

999. **Research**  
Fall, Winter, Spring, Summer. Variable credit.

**DAIRY SCIENCE DRY**

**College of Agriculture and Natural Resources**

214. **Dairy Production**  
Fall, Spring. 4(3-2)

Dairy cattle in modern agriculture. Normal cow behavior. Feeding, breeding and management of herd. Commercial milk production and marketing milk.

323. **Dairy Cattle Judging**  
Spring. 3(0-6)

Desired type in dairy cattle. Judging and showing procedures. Competitive judging. Teams selected to represent Michigan State University in national competition.

371. **Dairy Seminar**  
(471.) Spring. 1(1-0) Juniors.

Major issues pertinent to the dairy industry are described by authorities from MSU and the dairy industry of Michigan. Students are provided an opportunity for an exchange in ideas.

413. **Dairy Farm Management**  
Spring. 3(2-2)

Analysis of dairy farm organization and operations. Dairy herd management practices. Dairy cattle housing with emphasis on economical and efficient usage. Use of dairy records in the farm operation.

424. **Dairy Cattle Breeding**  
Spring. 4(2-4) ANS 461.

Applications of population genetics to improving dairy cattle. Use of selection, aids to selection, and systems of mating to formulate breeding plans. Inheritance of economic traits. Breed improvement programs.

433. **Dairy Cattle Nutrition**  
Winter. 4(3-2) ANS 325.

Principles of ruminant nutrition and application to actual feeding practices in commercial dairy herds. Rumen fermentation as related to feed utilization, milk production and milk composition.

444. **Milk Secretion**  
Winter. 4(3-2) Interdepartmental and administered jointly with the Physiology Department.

Anatomy of mammary gland. Hormonal and nervous control of mammary growth, initiation and maintenance of lactation. Biochemistry of milk secretion. Physiology of milking; physiological, pathological and management factors affecting lactation.

445. **Endocrinology and Reproduction of Farm Animals**  
Fall. 4(3-2) PSL 240. Interdepartmental and administered jointly with the Physiology Department.

Endocrine and reproductive systems are presented with emphasis upon characteristics which can be altered for economic benefit and upon causes, prevention, and treatment of endocrine abnormalities.

460. **Special Problems**  
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 10 credits. Approval of department.

488. **The Impact of Animal Resource Management Upon the World's Developing Nations.**  
Winter. 3(4-0)

For course description, see Interdisciplinary Courses.

850. **Topics in Dairy Science**  
Fall, Winter, Spring. Variable credit. May re-enroll for credit. Approval of department.

Topics from breeding, management, nutrition, or physiology, changing from term to term to include recent technical advances.

899. **Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

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

**EARTH SCIENCE**

See Geology.

**ECONOMICS EC**

**College of Business**

Courses are classified as follows:

- Applied Welfare Economics—380, 390, 410.
- Labor Economics and Industrial Relations—305, 455, 456, 457.
- Money and Banking—318, 322, 330.
- International Economics—427.
- Public Finance—406, 407, 408.
- Price and Value Theory—324, 325, 426.
- Income and Employment Theory—320, 322, 451, 452.
- History of Economic Thought—421, 422.
- Industrial Organization and Control—444, 445, 446, 448.
- Economic Development, Regional Studies, and Comparative Economics Systems—360, 430, 431, 434.

200. **Introduction to Economics**  
Fall, Winter, Spring, Summer. 4(4-0)  
Open to Freshmen. Students may begin sequence with either 200 or 201.

Problem of unemployment; meaning and determination of national income; the multiplier; the accelerator; fiscal policy; deficit spending; monetary policy; banks creation of money; international aspects of the employment problems.

201. **Introduction to Economics**  
Fall, Winter, Spring, Summer. 4(4-0)  
Open to Freshmen. Students may begin sequence with either 200 or 201.

Problem of resource allocation; price determination (demand, supply), applications to agricultural policy; diminishing returns; behavior of the firm (determination of quantity of output, hiring of factors); aspects of international trade.

210. **Fundamentals of Economics**  
Fall, Winter. 4(4-0) MTH 215 or 228; or concurrently. Students may not earn credit in 210 if they have credit in either 200 or 201.

Introductory course in economic theory, employing mathematics, when useful, as a tool analysis. Covers consumer and business behavior, markets and the price system, income distribution, and elements of employment theory.

251H. **Households, Firms and Markets**  
Fall. 5(5-0) Honors College students.

Microeconomic theory and its applications to analysis and policy. Substitutes for 201, 324 and 325.

252H. **Aggregative Economics and Public Policy**  
(250H.) Winter. 5(5-0) Honors College students.

Theory of national income and its application to analysis and policy. Substitutes for 200, 320, and 321.

305. **Industrial Relations and Trade Unionism**  
Fall, Winter, Spring, Summer. 5(5-0)

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, Summer. 4(4-0) 200 or 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.

320. **Macroeconomics I**  
Fall, Winter, Spring, Summer. 3(3-0) 200 and 201 or 210.

Measurement of economic activity. Determination of equilibrium aggregate output and the theory of underemployment equilibrium. Role of consumption, investment, government and foreign sectors in determining national income.

321. **Macroeconomics II**  
Fall, Winter, Spring, Summer. 3(3-0) 320.

Expansion of role of monetary factors in macroeconomic theory. Theories of economic growth and cycles. Study of macroeconomic problems of inflation, unemployment, and other current policy problems.

324. **Microeconomics I**  
Fall, Winter, Spring, Summer. 3(3-0) 200 and 201, or 210.

Theory of production and cost. Theory of the firm under varying market structures.

325. **Microeconomics II**  
Fall, Winter, Spring, Summer. 3(3-0) 200 and 201, or 210, and 324.

Consumer choice and theory of demand. Theory of distribution and factor rewards. Welfare economics and general equilibrium theory.

330. **Investments and Security Markets**  
Fall, Spring. 3(3-0) 200 or 210, Juniors.

The stock market; principles of investment; analysis of selected industries and corporations; regulation by the Securities and Exchange Commission.

337. **American Social and Economic History: Foundations**  
Winter. 4(4-0) Juniors. Interdepartmental with and administered by the History Department.

Multiple sources of economic growth in economic, social and political change, education, science and technology, political action, and other factors, mid-19th century.

338. **American Social and Economic History: Modern Trends**  
Spring. 4(4-0) Juniors. Interdepartmental with and administered by the History Department.

Urbanization, origins and implications of large-scale organizations in business and other sectors of society, and sources of economic growth since mid-19th century.

**361. Economic Development of Asia**  
Fall. 3(3-0) 200 and 201 or 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) 200 and 201 or 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) 200 and 201 or 210.

*Interdepartmental with Public Affairs Management.*  
African economic development in historical perspective. Analysis of contemporary economic development problems faced by tropical African countries. Alternative strategies for African economic development.

**371A. European Economic History to 1800**  
Fall. 4(4-0) Juniors. *Interdepartmental with and administered by the History Department.*

Economic history of medieval and early modern Europe stressing the nature of agrarian societies, the growth of cities, the divergence of the European economies, and the Industrial Revolution in England.

**380. Urban Economics**  
Fall. 4(4-0) 200, 201.

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.

**390. The Economics of Poverty**  
Winter. 3(3-0) 200, 201.

Theory of the distribution of income and wealth. Concepts and measurement of welfare. Definitions of poverty. Effects of public and private programs on the poor.

**400. Independent Study**  
Fall, Winter, Spring, Summer. 1 to 4 credits. Seniors or approval of department.

Research and reading course for students interested in doing independent work in economics.

**406. Public Expenditure: Theory and Policy**  
Fall, Spring. 4(4-0) 201 or 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) 201 or 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) Juniors.

Fiscal problems at the state and local levels of government, including revenues, expenditures, borrowing, and intergovernmental fiscal relations.

**410. Medical Economics**  
Fall. 3(3-0) 200, 201, or approval of department.

Demand, supply and economic efficiency in the markets for health services. Demand for medical care, organization forms, methods of pay-

ment, utilization and cost, and public policy for health care.

**417. Land Economics**  
Fall, Spring. 4(4-0) *Interdepartmental with the Resource Development Department, Public Affairs Management and Food Systems Economics and Management and administered by the Resource Development Department.*

Factors affecting man's economic use of land and space resources. Input-output relationships; development, investment, and enterprise location decisions. Land markets; property rights, area planning; zoning and land use controls.

**421. Economic Thought I**  
Fall, Summer. 4(4-0) 200 and 201, or 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) 200 and 201, or 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) 320, 324; MTH 214.

Mathematical analysis of production, cost, and consumer choice. Mathematical models of aggregate and general-equilibrium economic systems.

**427. International Trade and Finance**  
Fall, Winter, Spring, Summer. 5(5-0) 200 and 201, or 210.

Theory of comparative advantage. Tariffs, quotas, and customs unions. Mechanism of balance of payments adjustments. Exchange rate determination and international financial relationships.

**430. Stagnation and Development in Emerging Societies**  
(350.) Winter, Summer. 4(4-0) 200 and 201, or 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**  
(351.) Spring. 4(4-0) 430.

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) 200 and 201, or 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.

**444. Private Enterprise and Public Policy**  
Fall, Winter, Spring, Summer. 3(3-0) 201 or 210.

Competition and monopoly in the American economy. Problems of antitrust.

**445. Economics of Regulated Industries**  
Winter. 4(4-0) 444.

Government policy and role of competition in the public utility and transportation industries.

**448. Structure of American Industry**  
Spring. 3(3-0) 444.

Analysis and critique of industry structure, behavior, and performance. The functions of public control.

**451. Methods of Economic Research and Forecasting**  
Spring. 4(4-0) 320 and 324; STT 422 or 317.

Research design, testing of economic hypotheses, elementary methods of projection, forecasting, estimation, and introduction to econometrics.

**455. Public Policy and Labor Relations**  
(308.) Fall, Winter, Spring, Summer. 5(5-0) 305.

Evolution of public policy concerning trade unions and collective bargaining. Causes and effects of labor-management disputes; public and private methods and agencies for dispute settlement.

**456. Economics of Social Security**  
Spring. 3(3-0) 305 or Seniors.

Problems of unemployment, old age, and medical care from standpoint of economic theory, political philosophy, and our changing economic and social structure. Workmen's Compensation Laws, Railroad Retirement Act, Civil Service Retirement Act, and Social Security Act.

**457. Manpower Economics**  
Fall, Winter, Summer. 5(5-0) 200 and 201, or 210.

Leading theories explaining wage determination, wage differentials and trends in wage structure. Labor force composition, distribution of unemployment, labor mobility, and manpower utilization. Data sources and forecasting methods.

**460. Location Analysis**  
Winter. 4(4-0) 417 or 324 or FSM 401. *Interdepartmental with the Resource Development Department, Public Affairs Management and Food Systems Economics and Management and administered by the Resource Development Department.*

Forces affecting location decisions of firms, households and governments. Applications to agricultural, industrial, and regional developments.

**470. Monetary Theory**  
(322.) Fall. 3(3-0) 321.

Relationship between money and interest rates, prices and output.

**480. 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 Mathematics Department.*

Matrix algebra, determinants, quadratic forms, characteristic values. Partial derivatives, chain rule, Jacobian matrix, Taylor series, constrained optimization, linear differential equations. Mathematics introduced and developed using students' background in economics.

**499H. Honors and Senior Seminar**  
Fall, Spring. 4(4-0) May re-enroll for a maximum of 8 credits. *Honors College students or economics Seniors with 3.20 grade point average; 251H and 252H recommended.* Directed reading and student research in contemporary economic problems.

**800. Economic Analysis I**  
Fall, Winter. 4 credits. 324 or 325.

Determinants of prices and outputs. Consumer choice. Theory of competitive and monopolistic markets.

**801. Economic Analysis II**

Winter, Spring. 4 credits. 800.  
Students may not receive credit in both 801 and 812.

Monopolistic and oligopolistic competition. General equilibrium analysis. Aggregate income and employment theory.

**802. Economic Analysis III**

Spring, Summer. 4 credits. 801 or 812. Students may not receive credit in both 802 and 813.

Aggregate income and employment theory. Study of money and credit as related to income, employment and prices.

**803. Seminar in Industrial Relations**

For course description, see *Interdisciplinary Courses*.

**806A. Fiscal Policy**

Fall. 3 credits. Approval of department.

Economics of government surpluses, deficits, and debt. Examination of fiscal theories and programs to maintain economic stability, high level employment and income, economic progress, and other goals.

**806B. Public Revenues**

Winter. 3 credits. Approval of department.

Theory and development of revenue systems. Incidence and economic effects of taxes. Studies of selected national, state and local revenue structures for comparative analysis.

**806C. Government Finance**

Spring. 3 credits. Approval of department.

Revenue adequacy, fiscal controls, intergovernmental fiscal relations, tax burdens, subsidies, government costs and benefits.

**810. Economics of Public Choice**

Winter. 3(3-0) Approval of department. Interdepartmental with the Agricultural Economics and Resource Development Departments and administered by the Agricultural Economics Department.

Economics of alternative institutions for collective action. Emphasis on property rights and natural resources. Public goods, externalities non-marginal change, commonwealth, income and power distribution, grants, welfare criteria and market failure.

**811. Public Program Analysis**

Spring, Summer of odd-numbered years. 3(3-0) FSM 401 or EC 324 or approval of department. Interdepartmental with the Resource Development and Agricultural Economics Departments and administered by the Agricultural Economics Department.

Application of benefit-cost analysis to public programs of resources development. Issues and case studies in budgeting, investment criteria, pricing, externalities, and coordination.

**812A. Microeconomics I: Choice and Exchange**

(812.) Fall. 3(3-0) 324, 325; 480 or MTH 215 or concurrently.

Consumption exchange, the axiomatics of choices, involving time, introduction to welfare.

**812B. Microeconomics II: Production and Distribution**

Winter. 3(3-0) 812A.

Production—variable proportions, the multi-product firm, programming analysis. Distribution—the micro theory.

**812C. Microeconomics III: The Firm and Market**

Spring. 3(3-0) 812B.

Theories of the firm. Market behavior—perfect and imperfect markets. Game theory.

**813A. Macroeconomics I: Comparative Statics**

(813) Fall. 3(3-0) 320, 321; 480 or MTH 215 or concurrently.

Macro models and macro function; the interaction of macro markets.

**813B. Macroeconomics II: Dynamics**

Winter. 3(3-0) 813A.

Stochastic and dynamic models. Growth and technical change. The macro theory of distribution.

**813C. General Equilibrium and Welfare**

Spring. 3(3-0) 813B; 812C or concurrently.

The disaggregated general equilibrium system. Input-output economics. Welfare.

**815. Labor Force Behavior**

Spring. 4(4-0) 457. Interdepartmental with and administered by the School of Labor and Industrial Relations.

Theoretical and empirical analysis of factors affecting labor force participation rates, unemployment levels, employment distribution, hours of work, and labor mobility. Concepts and measurement methods.

**818A. Monetary Theory**

(818.) Fall. 4 credits. 318, 320.

Money, the financial system, and interest theory as related to the determination of aggregate output, employment, and prices.

**818B. Monetary Policy**

(818.) Winter. 4 credits. 818A.

Goals, techniques and effectiveness of monetary and financial policy.

**821A. Competition and Monopoly in American Industry**

Fall. 3 credits. Approval of department.

Examination of structure, behavior, and performance in industries.

**821B. Government Policy Toward Private Enterprise**

Winter. 3 credits. 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.

**821C. Problems Related to Regulated Industries**

Spring. 3 credits. Approval of department.

Departures from market competition as a policy norm, as in public utilities and transportation.

**826A. Theory of International Trade**

Fall. 3 credits. 427 or approval of department.

Classical and modern theories of international trade. Application of modern techniques of economic analysis to international trade theory.

**826B. Theory of International Trade Policy**

Winter. 3 credits. 826A.

Various means by which a government may influence the volume, character, and direction of its foreign commerce. In this connection an analysis is made of the theory of the tariff, the subsidy, exchange control, and quotas. Emphasis on the economic impact of trade controls upon a nation and the world.

**826C. International Exchanges and Capital Flows**

Spring. 3 credits. 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.

**831. Mathematical Economics I**

Fall. 3(3-0) 812; MTH 214, 334.

Economic behavior of firms, households, commodity markets. Relation of traditional theories to programming models, theory of games and other decision theories. Dynamic models of behavior. Equilibrium of multiple markets.

**832. Mathematical Economics II**

Winter. 3(3-0) 813; MTH 215, 334.

Mathematical models of growth and fluctuations dealing with macroeconomics, monetary theory, fiscal policy. The cobweb, static and dynamic multipliers, multiplier-accelerator models, trade cycle models. Relations among stocks, flows and time lags.

**833. Mathematical Programming**

Spring. 3(3-0) 800; or 812A; MTH 334. Interdepartmental with the Agricultural Economics, and Statistics and Probability Departments and administered by the Agricultural Economics Department.

Linear programming. Theory of linear economic models. Topics in nonlinear programming.

**835. Econometrics and Price Analysis**

(AEC 831.) Fall, Spring, Summer. 3(3-0) 325; STT 422. Interdepartmental with the Agricultural Economics Department.

Specification, estimation and interpretation of economic models. Applications to empirical problems.

**838. Interdisciplinary Seminar on Africa**

For course description, see *Interdisciplinary Courses*.

**841A. History of Economic Thought: Classical**

Fall. 3(3-0)

Early thought, mercantilism, physiocracy, and classical economics.

**841B. History of Economic Thought: Heterodox**

Winter. 3(3-0)

Historicism, socialism, and institutionalism.

**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) 430 or approval of department.

Cross-cultural analysis of factors influencing the organization of economies. Motivation, values, and technological change. Growth of markets, entrepreneurship, industrial labor force and the diffusion of knowledge.

**851. The Economics of Secular Change**

Winter. 3(3-0) 320, 324, 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) 320, 324, 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.

**854. The Emergence of Commercial Capitalism**

Winter of odd-numbered years. 3 credits. 318, 324. Interdepartmental with the History Department.

The rise of the mercantilist economies of Europe with stress on the growth of internal and international trade and finance during the 16th and 17th centuries.

**855. The Industrial Revolution in Europe**

Winter of even-numbered years. 3 credits. 318, 324. Interdepartmental with the History Department.

The preconditions that led to the momentous changes in agriculture and industry in Europe from 1700-1914.

**857. Wage Theory**

Fall. 3 credits. 320, 324, 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.

**858. Industrial Relations**

Winter. 3 credits. 305 and 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 and administered jointly with 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.

**859. Labor Legislation and Public Policy**

Spring. 3 credits. 305 or approval of department.

Criteria for public policy concerning unions and collective bargaining; current problems in labor legislation; role of federal and state governments in industrial relations; decision-making process in labor legislation.

**860. Economics of the Firm**

Fall, Winter, Summer. 4 credits. Graduate students in Business Administration. Not open to Economics majors.

Analysis of the firm. Problems facing management; economizing in use of resources, optimal combinations of products, pricing, competitive forces in markets affecting the firm.

**861. American Economy**

Fall, Winter, Spring, Summer. 4 credits. Thirty credits in MBA core program. Not open to Economics and Agricultural Economics majors.

Determinants of the national income, employment, and capital formation. National income accounts. Business fluctuations. Fiscal and monetary policy.

**862. Business and Public Policy**

Winter, Spring. 4 credits. 860 or approval of department. Not open to majors. Problem of government regulation of business.

Economic models which relate to regulation. Regulatory legislation, regulatory bodies, and alternatives available.

**876. Statistical Inference in Economics I**

Fall. 3(3-0) 812A or 801; STT 443 or 863; or approval of department. Interdepartmental with the Agricultural Economics, and Statistics and Probability Departments.

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) 876 or approval of department. Interdepartmental with the Agricultural Economics, and Statistics and Probability Departments.

Specification interpretation and estimation of simultaneous equation models. Nonlinear models. Bayesian approach to estimation problems. Recent developments in econometrics.

**878. Statistical Inference in Economics III**

Spring. 3(3-0) 877 or approval of department. Interdepartmental with the Agricultural Economics, and Statistics and Probability Departments.

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. 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**

Spring. 4(4-0) Approval of instructor. Interdepartmental with and administered by the Department of Management.

Analysis of role and tasks, appropriate techniques and organizational structures of political agencies in planning and management of complex programs.

**895. Graduate Reading in Economics**

Fall, Winter, Spring, Summer. Variable credit.

**899. Research**

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**911. Theory of the Firm and the Consumer**

Fall, Summer. 3(3-0) 812 or approval of department.

Imperfect markets, rational behavior and other advanced topics.

**912. Activity Analysis in Economic Theory**

Winter. 3(3-0) Approval of department.

Linear programming, with an introduction to the theory of games. Production with fixed technical preparations.

**913. General Equilibrium Economics**

Winter. 3(3-0) 813 or approval of department.

General equilibrium economics: statics and dynamics. General equilibrium economics involving time and risk. Integration of the micro-

theories of production, consumption and markets with the macroeconomic variables. Dynamics as development through time.

**914. Welfare Economics**

Spring. 3 credits. 812 or approval of department.

Individual values, Pareto optimality and social welfare.

**915. Economic Dynamics**

Spring. 3(3-0) 813 or approval of department.

Models of economic behavior over time with emphasis on stability conditions, the trade cycle, and economic growth.

**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 Agricultural Economics Department.

Selection, planning and conduct of research. Alternative research approaches. Role of theory, beliefs and valuations. Critical appraisal of research studies.

**990A. Monetary Theory and Policy Workshop**

Winter, Spring. 3 to 16 credits. 812, or approval of department.

Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to participate in workshop and may do so while registered for 999.

**990B. Industrial Organization and Public Policy Workshop**

Fall, Winter, Spring. 3 to 16 credits. 812, 821A, or approval of department.

Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to participate in workshop and may do so while registered for 999.

**990C. Mathematical Economics and Econometrics Workshop**

Fall, Winter, Spring. 3 to 16 credits. 812A, 832; or approval of department. Interdepartmental with the Agricultural Economics Department.

Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to participate in workshop and may do so while registered for 999.

**990D. Economic Development Workshop**

Fall, Winter, Spring, Summer. 3 to 16 credits. 850, 851, 852 or approval of department.

Critical evaluation of research reports by staff and students. Students writing doctoral dissertations in Development are encouraged to participate in the workshop and may do so while registered for 999.

**999. Research**

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**EDUCATION**

**ED**

**College of Education**

**101. Introduction to Teaching**

A. EXPLORING ELEMENTARY TEACHING

Fall, Winter, Spring. 3(1-4) Pre-education major.

Emphasis on the nature of teaching in the ele-