSEAS STUDIES

The following courses are approved for the Economics major and taught overseas at the campus indicated. Students are encouraged to discuss with their major advisers on campus which courses would best meet individual educational needs. Descriptions can be found in the "Overseas Studies" section of this bulletin or in the Overseas Studies Program office, 126 Sweet Hall.

BERLIN

115X. The German Economy: Past and Present

4-5 units, Aut (Klein)

BUENOS AIRES

162X. Themes in the Political Economy of Argentina

5 units, Spr (Canitrot)

MOSCOW

120X. Economic Reform and Economic Policy in Modern Russia

5 units, Aut (Mau)

OXFORD

168X. Path Dependence of Science and Technology since the Industrial Revolution

5 units, Spr (David)

PUEBLA

118X. Developmental Macroeconomics: The Mexican Case—(Same as Overseas Studies 114X.)
5 units, Win (Cárdenas)

SANTIAGO

160X. Latin America in the International Economy
5 units, Win (DiFilippo)

165X. Latin American Economies in Transition—(Same as Overseas Studies 130X.)
5 units, Aut (Muñoz)