MASTER OF SCIENCE IN APPLIED ECONOMICS

Program Director

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Program Description

The goal of the Master of Science in Applied Economics is to train students to become adept at using economic concepts, theories, and models along with computational and analytical tools to solve complex problems. The program includes instruction in data analysis, database design, data mining, computer algorithms, economics, econometrics, computer programing, mathematics, and statistics.

Admission Requirements

In addition to the College of Graduate Studies admission requirements, applicants must have completed at least one course in each of the following areas:

- principles of microeconomics,
- principles of macroeconomics,
- statistics, and
- calculus.

Students who do not meet the requirements may be admitted on a provisional basis. Students with provisional admission are required to take undergraduate coursework to fulfill the admission requirements. With the permission of the Graduate Coordinator they may also be allowed to simultaneously take a limited number of masters-level courses.

International students from Jilin University of Economics and Finance and National Chiayi University may take up to 9 semester hours of graduate credit as an undergraduate if requirements are met in outlined agreement.

Degree Requirements

Students must complete 30 semester hours of graduate credit with a grade point average of 3.0 or higher for the M.S. in Applied Economics.

COURSE	TITLE	S.H.
Required Courses		
DATX 5801	Data Management	3
DATX 5805	Predictive Modeling Algorithms	3
ECON 5850	Introduction to Game Theory	3
ECON 6912	Microeconomic Theory	3
ECON 6915	Health Policy	3
ECON 6922	Macroeconomic Theory	3
ECON 6939	The Economics of Financial Markets and Institutions	3
ECON 6976	Econometrics	3
ECON 6998	Research Seminar	3
Select one course		3
Total Semester Hours		**30**

Subject to availability, students may fulfill their degree with one course from ECON 5811, ECON 5812, ECON 5822, ECON 5861, or ECON 6970.

Learning Outcomes

Graduates of the Master of Science in Applied Economics should be able to do the following:

1. Apply fundamental economic concepts, models, and theories to describe and predict economic phenomena

2. Examine and implement quantitative and computational tools to create, store, analyze, and predict data

3. Evaluate economic concepts, models, and theories using quantitative and computational tools

4. Assess how economic concepts, models, and theories are used in quantitative and computational methods

5. Propose, implement, and communicate solutions to complex economic problems as part of a team

ECON 5801 Economics of Industrial Organization 3 s.h.
A systematic analysis of the structure, conduct, and performance of American industry. A quantitative analysis plus a comprehensive review of theoretical models of the market, firm behavior, and performance.
Prereq.: ECON 2610.

ECON 5806 History of Economic Thought 3 s.h.
Designed to provide students with an understanding of the development of economic ideas to include: Mercantilism, Physiocrats, the English Classical School, Utilitarianism, early Social Thought, Karl Marx, the German Historical School, Institutionalists and the Keynesian School.
Prereq.: ECON 2630.

ECON 5811 International Trade 3 s.h.
Theories of international trade and specialization; free trade vs. protectionism; tariff and non-tariff barriers to international trade; international balance of payments and its components; the role of multinational enterprises in contemporary trade pattern; regional economic integrations and world trade; U.S. commercial policies.
Prereq.: ECON 2610.

ECON 5812 International Finance 3 s.h.
Theories of foreign exchange and capital movements, international payments, analysis of spot and forward foreign exchange markets, foreign exchange market arbitrage, speculation, and risk hedging. The Bretton Woods agreement and the contemporary international monetary system. The rise of international organizations and multinational enterprises in the international economy.
Prereq.: ECON 2630.

ECON 5822 Crime and Urban Economics 3 s.h.
This course will draw upon economic models and theories and use the tools of economics to analyze problems of urban areas with an emphasis on the economics of crime, drugs, and incarceration. Topics include the causes of the growth or decline in cities, the theory of location, agglomeration, housing, segregation, suburbanization, and auto congestion.
Prereq.: ECON 2610.

ECON 5824 Applied Time Series Analysis of Economic and Business Data 3 s.h.
An in-depth analysis of time series models and their applications to problems in economics and business. Emphasis on forecasting. Extensive use of standard computer programs.
Prereq.: ECON 2610 and STAT 4817 or ECON 3790 or (ECON 3788 and ECON 3789) or (ECON 3788 and BUS 3700).

ECON 5850 Introduction to Game Theory 3 s.h.
Topics include (not limited to) Nash equilibrium, pure/mixed strategy, static/dynamic games, repeated games and coordination, perfect/incomplete information, etc.
Prereq.: ECON 2610.

ECON 5861 SAS Programming for Data Analysis 3 s.h.
An introduction to SAS programming for data analytics. Topics include using SAS for data processing, manipulation, visualization, reporting, and statistical analysis. The objective is for students to develop statistical computing skills for problem solving and decision making.
Prereq.: STAT 2601 or STAT 3717 or STAT 3743 or ECON 3790, or ECON 3788 and ECON 3789, or ECON 3788 and BUS 3700.
Cross-Listed: STAT 5811.

ECON 6912 Microeconomic Theory 3 s.h.
This course provides comprehensive coverage of microeconomic issues by analyzing applications of the theory. This includes study of demand and supply, theory of behavior of consumers and firms, choice under uncertainty, partial equilibrium analysis of various market structures, and Pareto efficiency. The course will focus on applications of the theory through current applied economic research peer reviewed articles.

ECON 6915 Health Care Analytics 3 s.h.
In this course we will learn skills necessary to analyze and interpret healthcare data to improve evidence-based decision-making, patient outcomes, and overall healthcare system performance. Topics include data management, exploratory data analysis (EDA), predictive modelling and model evaluation as it relates to various health care data. We also learn about the main issues that plague the healthcare markets in the US.

ECON 6921 Economic Analysis of Markets and Industries 3 s.h.
Participants will learn to analyze and understand the impact economic factors (e.g., information, consumer behavior, supply and demand) have on shaping markets and industries. Using this knowledge, participants will be capable of assessing the different types of economic strategies (e.g., product differentiation, pricing, advertising and signaling) an organization can employ to gain market power to realize economic profits.
Prereq.: Graduate standing.

ECON 6922 Macroeconomic Theory 3 s.h.
Examines models used to determine the value of various aggregate economic variables, such as the price level, national income, employment, interest rates, and wage rates.

ECON 6939 The Economics of Financial Markets and Institutions 3 s.h.
Study of the institutions, instruments, and markets that facilitate the distribution of financial resources throughout the economy. The course discusses the money, capital, and commodity markets. Also, the topics of accessing default risk and hedging against market risk are discussed.

ECON 6940 Financial Economics 3 s.h.
Study of various topics, including risk and the selection of the optimal monetary control tool, politics and monetary control, the financial firm as an optimizing institution, and portfolio theory.
Prereq.: ECON 6939 or permission of the instructor.

ECON 6945 Public Finance 3 s.h.
Study of the role of the government in the economy. The topics covered will include expenditure analysis, theories of taxation, provision of public goods, fiscal federalism, and public choice theory.
Prereq.: ECON 6912.

ECON 6952 Transfer Programs and Poverty 3 s.h.
A study of poverty and the effectiveness of antipoverty programs. Topics include defining and measuring poverty, trends in the rate of poverty and the distribution of income, causes of poverty, models of discrimination, effectiveness of government training programs, transfer programs and their effect on labor supply, and the financial stability of the Social Security retirement program.
Prereq.: admission into the MA in Economics or MA in Financial Economics programs or permission of instructor.

ECON 6970 Economics Internship 3 s.h.
The practical application of economic knowledge and statistical skills in the workplace. Students assist participating professionals in various kinds of industrial, financial, and public service organizations.
Prereq.: ECON 6912 and ECON 6922, Special Approval of Director.

ECON 6976 Econometrics 3 s.h.
Study of the fundamentals of econometric techniques that are useful for estimating causal economic relationships. The objectives include (1) analysis of the effects of exogenous factors on the variable whose behavior we seek to explain, (2) testing of hypotheses about new and existing economic theories, and (3) forecasting estimated economic relationships beyond the sample period for the purpose of planning and control. The course will focus on the practice of econometrics with extensive applications to a variety of real-world problems in many areas of economics.

ECON 6980 Applied Time Series Analysis and Forecasting 3 s.h.
Covers essential tools for time series analysis and forecasting with emphasis on how to apply those tools to analyze and forecast economic and business data. Topics include ARMA models, Time Series Decomposition, Exponential Smoothing, GARCH, VAR models, and Cointegration.
Prereq.: ECON 2610 and ECON 3789 or ECON 3790 or ECON 6976 or STAT 5817.

ECON 6988 Modeling in Financial Economics 3 s.h.
A study of modeling and evaluation of derivatives and bonds and risk management using derivatives. Topics cover various models in asset evaluation, such as bond price models, the Black-Sholes model, diffusion processes, and risk management. Also listed as STAT 6988.
Prereq.: STAT 4843 or STAT 6943 or ECON 6976.

ECON 6990 Special Topics in Economics 1-3 s.h.
Special interest topics selected by the staff in the following areas: economic education, economic theory, and applied economics analysis. May be repeated for a maximum of six hours toward a graduate degree.

ECON 6992 Data Analytics - Advanced SAS Programming 3 s.h.
This coures is designed to provide students training of advanced SAS programming for data analysis. Main topics include SQL, Macro language, Econometrics-related procedures, working with large data set, etc.
Prereq.: ECON 6976 or equivalent and either ECON 5861 or STAT 5811.
Cross-Listed: STAT 6912.

ECON 6998 Research Seminar 3 s.h.
Applied quantitative research techniques will be discussed. Students are required to undertake an original quantitative research project in a field of economics and write a paper summarizing their results. Course may be taken concurrently with ECON 6976.Prereq.: ECON 6912 and ECON 6922.

ECON 6999 Master's Thesis 3 s.h.
A research project under the supervision of a member of the department on the graduate faculty. The project typically extends the student's research in ECON 6998.
Prereq.: a grade of "A" or "B" in ECON 6998 and a thesis proposal accepted by departmental committee.