

Economics

Gatton College of Business & Economics

Financial Assistance

Any student who is a graduate of a fully accredited institution of higher learning is eligible to apply for admission to the graduate program in economics. The final decision on matters of admission is made by the Graduate Studies Committee of the Department of Economics and is based on the student's academic profile and prospects for successful completion of the curriculum. For more information on the qualifications of our admitted students see <http://gatton.uky.edu/programs/phd/phd-economics>.

Applications are submitted online through the Graduate School, and must include:

1. A resumé
2. A one-to-two page personal essay about why you want to attend graduate school in economics
3. Two or three confidential letters of recommendation
4. Unofficial copies of your GRE scores, transcript, and TOEFL score (if required).

Along with the other application materials, the information in these items will be considered by the Economics Department in its admission and financial aid decisions.

Master of Science

The M.S. in Economics is designed to introduce students to graduate-level study in economics. The M.S. in Economics provides a strong foundation in microeconomics, macroeconomics, and econometrics, in addition to allowing students to pursue some electives in their fields of interest.

Degree Requirements

The recommended minimum prerequisite undergraduate preparation includes 6 hours of intermediate theory, 6 hours of statistics, and 6 hours of calculus. Requirements for the M.S. in Economics are:

1. A minimum of 30 hours of graduate credit courses.
 - a. The student must satisfactorily complete the following courses:

ECO 590	Introduction to Quantitative Economics
ECO 601	Advanced Microeconomic Theory
ECO 602	Macroeconomic Theory
ECO 603	Research Methods and Procedures
ECO 703	Introduction to Econometrics I
 - b. The student must also satisfactorily complete either:

ECO 701	Neoclassical Microeconomic Theory or
ECO 702	Advanced Macroeconomic Theory

and, one course in an elective area of the Ph.D. program.
 - c. Courses taken outside of the Department of Economics must be approved by the Director of Graduate Studies to count toward the 30 hour requirement.
2. Successful completion of a final examination.
3. Minimum average of grade B (a GPA of 3.0) in all courses attempted for graduate credit after being admitted to Graduate School. Students obtaining six quality points below a B average will be dropped by the department.

Doctor of Philosophy

The Ph.D. program is designed to enable the graduate to contribute to economic research and policy-making. The program is aimed at preparing students for careers in academia, government, and the private sector. To attain these objectives, the program is structured to provide the student with the appropriate knowledge, understanding, skills and abilities, including:

1. An understanding of economic theory;
2. Skill in the use of quantitative techniques, specifically mathematics and statistics;
3. An extensive exposure to the research, institutions, and issues in several fields;
4. Experience in the development of research projects throughout their entire program;
5. Research and writing skills that will lead to the publication of original research; and
6. Competence in communicating economic knowledge to broad and diverse audiences.

Degree Requirements

1. **Economic Theory.** The student must demonstrate competence in economic theory as demonstrated by passing a departmental written examination in economic theory. This examination will be given twice a year, at the beginnings of the spring semester and the eight-week summer session. Students failing the examination will be given a second attempt; those failing on the second attempt will not be allowed to continue in the program. Minimum preparation for the written examination in economic theory can be achieved by taking the following core courses:

ECO 601	Advanced Microeconomic Theory
ECO 602	Macroeconomic Theory
ECO 701	Neoclassical Microeconomic Theory
ECO 702	Advanced Macroeconomic Theory

2. **Statistics/Econometrics.** The student must demonstrate competence in the area of statistics and econometrics. This competence may be demonstrated by satisfactory performance in the following courses:

ECO 603	Research Methods and Procedures
ECO 703	Introduction to Econometrics I
ECO 706	Introduction to Econometrics II
and ECO 707 (Seminar) or ECO 790 (Time Series Analysis)	

3. **Elective Areas.** All Ph.D. students must choose two fields of study approved by the student's Advisory Committee. The two fields may be chosen from the following:

Environmental/Health Economics
Industrial Organization
International Economics
Labor Economics
Macroeconomics
Public Economics

Minimum course preparation for each field shall consist of at least two courses as determined by the student's Advisory Committee. In addition to the two chosen fields, the student is encouraged to take elective courses in other areas of economics, such as econometrics or economic theory, or in other disciplines such as Agricultural Economics, Finance, Marketing, Management, Mathematics, or Public Administration.

4. **Supporting Work.** At least nine hours of supporting course work must be selected. These courses must be approved by the student's Advisory Committee. This supporting work will allow the student to

pursue more intensive study of one or both of the two chosen fields, or to pursue courses in other fields of economics. The supporting work cannot consist of 400 or 500 level courses, ECO 610 or ECO 611, ECO 652, or any of the core courses in economic theory (ECO 601, ECO 602, ECO 701, ECO 702, ECO 704, ECO 705) or econometrics (ECO 603, ECO 703, ECO 706). Supporting work can also be courses from other disciplines including Agricultural Economics, Finance, Mathematics, Statistics, or Public Policy with the approval of the Director of Graduate Studies.

5. Grades. Minimum average of grade B in all courses attempted for graduate credit after being admitted to the Graduate School. Students obtaining six quality points below a B average will automatically be dropped by the department.
6. Qualifying Examinations.
 - a. Written Examination: The written examination must be taken in one of the student's two elective fields as part of the requirements for candidacy for the Ph.D. degree. The choice of the field in which the student takes the exam should reflect the intended field in which the student is to write his or her dissertation. This examination is given twice a year, at the beginning of the spring semester and at the beginning of the eight-week summer session. Fields may elect to require a paper in addition to an exam; this will be communicated to the students at the beginning of the academic year. The written examination is prepared and graded by specialists in the respective fields. In the event that the student fails the examination, the student's Advisory Committee determines the conditions which must be met before another examination is given. The minimum time between examinations is four months. Two failures to pass the written examination constitute failure of the qualifying examination.
 - b. Oral Examination: After passing the written qualifying examination, the Director of Graduate Studies will, on the advice of the Advisory Committee, schedule through the Graduate School an oral examination which will be administered by the Advisory Committee. The examination will ordinarily consist of the presentation and defense of a dissertation proposal.
7. The Ph.D. Dissertation. The dissertation will be based on original research on a significant topic. The dissertation will be defended in an oral examination

Course Descriptions

ECO 601 ADVANCED MICROECONOMIC THEORY. (3)

An intensive course covering microeconomic theory and its various methodological and analytical techniques. Prereq: ECO 401 or consent of instructor.

ECO 602 MACROECONOMIC THEORY. (3)

An analysis of a market clearing, general equilibrium macroeconomic model. Emphasis on theoretical foundations of relevant behavioral functions and comparative statics. Not open to those with credit in ECO 761. Prereq: ECO 402 or consent of instructor.

ECO 603 RESEARCH METHODS AND PROCEDURES IN ECONOMICS. (3)

The basic procedures and methods of research in economics are considered from the standpoint of their applicability to problem solving and discovery of new scientific facts and generalizations in economics. Definition of the problem, statement of hypothesis, research design, data collection methods, and data analysis constitute the major topics. Attention is given to proper style and preparation of research reports in economics.

ECO 610 MANAGERIAL ECONOMICS. (3)

Analysis of applications of economic theory to management decision making. Such problems as demand

and cost determination, pricing, and capital budgeting are treated. Prereq: Graduate standing, MA 123 or its equivalent.

ECO 619 SKILL DEVELOPMENT FOR APPLIED ECONOMIC ANALYSIS. (3)

Calculus, matrix algebra, mathematical statistics to understand basic economic models and applications and the fundamentals of econometric analysis. The intent of this course is to provide and develop the tools the students will need to engage in applied economic analysis and that will be used in subsequent courses in the MS in Economics Program. Prereq: MA 114 or its equivalent or consent of the instructor.

ECO 621 APPLIED MICROECONOMICS. (3)

This course covers essential microeconomic models and issues for the advanced applied economist and is the foundational course for the microeconomics in the applied track of the MS in economics program. The focus is on topics and methods most frequently used and relied upon in applied business and policy problems. By doing so, the course will prepare students for subsequent coursework for the applied MS track. Additionally, it will strive for students to gain strong intuitive skills regarding how to approach applied economics problems and their related empirical applications. Prereq: ECO 401 or its equivalent or consent of the instructor.

ECO 622 MACROECONOMICS FOR APPLIED ECONOMISTS. (3)

An applied analysis of macroeconomic conditions useful to a professional business economist is presented. Emphasis is on blending mainstream economic models of the economy with data to interpret current conditions, prospects for future conditions, and monetary and fiscal policies that influence these conditions. Prereq: ECO 402 (Intermediate Macroeconomics) or an equivalent course.

ECO 623 ECONOMETRICS FOR APPLIED ECONOMICS. (3)

This course examines a variety of topics in applied econometrics. The course begins with a review of the classic linear regression model and ordinary least squares estimation. The primary focus of the class is to examine how estimation can be done when the classic model doesn't apply. Topics include endogenous regressors and instrumental variables, limited dependent variables models and maximum likelihood estimation, unobserved heterogeneity and panel data methods. Prereq: ECO 491 or equivalent or consent of instructor.

ECO 624 EMPIRICAL DATA MANAGEMENT. (3)

This course will cover the basic ways that economic data can be obtained. The course will cover obtaining data from data from the web, from APIs, and from colleagues in various formats including raw text files, binary files and databases. It will also cover the basics of data cleaning and how to make data operational. Organized data dramatically speeds downstream data analysis tasks. The course will also cover the components of a complete data set including raw data, processing instructions, codebooks, and processed data. The course will cover the basics needed for collecting, cleaning and sharing data. Particular points of emphasis will include reading and writing datasets, data cleaning, creating, changing and labeling variables and values, automating your work, combining and reshaping files, processing observations across subgroups, .do file programming, and programming using .ado files. Prereq: ECO 491 or its equivalent or consent of the instructor.

ECO 625 PREDICTIVE MODELS AND FORECASTING. (3)

This course provides students with an overview of modern techniques in the forecast of time series used in a variety of applications in the private and public sectors including revenue and sales forecasting. As an applied course the techniques will be motivated by specific practical problems and will be put to use in forecasting practices. The course covers auto-regressive and moving average models, distributed lag models, forecasting, Vector Auto-Regression, unit roots and testing, and auto-regressive conditional heteroskedasticity. Prereq: ECO 623 or its equivalent.

ECO 631 BUSINESS ECONOMICS. (3)

ECO 631 studies the economics of organizations and the economics of strategy. The first half of the course applies transactions costs and principal-agent theories to study the internal organization of the firm. Topics to be covered include the boundaries of the firm, corporate governance, choice of production process, and internal incentive systems. The second half of the course applies economic tools to the analysis of firm strategy. Topics to be covered include basic cost and demand conditions, economies of scale and scope, product differentiation, entry, exit and mobility conditions, price discrimination and commodity bundling, vertical control, and rivalry and strategy. Basic tools of game theory and asymmetric information are integral parts of this course. Prereq: ECO 621 or its equivalent or consent of the instructor.

ECO 652 PUBLIC POLICY ECONOMICS. (3)

Principles and practices of economical resource management in the governmental sector: tax and expenditure types, intergovernmental fiscal cooperation, debt financing, budgeting and financial planning. Prereq: ECO 201 or equivalent and MPA or MPP program status or permission of department. (Same as PA 652.)

ECO 653 HEALTH ECONOMICS. (3)

This course applies general theoretical principles of economics to the health care sector. The basic approach is to recognize the importance of scarcity and incentives, allowing for differences peculiar to health. The demand and supply of health and medical care are examined as they involve physicians, nurses and hospitals. The competitiveness of their markets, health insurance and the role of government are explored. Special topics include regulation and planning, benefits-cost analysis, and reform health plans. Prereq: The economics prerequisite can be met in three ways: (a) an undergraduate principles course in microeconomics and HA/PA 652; (b) an undergraduate microeconomics principles course and a graduate course in managerial economics; or (c) an undergraduate microeconomics principles course and an intermediate microeconomics course. (Same as PA 636.)

ECO 654 BENEFIT-COST ANALYSIS. (3)

Principles, practices and applications of applied welfare analysis are the content of this course. The basic theory of benefit-cost analysis is presented and the relevance of implementation analysis in policy analysis is established. Prereq: PA 652. (Same as PA 680.)

ECO 672 WORLD TRADE AND COMMERCIAL POLICY. (3)

An analysis of trade patterns and the implication of government policy on trade, in the light of both economic theory and empirical findings. Prereq: Successful completion of an upper division undergraduate or graduate level economics course.

ECO 674 AGRICULTURE AND ECONOMIC DEVELOPMENT. (3)

Analytical consideration of the role of agriculture in economic development in relation to overall development strategy at various stages of growth. Theoretical and policy issues of particular relevance to the agricultural development in underdeveloped agrarian economies with various resource, social, political and economic systems. Prereq: ECO 473G or consent of instructor. (Same as AEC 626.)

ECO 679 ECONOMICS OF THE PUBLIC SECTOR. (3)

Topics and methods for students who wish to become policy practitioners as well for those who will deal with policy makers. Focus is on role of the federal, state, and local government in the economic with both the expenditure and revenue sides of the government budget examined. Substantial material from standard public finance courses including welfare measures and cost-benefit analysis, program evaluation, and tax analysis. Prereq: ECO 621 or equivalent or consent of the instructor.

ECO 692 ECONOMETRICS FOR POLICY ANALYSTS. (3)

Maximum likelihood estimation, ordinary least squares (OLS) regression, instrumental variables (IV) regression, heteroscedasticity consistent regression, fixed and random effects models, probit, logit and tobit models, and identification and two-state least squares estimation of simultaneous equations models. Prereq: Any undergraduate statistics course. MPA, MPP or PUAD program status for priority registration, other students with permission of instructor. (Same as PA 692.)

ECO 697 FINAL PROJECT IN APPLIED ECONOMICS. (3)

The purpose of this course is to assist the student in developing and completing a research study applying the tools and institutional knowledge obtained in other courses in the Applied Economics courses to evaluate an important economic policy or concern in either the public or private sector. While much of the work in the course is done independently students will meet together to discuss their progress as well as meet with the instructor individually. Prereq: ECO 623 or its equivalent or consent of the instructor.

ECO 700 TEACHING METHODS IN BUSINESS. (1)

A three part course that examines what constitutes good teaching and explores effective techniques for college instruction. Seminars emphasize practical information for both the principal activities and the details of teaching. Departmental discussions allow students to discuss issues that arise in their teaching practice. Reviews of classroom performance provide professional feedback in order to enhance on-the-job learning. Seminar, two hours per week. Prereq: Approval of Director of Graduate Studies. (Same as BA 700.)

ECO 701 NEOCLASSICAL MICROECONOMIC THEORY. (3)

The Neoclassical theory of consumer behavior, production, market equilibrium and imperfect competition. Prereq: ECO 601 and ECO 590, or consent of instructor.

ECO 702 ADVANCED MACROECONOMIC THEORY. (3)

Analysis of general equilibrium macroeconomic models and factors responsible for deviations from general equilibrium. Emphasis on issues from recent professional literature. Prereq: ECO 602 or consent of instructor.

ECO 703 INTRODUCTION TO ECONOMETRICS I. (3)

The first course in the introduction to econometrics. A comprehensive survey of the general linear regression, autocorrelation, errors in variables and distributed lag models. Prereq: ECO 590 and either ECO 603 or STA 525, or consent of instructor.

ECO 704 GENERAL EQUILIBRIUM ANALYSIS AND WELFARE ECONOMICS. (3)

Existence, stability, efficiency and Pareto satisfactoriness of competitive equilibrium. Recent developments in general equilibrium and welfare theory. Prereq: ECO 701 or consent of instructor.

ECO 705 MACROECONOMIC DYNAMICS. (3)

Theoretical and empirical assessment of dynamic issues in macroeconomics. Topics include neoclassical and endogenous growth models and vector autoregressions. Prereq: ECO 702 or consent of instructor.

ECO 706 INTRODUCTION TO ECONOMETRICS II. (3)

The second course in the introduction to econometrics. A comprehensive survey of identification, estimation and hypothesis testing in the context of simultaneous equations model. Prereq: ECO 703 or consent of instructor.

ECO 707 RESEARCH SEMINAR IN ECONOMICS. (3)

This course will help students develop research skills by requiring them to work through an independent

project from start to finish. The student will review the literature and select a topic in an area of economics of interest. The student will then complete the project under the guidance of the instructor. Students will discuss their ongoing work in class with other students and in individual meetings with the instructor. The final output of the course will be a finished paper suitable for submission to a scholarly journal for publication. Prereq: Passing the Theory Exams or permission of the instructor.

ECO 721 ENVIRONMENTAL ECONOMICS, REGULATION AND POLICY. (3)

This course takes a balanced practitioner approach to the problems of the environment and environmental regulation. Efficiency aspects will be developed carefully, so as to provide a background for an extensive coverage of various available alternative policies. Prereq: PA 652 and MPA or economics program status or consent of instructor. (Same as PA 727.)

ECO 724 ENVIRONMENTAL ECONOMICS. (3)

This seminar in environmental economics deals with market failure, benefit-cost analysis, no market failure, valuations of environmental changes, and selected topics in environmental economics. Central to the course is valuing changes in health risks, risk perception, and behavior related to health risk. Selected topics include international issues, environmental equity and markets for environmental quality. This course and ECO 725 Health Economics are the two courses that are the basis for the area in Environmental and Health Economics in the Ph.D. Program in Economics. Prereq: ECO 601 and ECO 703 or consent of instructor.

ECO 725 HEALTH ECONOMICS. (3)

This course rigorously examines the organization, financing, and management of the US health care system and programs, and emphasizes economic analysis contemporary health policy concerns. By the end of the semester, students should have the institutional knowledge and analytic tools needed to contribute to current public policy debates about health and medical care. This course and ECO 724 Environmental Economics are the two courses that are the basis for the area in Environmental and Health Economics in the Ph.D. program in Economics. Prereq: ECO 601 and 703 or consent of instructor.

ECO 726 ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS. (3)

This course is a graduate-level survey of environmental and natural resource economics. Students will use mathematical models and econometric analysis to address topics including externalities and other market failures, environmental policies, management of renewable and nonrenewable resources, and non-market valuation. Prereq: ECO 701 and 703 (or equivalent courses), or consent of instructor. (Same as AEC 745.)

ECO 731 LABOR ECONOMICS I. (3)

The theory and estimation of the demand for and the supply of labor are introduced. Topics include demographic changes, minimum wages, retirement, and secular trends in labor force participation. The concept of human capital is examined, including applications to income distribution. Theory and evidence on the structure of wages in the U.S. is considered. Topics include compensating wages and race and gender differences. Prereq: ECO 601 or consent of instructor.

ECO 732 LABOR ECONOMICS II. (3)

Dynamic and cyclical labor demand are examined theoretically and empirically. Models of unemployment are considered, including search theory and the implicit contract model. Aspects of labor unionism are examined including changes in union membership, strikes, and union wages and employment. The incentive effects of compensation are discussed, including sorting models and the principal-agent problem. Prereq: ECO 601 or consent of instructor.

ECO 741 THEORY OF THE FIRM AND MARKET STRUCTURE. (3)

A study of firms and markets covering such topics as organizational structure and objectives of firms; product selection, advertising and quality; price discrimination; vertical control; entry, accommodation and exit; cost structure and market organization, market structure and performance; and public policy. Prereq: ECO 601 or consent of instructor.

ECO 742 INDUSTRIAL ORGANIZATION. (3)

A comprehensive survey of the literature in industrial organizations including static theories of oligopoly, dynamic theories of oligopoly, information about strategic behavior, research and development, patents, and adoption of new technology.

ECO 749 DISSERTATION RESEARCH. (0)

Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

ECO 751 PUBLIC ECONOMICS. (3)

An advanced study of both how government activities influence allocation, relative prices and welfare and what is the proper role of the public sector in resource allocation. Relevant topics include: public goods, externalities, tax incidence, optimal taxation, benefit-cost analysis, public pricing, fiscal federalism, state-municipal finance and public choice. Prereq: ECO 601 or consent of instructor.

ECO 752 ADVANCED TOPICS IN PUBLIC FINANCE. (3)

Principles of taxation and expenditure; applications to federal, state, and local policy; fiscal federalism; international public finance. Prereq: PA 752, ECO 701 or permission of the instructor. (Same as PA 754.)

ECO 753 URBAN AND REGIONAL ECONOMICS. (3)

An intensive study of the theory, evidence and policy concerning urban areas and regions. Topics typically covered include: nature of regions and urban areas, size and distribution of cities, location decisions, housing, transportation, migration and regional growth. Prereq: ECO 601 or consent of instructor.

ECO 761 MACRO AND MONETARY ECONOMICS I. (3)

Advanced study of business cycle fluctuations. Theoretical and empirical investigations of the causes of business cycles; evaluating the effectiveness of monetary, fiscal, and other policies to affect inflation, unemployment, and short-run economic goals. Emphasis on current academic research. Prereq: ECO 701, ECO 702 or consent of instructor.

ECO 762 MACRO AND MONETARY ECONOMICS II. (3)

Advanced study of long-run macroeconomic issues. Theoretical and empirical examinations of the determinants of economic growth; analysis of government policies, country endowments, and institutional factors in determining growth rates and income levels. Emphasis on current academic research. Prereq: ECO 702 or consent of instructor.

ECO 767 DISSERTATION RESIDENCY CREDIT. (2)

Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.

ECO 768 RESIDENCE CREDIT FOR THE MASTER'S DEGREE. (1-6)

May be repeated to a maximum of 12 hours.

ECO 769 RESIDENCE CREDIT FOR THE DOCTOR'S DEGREE. (0-12)

May be repeated indefinitely.

ECO 771 INTERNATIONAL ECONOMICS: INTERNATIONAL MONEY AND FINANCE. (3)

International finance and open economy macroeconomics; the balance of payments; theory of exchange rate determination; macroeconomic policy issues in open economies. Prereq: ECO 602.

ECO 772 INTERNATIONAL ECONOMICS: TRADE THEORY AND POLICY. (3)

Theory and empirical analysis of the effects of trade and trade policy. Prereq: ECO 601.

ECO 773 OPEN ECONOMY MACROECONOMICS. (3)

Development of rigorous models to enhance knowledge of open economies. Topics include: impact on an economy of changes in trade, the current account balance, exchange rates, and international financial markets. Prereq: ECO 702.

ECO 790 TIME SERIES ANALYSIS. (3)

Time series and stochastic processes, auto-correlation functions and spectral properties of stationary processes; linear models for stationary processes, moving average, auto-regressive and mixed auto-regressive-moving average processes; linear nonstationary models, minimum mean square error forecasts and their properties; model identification, estimation and diagnostic checking. Prereq: STA 422G or its equivalent. (Same as STA 626.)

ECO 796 SEMINAR. (1-6)

An extended original investigation of some specific topic with a view to giving training in methods of research and studying intensively a particular subject in the field of economics. May be repeated to a maximum of six credits.

ECO 797 RESEARCH PROBLEMS IN ECONOMICS. (1-9)

Students confer individually with the instructor. May be repeated to a maximum of 15 credits. Prereq: Permission of the Director of Graduate Studies is required.