MAJOR IN ECONOMICS - MATHEMATICAL ECONOMICS TRACK

The major in Economics requires 37 units in Economics, and the Mathematical Economics Track requires an additional 23 units in Mathematics. All courses must be completed with a grade equivalent of 2.00 or higher.

Transfer students must take a minimum of 15 units in economics at Towson University to qualify for an Economics major.

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<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>ECON 201</td>
<td>MICROECONOMIC PRINCIPLES</td>
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<td>or ECON 203</td>
<td>HONORS MICROECONOMIC PRINCIPLES</td>
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<tr>
<td>ECON 202</td>
<td>MACROECONOMIC PRINCIPLES</td>
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<td>or ECON 204</td>
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<tr>
<td>ECON 205</td>
<td>STATISTICS FOR BUSINESS AND ECONOMICS I</td>
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<td>ECON 306</td>
<td>STATISTICS FOR BUSINESS AND ECONOMICS II</td>
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<td>ECON 309</td>
<td>INTERMEDIATE PRICE THEORY</td>
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<td>ECON 310</td>
<td>MACROECONOMIC THEORY</td>
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<tr>
<td>MATH 273</td>
<td>CALCULUS I</td>
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Electives
Two 400-level ECON courses (excluding ECON 495 and ECON 497) 6
Three Upper-Level ECON Electives 9
Only one ECON 497 will count toward major.

The department will allow the following course outside the department to count toward the major in satisfying electives:
MATH 377 MATHEMATICAL MODELS

Mathematical Economics Track Requirements
MATH 265 ELEMENTARY LINEAR ALGEBRA 4
MATH 267 INTRODUCTION TO ABSTRACT MATHEMATICS 4
MATH 274 CALCULUS II 4
MATH 275 CALCULUS III 4
MATH 374 DIFFERENTIAL EQUATIONS 3
or MATH 332 MATHEMATICAL STATISTICS 3
MATH 473 INTRODUCTORY REAL ANALYSIS 4
or MATH 331 PROBABILITY 4

Total Units 60

Courses
ECON 201 MICROECONOMIC PRINCIPLES (3)

ECON 202 MACROECONOMIC PRINCIPLES (3)

ECON 203 HONORS MICROECONOMIC PRINCIPLES (3)

ECON 204 HONORS MACROECONOMIC PRINCIPLES (3)

ECON 205 STATISTICS FOR BUSINESS AND ECONOMICS I (3)
Analysis and presentation of business and economic data; descriptive statistics and statistical inference; measures of central tendency and variability; probability theory; estimation; testing of hypothesis; linear regression analysis. Not open to students who have successfully completed ECON 301. Prerequisite: qualifying score on Math Placement exam or MATH 100 (recommended) or MATH 102 or higher (except MATH 204). GenEd I.C or Core: Mathematics.

ECON 303 AMERICAN ECONOMIC DEVELOPMENT (3)
Description and analysis of growth and development of U.S. economy and its institutions from colonial times to 20th century. Emphasis on "new" economic history: explicit economic models and quantitative methods to analyze historical phenomena. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 305 SURVEY OF INTERNATIONAL ECONOMICS (3)
A policy approach to international trade and international finance; international economic problems and issues facing the United States within the global economy. Not open to students who have had ECON 421. Prerequisites: ECON 201 / ECON 203 and ECON 202/ ECON 204.

ECON 306 STATISTICS FOR BUSINESS AND ECONOMICS II (3)
Hypothesis testing, regression models and regression analysis featuring extensive use of Stata. Multiple and logistic regressions. Assumptions of regression analysis including diagnostics of and means to address multicollinearity, heteroskedasticity, and autocorrelation. Assessing validity of causal inference. Prerequisites: ECON 201, ECON 202, and ECON 205 or MATH 231 or equivalent. Prerequisites: ECON 201, ECON 202, and ECON 205 or MATH 231 or equivalent.

ECON 309 INTERMEDIATE PRICE THEORY (3)
Determination of prices, output, wages, resource allocation. Theory of the firm. Theory of competition, monopolistic competition, oligopoly, and monopoly. Prerequisites: ECON 201 / ECON 203 and ECON 202/ ECON 204 and either MATH 211 or MATH 273.

ECON 310 MACROECONOMIC THEORY (3)
Impact of monetary and fiscal policy. The overall level of output, prices, employment, interest rates. Prerequisites: ECON 201 / ECON 203 and ECON 202/ ECON 204 and either MATH 211 or MATH 273.

ECON 313 MONEY AND BANKING (3)
Organization and function of the money, credit and banking system of the United States; banking institutions, Federal Reserve System; the relation of money and credit to prices; foreign exchange. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.
ECON 321 HISTORY OF ECONOMIC THOUGHT (3)
Development of economic theory; 18th and 19th century classical schools. Modern economic literature on price, investment and employment. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 322 COMPARATIVE ECONOMIC SYSTEMS (3)
Effects of alternative institutional arrangements on incentives and individual behavior affecting the allocation of resources. Differences between decentralized or market systems and centralized or government planning. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 326 ECONOMIC DEVELOPMENT (3)
Theory of economic growth. Problems and programs relating to less developed countries. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 330 INDUSTRIAL ORGANIZATION (3)
Competition, collusion, monopoly, and oligopoly in regulated and unregulated markets. Economics of firm management, market organization, sales practices and anti trust laws. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 331 GOVERNMENT AND ECONOMIC LIFE (3)
Economics and philosophy of markets and government and criteria for judging their success: end-state vs. process, efficiency vs. equity, act and rule utilitarianism vs. natural rights. Emphasis on moral foundations of capitalism. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 334 ECONOMICS OF POVERTY AND DISCRIMINATION (3)
Study of the causes of poverty. How poverty and discrimination are interrelated. An analysis of existing and proposed programs to alleviate poverty and discrimination. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 337 PUBLIC FINANCE (3)
Non-market provision of goods and services at all levels of government: principles of public finance, specific public spending programs and taxes, allocation of resources and income distribution. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 339 HEALTH ECONOMICS (3)
Analysis of the economic organization of the health care sector of the U.S. economy; alternative health care delivery systems and methods of financing health care services; current issues in health economics. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 341 LABOR ECONOMICS AND LABOR RELATIONS (3)
The determination of wages. Labor unions: history, structure, activities, effects. Government labor policy. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 351 URBAN ECONOMICS (3)
Economic bases for the existence of metropolitan areas. The economy of the metropolitan area; its growth, income distribution, economic stability. Transportation and land use patterns. Social and other problems of metropolitan areas. Application of elementary price theory to the analysis and solution of urban issues and problems. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 370 SPORTS ECONOMICS (3)
Study of sports and the sports industry using economic models. Organized according to the fields of industrial organization, public finance, and labor economics. Topics include league makeup, stadium financing, team location, competitive balance, and incentive structures. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204.

ECON 374 ECONOMIC ISSUES OF GENDER (3)
Explores the changing role of men and women in the U.S. and other economies with specific emphasis on issues such as differences in occupations and wages, theories of discrimination, the economics of the household, child care, divorce, poverty, and the effect of government programs on families. Prerequisite: ECON 201/ ECON 203.

ECON 375 ENVIRONMENTAL ECONOMICS (3)
Applying tools of economic theory to issues focusing on natural resources and environmental policy. Topics include market failure, valuation of non-market goods, cost-benefit analysis and pollution. Prerequisite: ECON 201/ ECON 203.

ECON 376 NATURAL RESOURCE ECONOMICS (3)
Use of natural resources in the economy and related public policy issues emphasizing the role of property rights, markets, finance, and market failures. Topics may include resource scarcity, energy, forests, marine resources, water supply, biodiversity, land use, outdoor recreation, and international development. Prerequisite: ECON 201/ ECON 203.

ECON 380 TOPICS IN ECONOMICS (3)
Economic analysis applied to a contemporary subject area in economics. Introduction of a new course for possible addition to the curriculum or a select topic given mutual faculty and student interest. May be repeated for 6 units provided a different topic is covered. Prerequisites: ECON 201/203 and ECON 202/204, or consent of instructor.

ECON 401 INTRODUCTION TO ECONOMETRICS (3)
The problem of testing economic theories against empirical data; the formulation and estimation of regression models; the use of the method of multiple regression in testing the various hypotheses of economic theories; serial correlation; the problem of identification; application of simultaneous equation model; the use and construction of econometric models for forecasting and policy making. Prerequisites: ECON 201/ ECON 203 and ECON 202/ ECON 204 and ECON 305.

ECON 409 MANAGERIAL ECONOMICS (3)
Applications of microeconomic theory to business policies and decisions. The utilization of analytical and decision-making tools derived mainly from economic theory, quantitative methods, finance and marketing theory. Topics considered include pricing practices and market structures, investment decision-making, and estimation of demand and cost of production. Prerequisites: ECON 309 and ECON 205 or MATH 231/ MATH 233.

ECON 411 INTRODUCTION TO GAME THEORY (3)
Introduction to game theory and strategic behavior. Dominance, backward induction, Nash equilibrium, commitment, credibility, asymmetric information, and signaling. Applications from economics, politics, sociology, and other real-life situations. Prerequisite: ECON 309 or consent of instructor.

ECON 419 APPLIED MICROECON (3)
Applications of principles developed in price theory to problems arising in various market situations. Emphasis is on analysis and solutions of specific problems.

ECON 421 INTERNATIONAL ECONOMICS (3)
International trade theory; theory of tariffs and other trade restrictions; trade and economic growth; economic integration and trading blocks; international capital and labor flows. Prerequisites: ECON 309.

ECON 423 INTERNATIONAL MONETARY THEORY AND POLICY (3)
International issues in money and banking. Foreign exchange markets, exchange rates, and adjustment in the balance of payments. International monetary theory and its application. Prerequisite: ECON 309 and ECON 310.
ECON 431 COMPUTATIONAL ECONOMICS (3)
Introduction to basic programming concepts and analysis of applied economic models using numerical methods. Procedural programming; functions; visualization; data mining; root finding algorithms; minimization routines; dynamic models. No prior programming skills required. Prerequisites: ECON 309, ECON 310, and MATH 211 or MATH 273.

ECON 441 PERSONNEL ECONOMICS (3)
Use of economics to solve practical personnel problems with specific issues in training, turnover, hiring, incentives, fringe benefits, evaluation, and legal constraints. Prerequisite: ECON 201/ ECON 203.

ECON 451 INTRODUCTION TO MATHEMATICAL ECONOMICS (3)
Intended primarily for students planning a graduate education in economics. A study of the fundamental mathematical methods widely used in economics: calculus and linear algebra. Emphasis is on optimization theory, economic examples are used throughout. Prerequisites: ECON 309, ECON 310 and MATH 211 or MATH 273.

ECON 470 ADVANCED TOPICS IN ECONOMICS (3)
Economic analysis applied to a contemporary subject area in economics. Introduction of a new course for possible addition to the curriculum or a select topic given mutual faculty and student interest. May be repeated for 6 units provided a different topic is covered. Prerequisites: ECON 309 and ECON 310, or consent of instructor.

ECON 485 SEMINAR ON ECONOMIC ISSUES (3)
Research and writing of papers on an economic issue selected by the instructor. Prerequisites: ECON 309, ECON 310 and ECON 313.

ECON 493 WORKSHOP ON ECONOMIC EDUCATION (3)
Designed to help teachers and school administrators gain a better understanding of the economic working of the society in which we live. Prerequisite: consent of the instructor.

ECON 495 INDEPENDENT STUDY (1-3)
Individual and supervised study in selected areas of economics. Repeatable with a different topic for a maximum of 6 credits. Prerequisites: Economics major, junior standing, 2.50 GPA, ECON 309, ECON 310 and permission of instructor.

ECON 497 INTERNSHIP IN ECONOMICS (1-3)
Supervised work experience designed to promote an understanding of the economic system and the practical application of economic principles. Prerequisites: Economics major, junior standing, 2.50 GPA, ECON 309, ECON 310 and consent of internship coordinator. Graded S/U.

ECON 499 HONORS THESIS IN ECONOMICS (3)
Independent research completed under the close supervision of faculty thesis advisor. Prerequisites: ECON 495; 3.25 overall GPA; 3.5 GPA in ECON classes, and consent of faculty thesis adviser and honors coordinator.