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Econometrics and Quantitative Economics

The study of economics examines how entities from individuals to nations allocate resources to achieve objectives congruent with their desires and interests. A strong economics background can help one better conduct market analyses important for business, predict movements in financial markets, and understand effects of government policies. But to pursue these endeavors, employers are increasingly wanting students that have training in statistics, math, and computer programming as these employers will pay a premium to employees that have these skills. The Econometrics and Quantitative Economics (EQE) major is designed to provide these skills and to enable graduates to apply this training to economic issues. The EQE major will also greatly benefit those wanting to go to graduate school in economics because majors will have the quantitative foundation students need to succeed in economics graduate programs.

The requirements for an EQE major are given below. Courses taken for a pass/fail grade will not be counted toward the major without the written consent of the director of undergraduate studies within the economics unit. Transfer students can receive credit towards the major from equivalent courses at other institutions. However, the required 400-level economics courses must be taken at Southern Illinois University Carbondale.

Students are highly encouraged to discuss their major programs and career goals with an economics professor. Undergraduates considering graduate economics programs should meet with a professor as soon as possible in order to adequately prepare for the economics and mathematical rigor of these graduate programs.

Bachelor of Science (B.S.) in Econometrics and Quantitative Economics Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Major Requirements	33
ECON 208 (or equivalent), ECON 240, ECON 241, ECON 340, ECON 341, ECON 463, ECON 465	22
Computer Science and Mathematics Choose three of the following Math and CS courses: Computer Science Courses: CS 202, CS 215, CS 220, CS 221, CS 300, and CS 306 Math Courses: MATH 150 or MATH 151 (but not both), MATH 221, MATH 305, MATH 318, MATH 319, MATH 349, MATH 352, MATH 380, MATH 400 At least three credit hours must come from Math and at least three credit hours must come from Computer Science.	11

Degree Requirements	Credit Hours
Technical Electives	36
Choose courses in fields complementary to the major from: Accounting; Agribusiness Economics; Anthropology; Archeology; Business; Business Analytics; Computer Science*; Economics**, Engineering; Finance; Geography; History; HTEM; ITEC; Journalism; Languages, Cultures, and International Studies (with prefixes CHIN, FR, GER, INTL, JPN, LCIS, SPAN); Linguistics; Management; Marketing; Mathematics*; Paralegal Studies; Philosophy; Political Science; Psychology; Sociology ¹	
Other Electives	12
	120

¹ **Only Computer Science and Mathematics credit hours above the eleven applied to the major apply to the Technical Electives. **Only Economics courses not specified above apply to the Technical Electives.*

Accelerated Master's Program

Econometrics and Quantitative Economics majors can enter an accelerated Bachelor's-Master's program in which specific courses satisfy requirements in both degrees allowing for completion of the master's in just one year after the B.A. To enter this program, students apply through the School of Analytics, Finance, and Economics during their junior year and must have at least a 3.25 G.P.A. in all coursework. Before the end of their senior year, students in this program take ECON 465 (Mathematical Economics) and ECON 463 (Applied Econometrics), one other 400-level Economics course, and MATH 150 (Calculus I). Up to seven credits from these 400-level Econ courses can be applied to both the bachelor's degree and the master's degree. Because the master's requires 30 hours of coursework, students in the accelerated master's program only need 21 hours after their senior year thereby making it possible and likely to complete the master's degree in only one year. Please see the school director for more information.

Capstone Option For Transfer Students

The Capstone Option is available to students who have earned an Associate in Applied Science (A.A.S.) degree or have the equivalent certification and who have a cumulative 2.0/4.0 GPA on all accredited coursework prior to the completion of the A.A.S. or certification, as calculated by the transfer institution's grading policies. The Capstone Option reduces the University Core Curriculum requirements from 39 to 30 hours, therefore reducing the time to degree completion. See the Capstone Option section for information. Students who apply for the Capstone Option will work with the College of Business and Analytics Advisement Office for approval of the Capstone Option and will complete a personal contract for a degree completion plan.

Differential Tuition

The College of Business and Analytics assesses differential tuition for College of Business and Analytics majors. The College of Business and Analytics has a "minor program fee" for majors outside of the College of Business and Analytics that want to declare a minor through the College of Business and Analytics. The minor program fee is equal to 15% of 15 credit hours of applicable tuition for declared College of Business and Analytics minors.

Econometrics and Quantitative Economics Courses

ECON113 - Economics of Contemporary Social Issues (University Core Curriculum) The purpose of this course is to examine a number of major social issues from an economics perspective. Thus the student will be taught some basic economic concepts (tool kit) which will then be used to analyze a variety of social problems. The emphasis will be on policy. Once the causes of social problems have been analyzed, then specific policies effective in solving or dealing with the social problem will be discussed. Only one of the courses, Economics 113 or Economics 114, can count among those economics courses required for an economics major or minor. Credit Hours: 3

ECON208 - Business Data Analysis (Same as ACCT 208 and FIN 208 and MGMT 208) [IAI Course: BUS 901] Uses of data in policy formulation are discussed. Emphasis is placed on the conversion of raw information into statistics, which are useful to the decision-maker. Problems stress solutions to questions typically raised in businesses. Prerequisite: MATH 139. Credit Hours: 3

ECON240 - Introduction to Microeconomics (University Core Curriculum course) [IAI Course: S3 902] Study of businesses, consumers, and the government and their effects on prices, output and income distribution. Current economic problems will be used as illustrative examples. Prerequisite: satisfaction of the University Core Curriculum mathematics requirement. Satisfies the University Core Curriculum Social Science requirement in lieu of Economics 113. Credit Hours: 3

ECON241 - Introduction to Macroeconomics (University Core Curriculum course) [IAI Course: S3 901] Determination of income, employment, output and price levels in the national economy; government taxation, expenditure, and monetary policies to solve problems such as inflation and unemployment. Prerequisite: satisfaction of the University Core Curriculum mathematics requirement. Satisfies the University Core Curriculum Social Science requirement in lieu of Economics 113. Credit Hours: 3

ECON301 - Economic Readings Readings in books and periodicals in a defined field, under direction of one or more faculty members. Periodic written and oral reports. No more than three credit hours of 301 may be counted as part of the 30 credit hour economics requirements for economics majors. Special approval needed from the instructor and program chair. Restrictions: College of Business and Analytics majors. Credit Hours: 1-6

ECON302I - History and Philosophy of the World's Economic Systems (University Core Curriculum) An investigation into how economic systems coexist with, and determine, or are determined by, the political and social structures in internationally diverse countries. Utilizing both economic concepts and an institutional approach the evolution of systems in nations such as Russia, Japan, the United States, China and others will be explored. Credit Hours: 3

ECON310 - Labor Problems A comprehensive overview of the relation of labor to the United States economy. Included are the history of labor in the United States; analysis of institutions affecting labor; the theory of wage and employment determination; as well as analyses of unions and collective bargaining, discrimination, unemployment, and the distribution of income. Prerequisite: ECON 240 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON315 - Money and Banking Study of the operation of the money and banking system in the United States. Stresses Federal Reserve control of the money supply and credit conditions to combat inflation and unemployment and the operation of the commercial bank operating as a firm within the Federal Reserve System. Policy issues are examined for the regulation of the banking industry as well as for the control of the domestic money supply. Prerequisite: ECON 241 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON322 - Introduction to Economic Development An analysis of the preconditions, processes, and problems involved in economic development. Both the theory and policy relevant to development, with special emphasis on the developing or emerging economies, are stressed. Prerequisite: ECON 240 and

241 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON325 - Economics of Transition This course is a survey of the problems confronting former socialist economies making a transition to a market economy. We focus primarily on the case of countries in Eastern Europe and on Russia. Students will learn to apply economic principles to understand the costs and benefits of policies including gradual versus rapid reform, price liberalization, privatization, federalist arrangements and stabilization. Prerequisite: ECON 240 and 241 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON329 - Introduction to International Economics Introduction to the principles of international economics. Stresses the relationship between the balance of payments and the United States economy, the determinants of deficits and surpluses, and policy options to correct an imbalance. Prerequisite: ECON 240 and 241 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON330 - Public Finance Effects of government spending and taxing activities on the rest of the economy. Analysis of government debt, the federal budgetary process, and various taxes used in the United States. Prerequisite: ECON 240 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON333 - Economics of the Environment Factors which lead to physical and human deterioration in a market economy. Consideration of solutions to such problems as urban decay, overpopulation, and pollution. Prerequisite: ECON 240 or 241 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON334 - Health Economics Factors underlying the demand for and supply of health and medical care services. Included are the market, voluntary nonprofit, and governmental sectors of the industry. Special topics are the regional coordination of hospital facilities and services, the consumer price index and the measurement and costs of control programs. Prerequisite: ECON 240 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON340 - Intermediate Microeconomics A survey of theories of household, firm, and government economic behavior in the determination of competitive and non-competitive market prices. Emphasis is on understanding the United States economic system and on evaluating existing and proposed government microeconomic policies designed to improve the system. Not open to students who have had Economics 440. Prerequisite: ECON 240 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON341 - Intermediate Macroeconomics The determinants of fluctuations in aggregate economic activity, unemployment and inflation. An analysis of the behavior of consumption and investment, the impact of government monetary and fiscal policies, and factors affecting the rate of economic growth. Not open to students who have had Economics 441. Prerequisite: ECON 241 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON350 - Law and Economics The application of economics to the study of legal rules and institutions with an emphasis on how legal rules influence individual behavior and a discussion of whether such rules and resulting behavior are efficient and/or equitable. Applications from property, contract, tort, and criminal law will be used. Prerequisite: ECON 240 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON374 - Industrial Organization A survey of economic theories and empirical studies on the nature and consequences of business rivalry in imperfectly competitive markets. Includes such topics as oligopoly, economics of scale, natural monopoly, introductory game theory, advertising, imperfect information, spatial competition, patents, and innovation. Prerequisite: ECON 240. Restrictions: College

of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON390 - Topics in Economics This one to three credit course focuses on a specific economics topic and considers various perspectives and debates within this issue. Most readings will come from news coverage and editorials rather than textbooks. Topics need not be the same across semesters. Before registering, interested students are encouraged to inquire with the economics program what topic will be featured. Note: the determination of credit hours will not be chosen by the student but will be set by the economics program depending on how often the course will meet during the semester. Prerequisite: ECON 240 or ECON 241 with a C or better or consent of the instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 1-3

ECON399 - Internship in Economics Internship constitutes paid or unpaid work in a firm, organization, or government office applying economic principles learned in class to real world experiences. Only one internship counted towards the economics major. Grades determined by periodic written reports. Prerequisite: successful completion of ECON 240, 241 and six additional credit hours of economics at SIUC; declared major in economics; and written approval from the Economics program. Restrictions: College of Business and Analytics majors. Credit Hours: 3

ECON416 - Financial Economics Study the role of money within the financial system, and the role of the financial system itself in providing risk-sharing, liquidity and information services. An examination of the bond market, interest rates and the concepts of risk, liquidity, information costs, taxation and investment maturity. A detailed examination of financial markets, e.g., the markets for stocks, foreign exchange, and market for financial derivatives. Finally, a more detailed account of why and how financial institutions and instruments evolve. This course includes a research project in which students formulate a research question, review literature related to the question, gather relevant data, and provide a research conclusion using tools learned in this and other courses. The student will communicate their research findings via a written paper and, if possible, via an oral presentation. Prerequisite: ECON 315 or 341 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON429 - International Trade and Finance Analysis of the pattern and volume of world trade and capital flows; effects of trade and payments on the domestic economy; problems and methods of adjusting to change in the balance of payments. This course includes a research project in which students formulate a research question, review literature related to the question, gather relevant data, and provide a research conclusion using tools learned in this and other courses. The student will communicate their research findings via a written paper and, if possible, via an oral presentation. Prerequisite: ECON 340 and 341 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON440 - Price, Output, and Allocation Theories A systematic survey of theories of product prices, wage rates, rates of production and resource utilization under conditions of competition, monopolistic competition, oligopoly and monopoly markets. Emphasis is on developing analytical tools useful in the social sciences. Not open to students who have had Economics 340. Prerequisite: ECON 240 or consent of instructor. Restrictions: College of Business and Analytics majors. Credit Hours: 3

ECON441 - Contemporary Macroeconomic Theory An examination in the causes of inflation, unemployment, and fluctuations in aggregate economic activity, factors affecting consumption and investment, and the sources of economic growth. Emphasis is on understanding contemporary United States macroeconomic problems and the options for fiscal, monetary and income policies facing the United States government. Not open to students who have had 341. Prerequisite: ECON 241 or consent of instructor. Restrictions: College of Business and Analytics majors. Credit Hours: 3

ECON443 - Honors Research in Economics Individual research for honors students in economics; student must be a junior or senior with a grade point average of 3.25 or better, overall and in the major. For undergraduate credit only. Not for graduate credit. Prerequisite: Mathematics 140, 150 or equivalent. Special approval needed from the program chair and a faculty supervisor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON450 - History of Economic Thought An analytical study of the development of economic ideas, with special reference to historical and societal context, central thrust, and impact. Such benchmark figures as Smith, Marx, Marshall, Veblen, and Keynes are highlighted and major schools of economic thought are identified. Prerequisite: ECON 240 and 241; or 113; or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON463 - Introduction to Applied Econometrics Applications of statistical tools to specific economic problems. Numerous examples will be examined in order to achieve this goal. Emphasis will be given to model misspecification, non-classical estimation techniques, data analysis, and simultaneous equations. This course includes a research project in which students formulate a research question, review literature related to the question, gather relevant data, and provide a research conclusion using tools learned in this and other courses. The student will communicate their research findings via a written paper and, if possible, via an oral presentation. Prerequisite: ECON 208 or equivalent or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON465 - Mathematical Economics I A systematic survey of the fundamental mathematical tools for economic analysis. Topics include functions and their properties, including derivatives and integrals. The focus is on calculus techniques for optimization and comparative statics analysis. Prerequisite: ECON 340 or 440, and MATH 140 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 4

ECON474 - Economic Strategies for Business This course will be concerned with broad principles of microeconomics that underlie all business decision-making. The main topics discussed may include the firm's costs, pricing and research and development decisions under different market structures, price discrimination, strategies of different business practices, information, advertising, decision-making over time, and decision-making under symmetric information. Prerequisite: ECON 240 or its equivalent or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

ECON479 - Problems in Business and Economics Application of economic theory and tools of analysis to practical business problems. Cost and demand functions, and forecasting are analyzed from a policy standpoint. Prerequisite: ECON 208 and ECON 240 or consent of instructor. Restrictions: College of Business and Analytics majors or minors, or see a College of Business and Analytics advisor. Credit Hours: 3

Econometrics and Quantitative Economics Faculty

Becsi, Zsolt, Associate Professor, Economics, Ph.D., University of Wisconsin-Madison, 1991; 2003. Public finance, macroeconomics.

Dai, Chifeng, Associate Professor, Economics, Ph.D., University of Florida, 2003; 2005. Industrial organization, public economics, law and economics, and applied econometrics.

Gilbert, Scott, Associate Professor, Economics, Ph.D., University of California at San Diego, 1996; 1999. Econometrics, applied macroeconomics.

Kebede, Hundanol, Assistant Professor, Ph.D., University of Virginia, 2020; 2021. International economics, development economics.

Lahiri, Sajal, Professor, Distinguished Scholar, and Vandever Chair, Economics, Ph.D., Indian Statistical Institute, 1976; 2002. International trade, development economics, environmental economics.

Mehrabani, Ali, Assistant Professor, Ph.D., University of California at Riverside, 2021; 2021. Econometrics.

Morshed, AKM, Professor, Economics, Ph.D., University of Washington, 2001; 2004. Macroeconomic theory, international economics, economic growth.

Sylwester, Kevin, Professor and Director, School of Analytics, Finance, and Economics, Ph.D. University of Wisconsin-Madison, 1997; 1998. Macroeconomics, data analytics.

Watts, Alison, Professor, Economics, Ph.D., Duke University, 1993; 2001. Microeconomics, game theory, industrial organization, law and economics.

Emeriti Faculty

Fare, Rolf, Professor, Emeritus, Docent, University of Lund, Sweden, 1976; 1978.

Grabowski, Richard, Professor, Emeritus, Economics, Ph.D., University of Utah, 1977; 1979.

Mitchell, Thomas, Associate Professor, Emeritus, Economics, Ph.D., Brown University, 1984; 1983.

Primont, Daniel A., Professor, Emeritus, Ph.D., University of California at Santa Barbara, 1970; 1978.

Sharma, Subhash C., Professor, Emeritus, Ph.D., University of Kentucky, 1983; 1983.

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