819. Plant Breeding Systems
(CSS 822.) Winter. 3(3-6) CSS 821, STT 432. Interdepartmental with the Department of Forestry and Horticulture. Administered by the Department of Horticulture. Breeding systems for improvement of self and cross pollinated and of vegetatively propagated crops. The genetic basis for parent selection.

821. Genetic Concepts in Plant Breeding
Fall. 3(3-0) CSS 350 or ZOL 441. Interdepartmental with the Department of Forestry and Horticulture. Genetic structure of plant populations, gene action, inbreeding, outbreeding, heterosis, linkage and recombination, genetic architecture of traits, genetic distance.

825. Clay Mineralogy
(GLC 825.) Winter. 4(3-4) CSS 840. CSS 850 or approval of department. Interdepartmental with the Department of Geological Sciences. Structures and properties of clays, their origins, occurrence, and utilization. Methods of studying clays including X-ray diffraction, differential thermal analysis, infrared absorption and other chemical and physical techniques.

831. World Food Crops
Spring of odd-numbered years. 3(2-0) World food crop production and related systems of agriculture which provide this resource. The impact of modern discoveries and opportunities for change.

833. Soil Fertility and Plant Nutrition
Winter of odd-numbered years. 3(3-0) CSS 430 or approval of department. Fundamental concepts in soil fertility and mineral nutrition of plants; fate of nutrients applied to soils, nutrient uptake, translocation and utilization by plants; principles of laboratory, greenhouse and field research methods.

836. Evolution of Crop Plants
Fall of even-numbered years. 3(3-0) CSS 821 or approval of department. Interdepartmental with the departments of Forestry and Horticulture. Administered by the Department of Horticulture. Cultural and biological aspects of evolution under domestication; origin and diversity of cultivated plants.

838. Tissue Culture for Plant Breeding
(HRT 840.) Winter of even-numbered years. 3(2-2) BOT 414, CSS 821. Interdepartmental with the departments of Forestry and Horticulture. Administered by the Department of Horticulture. The application of plant cell, protoplast and tissue culture methodologies and principles to crop improvement.

840. Soil Physics
Fall. 3(3-0) CSS 430, CEM 162 or approval of department. Physical properties of soil (texture, structure, consistency, aeration, water, temperature, etc.), their quantitative measurement, and relation to plant growth, and agronomic and engineering practices.

842. Advanced Soil Microbiology
Fall of odd-numbered years. 3(3-0) MPH 426 or approval of department. Interdepartmental with and administered by the Department of Microbiology and Public Health. Biochemistry, biology, and community ecology of microorganisms indigenous to soil. Emphasis on current research problems.

843. Soil Microbiology Laboratory
Fall of odd-numbered years. 2(0-6) MPH 842 concurrently or approval of department. Interdepartmental with and administered by the Department of Microbiology and Public Health. Fundamental techniques of dealing with microorganisms indigenous to soil. Metabolic activity of microorganisms. Interaction between microorganisms and plants.

850. Soil Chemistry
Winter. 3(3-0) CSS 430; CEM 182, CEM 333; or approval of department. Chemistry of mineral weathering and soil formation, ion activities, ionic exchange and equilibrium reactions, soil pH, specific elements and their chemical analysis, and availability of nutrients to plants.

856. Organic Chemistry of Soils
Spring of odd-numbered years. 3(3-0) CEM 442. Relationship of natural and synthetic organic chemicals to chemical and biochemical processes in the soil environment.

870. Origin and Classification of Soils
Winter. 4(3-0) CSS 470; CSS 840, or approval of department. Genesis, morphology and classification of major soils of the world. Relationships among soils in natural and cultural landscapes. How soil properties affect their use, management and conservation. Land classifications for various purposes.

899. Master's Thesis Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

920. Applied Regression Analysis
Spring. 3(3-0) STT 443 or approval of department. Multiple regression, model selection, the general linear model and confounding in factorial sets of treatments.

940. Theoretical Population Genetics
Winter. 4(4-0) MTH 113, STT 442 or approval of department. Interdepartmental with the departments of Forestry and Horticulture. Administered by the Department of Forestry. Discussion of mathematical theories in population genetics and experimental works on natural and laboratory populations.

941. Quantitative Genetics in Plant Breeding
Spring of even-numbered years. 4(4-0) STT 442, CSS 817 or approval of department. Interdepartmental with the departments of Forestry and Horticulture. Calculation and implication of genetic parameters. Linkage, genotype by environment interaction. Covariance between relatives. Heritability and selection. Genotype by environment interaction. Emphasis on relationship of quantitative genetics to plant breeding.

944. Physiological Genetics
Winter of odd-numbered years. 3(3-0) BOT 412, CSS 821. Interdepartmental with the departments of Forestry and Horticulture. Administered by the Department of Forestry. Control of variation in higher plants including adaptive physiology, quantitative genetics, growth correlation, biochemical genetics, hybrid physiology, and geneology.

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

EARTH SCIENCE
See Geological Sciences.

ECONOMICS

College of Business and Graduate School of Business Administration

201. Introduction to Microeconomics
Fall, Winter, Spring. 4(4-0) Open to Freshmen. Not open to students who have credit in EC 251H or EC 210. Economic institutions, reasoning and analysis. Consumption, production, determination of price and quantity in different markets, income distribution, market structure and normative analysis.

202. Introduction to Macroeconomics
(EC 200.) Fall, Winter, Summer. 4(4-0) Open to Freshmen. Not open to students who have credit in EC 252H or EC 210. Determinants of Gross National Product, unemployment, inflation and economic growth. National income accounting, fiscal policy; aggregate demand and supply management.

210. Fundamentals of Economics
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 201, EC 324, and EC 325.

252H. Macroeconomics 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 application to economic analysis and policy. Substitutes for EC 202, EC 326 and EC 327 combined.

305. Industrial Relations and Trade Unionism
Fall, Winter, Spring, Summer. 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.
306. Government Programs for Workers
Fall, Winter, Spring. (4-4) EC 201. Interdepartmental with Public Affairs Management.
Economics of selected government institutions and programs for workers. Social security, worker’s compensation, Unemployment Insurance, SIA, employment and training programs, wages and hour legislation, anti-discrimination programs.

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. Summer. (3-0) EC 201, EC 202 or EC 210. Not open to students who have credit in EC 251H.

325. Microeconomics II
Fall, Winter, Spring. (3-0) EC 201, EC 202 or EC 210. Not open to students who have credit in EC 251H.

326. Macroeconomics I
Fall, Winter, Spring. Summer. (3-0) EC 201, EC 202 or EC 210. Not open to students who have credit in EC 251H.

327. Macroeconomics II
Fall, Winter, Spring. (3-0) EC 201, EC 202 or EC 210. Not open to students who have credit in EC 251H.
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. (3-0) 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, Winter, Spring, (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, Spring, (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, (3-0) EC 201, EC 202 or EC 210. Interdepartmental with Public Affairs Management.

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.

401. Interpreting Economic News and Research
Winter. (3-0) EC 201, EC 202 or EC 210 or EC 251H; EC 253H.
Reporting and interpreting economic news and research. Sources of 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) 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) 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) EC 201 or EC 210 or EC 251H.
Fiscal problems at the state and local levels of government, including revenues, expenditures, borrowing, and intergovernmental fiscal relations.

410. Medical Economics
Spring, (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.

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

412. Urban Economics
Fall, (4-4) 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) 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) 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) 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. (3-0) EC 324, EC 326, MTH 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. (3-0) EC 201, EC 202 or EC 210, EC 203 or EC 429 and EC 430 are a two-term sequence. Students should take the courses in succeeding terms, though they may begin with either course.

429. International Finance
Fall, Winter, Spring, Summer. (3-0) EC 201, EC 202 or EC 210, EC 203 or EC 429 and EC 430 are a two-term 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) 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) 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. (4-4) 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.
436. The Development of the American Economy
Fall, 4(4-0) EC 201, EC 202.
Causes and consequences of U.S. development. Quantitative analysis of topics, such as British trade policies, slavery, industrialization, immigration, the Great Depression and income distribution.

438. Soviet Economy
Winter. 4(4-0) EC 201 or EC 202.
History and analysis of Soviet planning, including input-output, banking, the pricing system, labor markets and capital allocation. Approved through Winter 1992.

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 Marxian-radical 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, Summer. 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 442 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 202 or approval of department. Interdepartmental with and administered by Public Affairs Management.

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. 1/0-0) R D 480 and approval of department. Interdepartmental with Department of Teacher Education.
Evaluation and use of analytical models designed to solve regional economic problems.

463. Economics of Education
(UMS 463.) Winter. 3(3-0) EC 201 or EC 210 or approval of department. Interdepartmental with the Department of Teacher Education.

470. Monetary Theory
Fall. 3(3-0) EC 320.
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 Department of Mathematics.

503. Managerial Economics
Fall, Winter, Summer. 4(4-0) 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.

504. Macroeconomic Models
Fall, Winter, Spring. 4(4-0) Graduate students in Business Administration or approval of department. Not open to undergraduates or to those with credit in EC 805B, EC 812A or EC 861.

505A. Microeconomics Theory
Fall, Winter. 3(3-0) 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.

805B. Macroeconomic Theory
Fall, Spring. 3(3-0) 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.

806A. Public Expenditures
Fall. 3(3-0) Approval of department.

806B. Public Revenues
Winter. 3(3-0) 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.

806C. State and Local Public Finance
Spring. 3(3-0) Approval of department.
State and local expenditure systems in theory and practice; tax and nontax revenues; intergovernmental fiscal relationships; the fiscal problems of metropolitan governments.

806D. Economic Role of Government
Spring. 3(3-0)
Analysis of fundamentals of economic role of government with focus on social control and social change; legal basis of economic institutions; applications to specialized problems and institutions.

807. Survey of Microeconomic Analysis
Winter. Spring. 3(3-0) 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.

808. Techniques of Microeconomic Analysis
Spring. 3(3-0) EC 805 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.

809. Macroeconomic Analysis
Winter. Spring. 3(3-0) 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.

810. Economics of Public Choice
Winter. 3(3-0) Approval of department. Interdepartmental with the departments of Agricultural Economics, and Resource Development. Administered by the Department of Agricultural Economics.
812A. Microeconomics I  
Winter, 3(3-0) 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.

812B. Microeconomics II  
Spring, 3(3-0) EC 312A.  
Functional forms in production and consumption; competitive equilibrium; theories of non-competitive markets; imperfect information and behavior under uncertainty; multiproduct firms.

812C. Microeconomics III  
Fall, 3(3-0) EC 312B.  
General equilibrium and welfare; optimality of competition; market failures; economies of linear and nonlinear programming and input-output analysis.

813A. Macroeconomics I  
Fall, 3(3-0) EC 326, EC 327; EC 480 or MTH 215 or concurrently.  
Income accounting and price indices; comparative statics of macroeconomics models; consumption and investment functions; the money supply.

813B. Macroeconomics II  
Winter, 3(3-0) EC 313A.  
Demand for money; portfolio theory; theories of inflation and unemployment.

813C. Macroeconomics III  
Spring, 3(3-0) EC 313B.  
Models of macroeconomic disequilibrium; macroeconomic dynamics and the effects of search; theories of neoclassical and optimal economies growth.

818A. Monetary Theory  
Fall, 3(3-0) EC 312C, EC 313C, and EC 335 and approval of department.  
Monetary and interest theories.

818B. The Theory of Monetary Policy  
Winter, 3(3-0) EC 318A or approval of department.  
Theories of the transmission of monetary policy to output, employment and prices.

818C. Problems in Monetary Policy  
Spring, 3(3-0) EC 318B.  
Goals and techniques of monetary policy.

821A. Competition and Monopoly in American Industry  
Fall, 3(3-0) Approval of department.  
Examination of structure, behavior, and performance in industries.

821B. Government Policy Toward Private Enterprise  
Winter, 3(3-0) Approval of department.  
Evolution of government policy with respect to such problems as conspiracy, monopoly, mergers, unfair practices, and discrimination in economic and legal appraisal of policy alternatives.

821C. Problems Related to Regulated Industries  
Spring, 3(3-0) Approval of department.  
Departures from market competition as a policy norm, as in public utilities and transportation.

826A. Theory of International Trade  
Fall, 3(3-0) EC 428 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(3-0) EC 336A.  
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(3-0) EC 366B.  
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.

834A. Heterodox Economic Analysis  
Spring, 3(3-0) EC 325, STT 422; not open to students with credit in EC 336.  
Intermediate with the Department of Agricultural Economics.  

836. Econometric Methods  
Winter, 3(3-0) STT 442; EC 325 or EC 805A or EC 812A; not open to students with credit in EC 336.  
Properties of least squares and maximum likelihood estimators of single and simultaneous equations econometric models.

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.

853. Introduction to Econometrics  
Spring, Summer, 3(3-0) EC 325, STT 422; not open to students with credit in EC 336.  
Intermediate with the Department of Agricultural Economics.  

856. Statistical Inference in Economics I  
Fall, 3(3-0) EC 312A or EC 365A or STT 443 or STT 763; or approval of department.  
Interdepartmental with the departments of Agricultural Economics, and Statistics and Probability.  

857A. Wage Theory I  
Fall, 3(3-0) EC 324, EC 326 or approval of department.  
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 365 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 II  
Fall, 3(3-0) EC 312A or EC 365A; STT 443 or STT 763; or approval of department.  
Interdepartmental with the departments of Agricultural Economics, and Statistics and Probability.  

877. Statistical Inference in Economics II  
Winter, 3(3-0) EC 376 or approval of department.  
Interdepartmental with the departments of Agricultural Economics, and Statistics and Probability.  
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.

591. Topics in Applied Econometrics
Spring. 3(3-0) EC 835 or EC 877. Topics in applied econometrics with particular attention to problems of testing hypotheses in the context of economic models.

595. Graduate Reading in Economics
Fall, Winter, Spring. Summer. 1 to 4 credits. May reenroll for a maximum of 9 credits.

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

911. Public Program Analysis
Spring. 3(3-0) AEC 863, EC 865A, EC 865B; 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.

990C. Mathematical Economics and Econometrics Workshop
Fall, Winter, Spring. 3 to 16 credits. EC 812A, EC 822; or approval of department. Interdepartmental with the Department of Agricultural Economics. Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to enroll in the workshop.

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

EDUCATION

EDUCATIONAL ADMINISTRATION EAD
(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(1-2)
Prepares students for leadership roles and responsibilities through the development of skills and ideas consistent with principles of our democracy.

415B. Topics Leadership Training
Fall, Winter, Spring. 3(1-2) EAD 415A.
Leadership roles and responsibilities with specialized populations. Topics include women, minorities, and fraternal organizations.

805A. Educational Development Planning: Basic Concepts
Winter. 3(3-0) Approval of department.
Basic concepts of economic, social and political development are studied as they place demands upon educational planners to cope with them. The distribution of development benefits is stressed.

805B. Educational Planning and National Development
Spring. 3(3-0) EAD 805A. Formulation of educational development strategies and plans to deal with crucial national and community development problems as they emerge. Focus on current practices and emerging trends in such problems and issues as personnel, plant, finance, community school programs, and instructional improvement. Intended primarily for persons actively preparing for administrative positions in schools and other educational agencies.

805C. Higher Education in Developing Countries
Fall. 3(3-0) Approval of department. National and international development roles of higher educational institutions and personnel. Major focus on science and the appropriate technology for applying scientific knowledge to developmental problems in specific socio-cultural settings.

806. Education Through Cooperative Extension
Winter. 3(3-0) AEE 828 or EAD 860 or approval of department. Interdepartmental with and administered by the Department of Agricultural and Extension Education. Cooperative extension programs in the United States with emphasis on Michigan model: philosophy, history, scope, organizational structure, programs and methods.

816E. Instructional Simulation (ED 823; EAC 816E.) Fall, Summer. 3(2-2) Teaching experience. Interdepartmental with and administered by the Department of Teacher Education. Design and use of simulations and instructional games in the curriculum for social development, skills, values and affects.

816F. Studies in Nonformal Education (EAC 816F.) Summer. 4(3-2) Approval of department. International invitation to establish workshops for specialists, project planners, staff trainers and practitioners. Worldwide selection of contemporary case studies of nonformal education. Focus is on out-of-school education for development.

816K. Curriculum for Nonformal Education
Winter. 3(3-0) T E 810A, T E 810C or EAD 860. Principles of curriculum related to nonformal education programs. Consideration of various fields of out-of-school education and training associated with community level rural and urban human resource development.

839. African Research
(FDC 839., EAC 838.) Fall, Winter, Spring. 3 to 4 credits. May reenroll for a maximum of 8 credits. Graduate standing or approval of instructor. Interdepartmental with the departments of Anthropology, Geography, History, Political Science, and Sociology. Administered by the Department of Anthropology. African-related archival and field research topics and methodologies viewed from perspective of relevant social science and humanistic disciplines associated with the African Studies Center.

851A. Foundations of Administration: Theory and Organization
Fall, Winter, Summer. 3(3-0) Approval of department. Emphasizes basic administrative theory and research, focuses on current practice and emerging trends in such problems and issues as personnel, plant, finance, community school programs, and instructional improvement. Intended primarily for persons actively preparing for administrative positions in schools and other educational agencies.

851B. Foundations of Administration: Practice and Problems
Winter, Spring, Summer. 3(3-0) EAD 851A or approval of department. Emphasizes basic administrative theory and research, focuses on current practice and emerging trends in such problems and issues as personnel, plant, finance, community school programs, and instructional improvement. Intended primarily for persons actively preparing for administrative positions in schools and other educational agencies.

851C. Seminar: Educational Leadership and Organizational Climate
Winter. 3 credits. Approval of instructor. Exploration of dimensions and alternative ways to measure educational leadership and organizational climate. Use of existing instruments for diagnostic or research projects.

851D. Project Planning Evaluation and Management
Fall. 3(3-0) Approval of instructor. Educational projects as an organizational strategy for developing and supporting innovation and change. Emphasis on planning evaluation and management techniques for project development and implementation.

852A. Administration of Educational Institutions: Elementary School Administration
Winter, Summer. 3(3-0) Twelve graduate credits in Education including EAD 851A; EAD 851B or approval of department. Exploration of the nature and scope of responsibilities of areas in educational administration. Designed to serve as an initial application of administrative theory for those aspiring to one of the several areas.