EARTH SCIENCE

See Geological Sciences.

ECONOMICS

College of Business and Graduate School of Business Administration

201. Introduction to Microeconomics
Fall, Winter, Spring, Summer. 4(4-0)
Open to freshmen. Not open to students who have credit in EC 251H or EC 310.
Economic institutions, reasoning and analysis: Consumption, production, determination of quantity and price in different markets, income distribution, market structure and normative analysis.

202. Introduction to Macroeconomics
(EC 200.) Fall, Winter, Spring, Summer. 4(4-0) Open to freshmen. Not open to students who have credit in EC 252H or EC 210.

210. Fundamentals of Macroeconomics
Fall, Winter. 4(4-0) MTH 215 or concurrently. Students may not earn credit in EC 210 if they have credit in either EC 201 or EC 202.
Economic principles, institutions and reasoning using mathematics, when useful, as a tool of analysis. Consumption, production, the market system, income distribution and elements of employment and inflation theory.

251H. Households, Firms and Markets
Fall. 5(5-0) Honors College students. Not open to students who have credit in EC 201, EC 324 and EC 325.
Microeconomic theory and its applications to analysis and policy. Substitutes for EC 301, EC 324, and EC 325.

252H. Microeconomics and Public Policy
Winter. 5(5-0) Honors College students. Not open to students who have credit in EC 202, EC 326 and EC 327.
Theory of national income, unemployment, inflation and economic growth and its applications to economic analysis and policy. Substitutes for EC 200, EC 326 and EC 327 combined.

305. Industrial Relations and Trade Unions
Fall, Winter, Spring. 4(4-0) EC 201 or EC 202.
Development, aims, structure and functions of labor and employer organizations. Their relation to economic, political, and legal institutions and their impact on society. Primary issues in collective bargaining.

318. Money, Credit and Banking
Fall, Winter, Spring. 4(4-0) EC 202 or EC 210.
Commercial banking and the money supply. The Federal Reserve System, the Treasury, and other financial institutions. Sources and uses of funds in the financial market.

324. Microeconomics I
Fall, Winter, Spring. 4(4-0) EC 201, EC 202 or EC 210. Not open to students who have credit in EC 251H.

325. Microeconomics II
Fall, Winter, Spring. 3(3-0) EC 324. Not open to students who have credit in EC 251H.
Theory of distribution and factor rewards. Welfare economics and general equilibrium theory. Externalities and public goods; decision-making under uncertainty. Other advanced topics.

326. Macroeconomics I
Fall, Winter, Spring, Summer. 3(3-0) EC 201, EC 202 or EC 210. Not open to students who have credit in EC 252H.

327. Macroeconomics II
Fall, Winter, Spring, Summer. 3(3-0) EC 236. Not open to students who have credit in EC 252H.
Consumption theories, investment theories, role of expectations, theories of economic growth and cycles, stabilization policies, and other advanced topics.

330. Investments and Security Markets
Fall, Spring. 3(3-0) EC 202 or EC 210, Juniors.
The stock market: principles of investment; analysis of selected industries and corporations; regulation by the Securities and Exchange Commission.

361. Economic Development of Asia
Fall. 3(3-0) EC 201, EC 202 or EC 210.
Population and resources; comparison of three economic systems: Communism in China, free enterprise in Japan and socialism in India; the role of Japan in regional trade and development.

362. Economic Development of Latin America
Winter. 3(3-0) EC 201, EC 202 or EC 210.
Concentration of political and economic power as related to income distribution, tax structures, agrarian reform; inflation, trade, exchange rates, integration; population and employment policy.

363. Economic Development of Tropical Africa
Spring. 3(3-0) EC 201, EC 202 or EC 210.
Interdepartmental with Public Affairs Management.

400. Independent Study
Fall, Winter, Spring. Summer. 1 to 4 credits. Senior or approval of department.
Research and reading course for students interested in doing independent work in Economics.

401. Interpreting Economic News and Research
Winter. 3(3-0) EC 201, EC 202 or EC 210, EC 251H.
Economics and social issues. Sources and uses of economic data and research information. Critical examination of written and broadcast reports through application of economic principles. Case studies.

406. Public Expenditure: Theory and Policy
Fall, Spring. 4(4-0) EC 201 or EC 210.
Interdepartmental with Public Affairs Management.
Expenditure theory; objectives and rationale of government activity in the market system; efficiency criteria in government decision-making; planning-programming-budgeting systems and cost-benefit analysis.
407. Public Revenues
Winter. 4(4-0) EC 201 or EC 210.
Principles and theory of the distribution of tax burdens and the incidence of taxation. Income, sales, property, and other major revenue sources.

408. State and Local Finance
Spring. 4(4-0) EC 201 or EC 210 or EC 214.
Fiscal problems at the state and local levels of government, including revenues, expenditures, borrowing, and intergovernmental fiscal relations.

410. Medical Economics
Spring. 3(3-0) EC 201, EC 202 or approval of department.
Demand, supply and economic efficiency in the markets for health services. Demand for medical care, organization forms, methods of payment, utilization and cost, and public policy for health care.

412. The Economics of Poverty and Income Distribution
Winter. 3(3-0) EC 201, EC 202.

413. Urban Economics
Fall. 4(4-0) EC 201, EC 202.
Location theory and urban development. Economics of city size and urban-suburban conflict. Economic aspects of certain community problems like housing, transportation, welfare and poverty. Strategies for urban development.

417. Land Economics
Fall, Spring. 4(4-0) EC 201. Interdepartmental with Public Affairs Management, and Food Systems Economics and Management and the Department of Resource Development. Administered by the Department of Resource Development.
Factors affecting the economic use of land. Input-output relationships, development, property rights, zoning and land use controls, public land. Application of economic principles to selected land use policies.

421. Economic Thought I
Fall, Summer. 4(4-0) EC 201, EC 202 or EC 210.
Forerunners of classical economics. Development of classical economic thought from Adam Smith to J. S. Mill. The socialist reaction.

422. Economic Thought II
Winter, Spring. 4(4-0) EC 201, EC 202 or EC 210.
The decline of classical economics and the rise of marginalist value and distribution theory. Marxism and institutionalism.

426. Introductory Mathematical Economics
Spring. 3(3-0) EC 324, EC 326, MTW 214.
Mathematical analysis of production, cost, and consumer choice. Mathematical models of aggregative and general-equilibrium economic systems.

428. International Trade
Fall, Winter, Spring, Summer. 3(3-0) EC 201, EC 202 or EC 210. EC 428 and EC 429 are a two-semester sequence. Students should take the courses in succeeding terms, though they may begin with either course.

429. International Finance
Fall, Winter, Spring, Summer. 3(3-0) EC 201, EC 202 or EC 210. EC 428 and EC 429 are a two-semester sequence. Students should take the courses in succeeding terms, though they may begin with either course.

430. Stagnation and Development in Emerging Societies
Winter, Summer. 4(4-0) EC 201, EC 202 or EC 210.
Obstacles to economic growth, theories of economic development, reorganizing agriculture and industry; problems in mobilizing the economy to accommodate new productive techniques, population problems.

431. Principal Issues in Promoting Economic Development
Spring. 4(4-0) EC 201, EC 202.
Structural change and growth, capital formation and investment criteria; financing development; foreign trade and finance in development; government and planning.

434. Comparative Economic Systems
Fall, Winter, Summer. 4(4-0) EC 201, EC 202 or EC 210.
Characteristics and functions of an economic system. Analysis of alternative patterns of economic control, planning and market structure. Experiences under capitalism, socialism and mixed economies. Consideration of their theories and philosophies.

440. Radical Political Economy
Spring. 3(3-0) EC 201, EC 202 or EC 210, or EC 251H, EC 252H.
Development and contemporary characteristics of capitalism from Marxist-radicall perspective. Historical materialism and class analysis. Radical critique of modern economics. Relationship of inequality, racism, alienation and other problems to the structure of capitalism.

444. Private Enterprise and Public Policy
Fall, Winter, Spring. 3(3-0) EC 201 or EC 210.
Competition and monopoly in the American economy. Problems of antitrust.

445. Economics of Regulated Industries
Winter. 4(4-0) EC 444.
Government policy and role of competition in the public utility and transportation industries.

451. Introduction to Econometric Methods
Fall, Spring. 4(4-0) EC 324, EC 326; STT 432 or STT 442 or MTA 317.
Specification, estimation and interpretation of econometric models. Understanding and evaluation of current quantitative work in economics.

453. Women and Work: Issues and Policy Analysis
Winter. 3(3-0) PAM 201 or EC 201 or EC 205 or approval of department. Interdepartmental with and administered by Public Affairs Management.
Quantity and quality of labor force participation by women, current status and past trends. Issues analyzed include differential earnings and occupations of men and women, employment discrimination and labor legislation.

455. Labor and the Law
Spring. 4(4-0) EC 305.
Development and current status of labor law as it applies to unions, employers, employees and collective bargaining. Economic and social issues regulated by, and posed by, labor law.

457. Analysis of Labor Markets
Spring. 4(4-0) EC 201, EC 202 or EC 210.
Theories of labor market behavior, empirical evidence and policy implications. Topics include labor supply, labor demand, wage differentials (due to education, discrimination, and union membership), competition and mobility.

460. Regional Economics
Winter. 4(4-0) R D 417 or EC 324. Interdepartmental with Food Systems Economics and Management, Public Affairs Management, and the Department of Resource Development. Administered by the Department of Resource Development.
Forces affecting location decisions of firms, households and governments. Applications to agricultural, industrial, and regional developments.

461. Regional Economics Laboratory
Spring. 1(0-2) R Da 460 and approval of department. Interdepartmental with Public Affairs Management, and Food Systems Economics and Management and the Department of Resource Development. Administered by the Department of Resource Development.
Evaluation and use of analytical models designed to solve regional economic problems.

463. Economics of Urban Education
(UMS 463) Spring. 3(3-0) EC 201 or EC 210.
Political economy of urban schools. Education as a commodity: efficient production and distribution, supply and demand for education, financing education, planning education to meet job needs and social mobility.

470. Monetary Theory
Fall. 3(3-0) EC 327.
Relationship between money and interest rates, prices and output.

490. Mathematics for Economists
Fall. 5(5-0) MTH 113, graduate status in either economics, agricultural economics or College of Business, or approval of department. Interdepartmental with and administered by the Department of Mathematics.
### Description — Economics

#### Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Time Period</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>803</td>
<td>Managerial Economics</td>
<td>Fall, Winter, Summer</td>
<td>4-3-0</td>
<td>Graduate students in Business Administration or approval of department. Not open to undergraduates or to those with credit in EC 805A, EC 812A, or EC 860. Analysis of the firm. Problems facing management; economizing in use of resources, optimal combinations of products, pricing, competitive forces in markets affecting the firm.</td>
</tr>
<tr>
<td>804</td>
<td>Macroeconomic Models</td>
<td>Fall, Winter, Spring</td>
<td>4-3-0</td>
<td>Graduate students in Business Administration or approval of department. Not open to undergraduates or to those with credit in EC 805A, EC 812A, or EC 860. Determinants of the national income, employment, and capital formation. National income accounts. Business fluctuations. Fiscal and monetary policy.</td>
</tr>
<tr>
<td>805A</td>
<td>Microeconomics Theory</td>
<td>Fall, Winter</td>
<td>3-3-0</td>
<td>MTH 113, EC 324; not open to students with credit in EC 812A. A review of microeconomic theory with calculus; production, costs, demand, markets; general equilibrium and welfare theory.</td>
</tr>
<tr>
<td>805B</td>
<td>Macroeconomic Theory</td>
<td>Fall, Spring</td>
<td>3-3-0</td>
<td>MTH 113, EC 326; closed to students with credit in EC 812A. A review of macroeconomic theory with calculus; comparative statics of macroeconomic models; theories of inflation and unemployment.</td>
</tr>
<tr>
<td>806B</td>
<td>Public Revenues</td>
<td>Winter</td>
<td>3-3-0</td>
<td>Approval of department. Theory of taxation. Incidence and economic effects, especially on income and wealth redistribution. Institutional and policy analysis of the U.S. federal tax system.</td>
</tr>
<tr>
<td>806C</td>
<td>State and Local Public Finance</td>
<td>Spring</td>
<td>3-3-0</td>
<td>Approval of department. State and local expenditure systems in theory and practice; tax and nonprofit revenue; intergovernmental fiscal relationships; the fiscal problems of metropolitan governments.</td>
</tr>
<tr>
<td>807</td>
<td>Survey of Microeconomic Analysis</td>
<td>Winter, Spring</td>
<td>3-3-0</td>
<td>EC 805A or EC 812A. Analytical methods taught through journal readings and practical examples from public finance, labor economics, industrial organization, and international trade. Such topics as measurement of tax incidence and effects of unemployment insurance.</td>
</tr>
<tr>
<td>808</td>
<td>Techniques of Microeconomic Analysis</td>
<td>Spring</td>
<td>3-3-0</td>
<td>EC 803 or EC 805A or EC 812A. Techniques of microeconomic analysis taught through examples drawn from current economic events; an emphasis on getting answers to problems encountered by practicing economists.</td>
</tr>
<tr>
<td>809</td>
<td>Macroeconomic Analysis</td>
<td>Winter, Spring</td>
<td>3-3-0</td>
<td>EC 804 or EC 805B or EC 812A. Analysis techniques taught through readings and examples from monetary economics, economic development, and international finance. Such topics as macroeconomic forecasting, sources of economic growth, and exchange constraints on monetary policy.</td>
</tr>
<tr>
<td>810</td>
<td>Economics of Public Choice</td>
<td>Winter</td>
<td>3-3-0</td>
<td>Approval of department. Interdepartmental with the departments of Agricultural Economics, and Resource Development. Admissions by approval from the Department of Agricultural Economics. Economics of alternative institutions for collective action. Emphasis on property rights and natural resources. Public goods, externalities, non-marginal change, income and wealth distribution, grants, welfare criteria and market failure.</td>
</tr>
<tr>
<td>812A</td>
<td>Microeconomics I</td>
<td>Winter</td>
<td>3-3-0</td>
<td>EC 324, EC 325, EC 480 or MTH 215 or concurrently. Theories of consumption and production; duality, cost and expenditure functions; input demand; revealed preference.</td>
</tr>
<tr>
<td>812B</td>
<td>Microeconomics II</td>
<td>Spring</td>
<td>3-3-0</td>
<td>EC 812A. Functional forms in production and consumption; competitive equilibrium; theories of non-competitive markets; imperfect information and behavior under uncertainty; multiproduct firms.</td>
</tr>
<tr>
<td>812C</td>
<td>Microeconomics III</td>
<td>Fall</td>
<td>3-3-0</td>
<td>EC 812B. General equilibrium and welfare; optimality of competition; market failures; economics of linear and nonlinear programming and input-output analysis.</td>
</tr>
<tr>
<td>813A</td>
<td>Macroeconomics I</td>
<td>Fall</td>
<td>3-3-0</td>
<td>EC 326, EC 335, EC 480 or MTH 215 or concurrently. Income accounting and price indices; comparative statics of macroeconomic models; consumption and investment functions; the money supply.</td>
</tr>
<tr>
<td>813B</td>
<td>Macroeconomics II</td>
<td>Winter</td>
<td>3-3-0</td>
<td>EC 813A. Demand for money; portfolio theory; theories of inflation and unemployment.</td>
</tr>
<tr>
<td>813C</td>
<td>Macroeconomics III</td>
<td>Spring</td>
<td>3-3-0</td>
<td>EC 813B. Models of macroeconomic disequilibrium; macro dynamics and the effects of search; theories of neoclassical and optimal economic growth.</td>
</tr>
<tr>
<td>818A</td>
<td>Monetary Theory</td>
<td>Fall</td>
<td>3-3-0</td>
<td>EC 812C, EC 813C, and EC 835 and approval of department. Monetary and interest theories.</td>
</tr>
<tr>
<td>818B</td>
<td>The Theory of Monetary Policy</td>
<td>Winter</td>
<td>3-3-0</td>
<td>EC 818A or approval of department. Theories of the transmission of monetary policy to output, employment and prices.</td>
</tr>
<tr>
<td>818C</td>
<td>Problems in Monetary Policy</td>
<td>Spring</td>
<td>3-3-0</td>
<td>EC 818B. Goals and techniques of monetary policy.</td>
</tr>
<tr>
<td>821A</td>
<td>Competition and Monopoly in American Industry</td>
<td>Fall</td>
<td>3-3-0</td>
<td>Approval of department. Examination of structure, behavior, and performance in industries.</td>
</tr>
<tr>
<td>821B</td>
<td>Government Policy Toward Private Enterprise</td>
<td>Winter</td>
<td>3-3-0</td>
<td>Approval of department. Evolution of government policy with respect to such problems as conspiracy, monopoly, mergers, unfair practices, and discrimination. Economic and legal appraisal of policy alternatives.</td>
</tr>
<tr>
<td>821C</td>
<td>Problems Related to Regulated Industries</td>
<td>Spring</td>
<td>3-3-0</td>
<td>Approval of department. Departures from market competition as a policy norm, as in public utilities and transportation.</td>
</tr>
<tr>
<td>826A</td>
<td>Theory of International Trade</td>
<td>Fall</td>
<td>3-3-0</td>
<td>EC 428 or approval of department. Classical and modern theories of international trade. Application of modern techniques of economic analysis to international trade theory.</td>
</tr>
<tr>
<td>826B</td>
<td>Theory of International Trade Policy</td>
<td>Winter</td>
<td>3-3-0</td>
<td>EC 826A. Various means by which a government may influence the volume, character, and direction of its foreign commerce. In this connection an analyst is made of the theory of the tariff, the subvention, exchange control, and quotas. Emphasis on the economic impact of trade controls upon a nation and the world.</td>
</tr>
<tr>
<td>826C</td>
<td>International Exchanges and Capital Flows</td>
<td>Spring</td>
<td>3-3-0</td>
<td>EC 826B. Theory of exchange rates and international money; markets especially with reference to other than current account items in balances of payments. Analysis of sources, causes, effects of capital flows with developing economies considered as a special case.</td>
</tr>
<tr>
<td>835</td>
<td>Introduction to Econometrics</td>
<td>Spring, Summer</td>
<td>3-3-0</td>
<td>EC 325, STT 442; not open to students with credit in EC 836. Interdepartmental with the Department of Agricultural Economics. Specification, estimation and interpretation of economic models. Applications to empirical problems.</td>
</tr>
<tr>
<td>836</td>
<td>Econometric Methods</td>
<td>Winter</td>
<td>3-3-0</td>
<td>EC 803 or EC 805A or EC 812A; not open to students with credit in EC 835. Properties of least squares and maximum likelihood estimators of single and simultaneous equations economic models.</td>
</tr>
<tr>
<td>841A</td>
<td>History of Economic Thought: Classical</td>
<td>Fall</td>
<td>3-3-0</td>
<td>Early thought, mercantilism, physiocracy, and classical economics.</td>
</tr>
<tr>
<td>841B</td>
<td>History of Economic Thought: Heterodox</td>
<td>Winter</td>
<td>3-3-0</td>
<td>Indeterminate. Historicism, socialism, and institutionalism.</td>
</tr>
</tbody>
</table>
841C. History of Economic Thought: Modern
Spring, 3(3-0)
Development of marginalism, general equilibrium theory, employment theory, and mathematical economics.

850. The Development of Economic Institutions
Fall, 3(3-0) EC 430 or approval of department.

851. The Economics of Secular Change
Winter, 3(3-0) EC 324, EC 326 or approval of department.
Empirical studies of long-run economic trends and a consideration of alternative hypotheses explaining these trends including classical Marxian, Harrod-Domar, and other general theories of economic development. Population growth, technological change, capital formation, occupational distribution, urbanization, and international trade.

852. Economic Problems of Underdeveloped Areas
Spring, 3(3-0) EC 324, EC 326 or approval of department.
Overcoming problems relating to early stages of economic development: investment priorities, mobilizing savings, balance of payment considerations; and policies and programs of various types.

855. The Industrial Revolution in Europe
Winter of even-numbered years, 3(3-0)
EC 318, EC 324. Interdepartmental with the Department of History. The preconditions that led to the memento changes in agriculture and industry in Europe from 1700-1914.

857A. Wage Theory I
Fall, 3(3-0) EC 324, EC 326 or approval of department. Interdepartmental with the School of Labor and Industrial Relations. Advanced analysis of: theories of wage determination; labor market research; economic effects of collective bargaining upon the national wage structure, output, employment, distribution of national income, the price level, nature and effects of government wage policies.

857B. Wage Theory II
Winter, 3(3-0) EC 324, EC 326 or approval of department. Advanced analysis of education, on-the-job training, family background, and discrimination as determinants of earnings. Causes and measurement of inequality and social mobility. Macroeconomic view of labor market.

858. Collective Bargaining
Fall, Winter, Spring, 3(3-0) EC 305 or approval of department. Open to graduate students in economics and related fields such as labor and industrial relations, psychology, sociology, anthropology, political science, business, and history. Interdepartmental with and administered by the School of Labor and Industrial Relations. Problems and issues in the administration and negotiation of collective bargaining agreements: includes both economic and noneconomic aspects of industrial relations policies and practices.

876. Statistical Inference in Economics I
Fall, 3(3-0) EC 812A or EC 805A; STT 443 or STT 885; or approval of department. Interdepartmental with the departments of Agricultural Economics, and Statistics and Probability. Review and extension of single-equation regression models. Properties of least-squares estimators under alternative specifications. Problems of analyzing nonexperimental data. Errors in variables, autoregressive and heteroscedastic models.

877. Statistical Inference in Economics II
Winter, 3(3-0) EC 876 or approval of department. Interdepartmental with the departments of Agricultural Economics, and Statistics and Probability. Specification, interpretation and estimation of simultaneous equation models. Nonlinear models. Bayesian approach to estimation problems. Recent developments in econometric methods and in applied econometric research.

878. Statistical Inference in Economics III
Spring, 3(3-0) EC 877 or approval of department. Interdepartmental with the departments of Agricultural Economics, and Statistics and Probability. Validation and application of dynamic econometric models. Bayesian approach to estimation problems. Recent developments in econometric methods and in applied econometric research.

880. Organization and Control in the Political Economy: Institutions and Theory
Winter of even-numbered years, 4(4-0)
Interdepartmental with the Department of Management. Organization and technique in choice and implementation of economic (especially planning, programming) functions of political authority.

881. Organization and Control in the Political Economy: Selected Problems
Winter of odd-numbered years, 4(4-0) Approval of instructor. Interdepartmental with the Department of Management. Analysis of role and tasks, appropriate techniques and organizational structures of political agencies in planning and management of complex programs.

891. Topics in Applied Econometrics
Spring, 3(3-0) EC 855 or EC 877. Topics in applied econometrics with particular attention to problems of testing hypotheses in the context of econometric models.

895. Graduate Reading in Economics
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 8 credits. Spaces are limited.

900. Special Topics in Economic Theory
Fall, Winter, Spring, 3(3-0) May reenroll for a maximum of 12 credits. EC 812C; EC 813C. Special topics in economic theory of current interest and importance.

911. Public Program Analysis
Spring, 3(3-0) EC 863, EC 805A, EC 805B, or approval of department. Interdepartmental with the departments of Agricultural Economics and Resource Development. Administered by the Department of Agricultural Economics.
Policy aspects of nonmarket value estimation, shadow pricing, time preference, and risk analysis applied to systematic choice of agricultural, natural and human resource regulatory and public investment programs.

972. Methodological Approaches to Research
Fall of even-numbered years, Summer of odd-numbered years. 3(3-0) Two terms of graduate study in social science or approval of department. Interdepartmental with and administered by the Department of Agricultural Economics. Selection, planning and conduct of research. Alternative research approaches. Role of theory, beliefs and valuations. Critical appraisal of research studies.

999. Doctoral Dissertation Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

EDUCATION
See Counseling, Educational Psychology and Special Education; Educational Administration, Health Education, Counseling Psychology and Human Performance; and Teacher Education.

EDUCATIONAL ADMINISTRATION
EAD
(Name changed effective July 1, 1984. Formerly department of Administration and Curriculum.)

College of Education
415A. Leadership Training
(EAD 415.) Fall, Winter, Spring. 2(2-2) Prepares students for leadership roles and responsibilities through the development of skills and techniques consistent with principles of our democracy.