

**Minor in East Asian Studies**

Requirements for a minor are:

eight credits in East or Southeast Asian language courses

*plus:*

twelve credits in East or Southeast Asian studies courses from the annual list of courses that satisfy the requirement

See the faculty adviser.

**Economics (ECON)**

Kreitzer (chair), Alexander, Blumenthal, Fairchild, Garhart, Gray, Jones, Langan, Marcott, Papagapitos, Riley, Selim, Supel, Vincent, Walsh

The economics program develops a logical, consistent and rigorous method of thinking about the world and its problems. The economic way of thinking can be applied to a wide variety of topics including inflation, unemployment, international trade, poverty, income inequality, currency depreciation, monopoly power, bank failures, budget deficits and health-care costs.

The Department of Economics offers two majors and a minor in economics. All three programs are designed to provide excellent career-entry skills and those skills providing preparation for possible career shifts.

Whether a major or minor in economics is pursued, students are strongly encouraged to complement their studies with work in other fields. In recent years, for example, graduates have done complementary coursework in such fields as mathematics, foreign languages, business, environmental studies, computer sciences, international studies and English.

The choice of major and of a complementary field depends upon the path the student wishes to pursue. For example, students pursuing a liberal arts major, wishing to double major, or who are interested in continuing studies in professions other than economics would likely find the Bachelor of Arts (B.A.) best suited to their needs. Students wishing to engage the discipline at a much broader and deeper level would find the Bachelor of Science (B.S.) a better alternative.

The core for each degree consists of five economics courses and two allied requirements. The B.A. requires three additional elective of the student's choosing. The B.S. has three possible paths. Each path requires three specified electives, two additional electives of the student's choosing, and additional allied requirements.

Students wishing to pursue graduate study in economics should consider the path in Mathematical Economics. Students interested in international affairs should consider the path in International Economics. Students seeking an economics degree supplemented with additional technical skills and an introduction to the business field or who are looking towards an eventual MBA degree should consider the Business Economics path.

Majors must complete a minimum of twenty credits in economics at St. Thomas. Minors must complete a minimum of twelve credits in economics at St. Thomas.

**Economics Honor Society**

Omicron Delta Epsilon, the international fraternity in economics, was organized at St. Thomas in 1967. Candidates must have completed at least sixteen credits in economics and have an average of 3.00 or better in both economics and their overall work.

**Economics Honors Program**

Candidates for honors in economics must complete a research paper and an additional four credits in economics chosen in consultation with the department chair. The research papers of honors candidates are to be read by a committee of three faculty, appointed by the department chair. Each will determine if the paper is suitable for the honors requirement, with a majority rule determining honors designation. Candidates must achieve a grade-point average of 3.25 or higher in the major and 3.0 or higher overall.

**Major in Economics (B.A.)**

- 251 Principles of Macroeconomics
- 252 Principles of Microeconomics
- 315 Empirical Methods in Economics
- 351 Macroeconomic Theory
- 352 Microeconomic Theory

*Plus:*

Twelve credits in courses numbered 300 and above.

Students are strongly encouraged to take 315, 351 and 352 in their junior year.

*Allied requirements:*

*One of:*

MATH 109 Calculus with Review II

## Economics

MATH 111 Calculus for Business and Social Science  
MATH 113 Calculus I

*Plus either:*

QMCS 220 Statistics I

*or*

MATH 303 Statistics for the Applied Sciences

*or*

MATH 313 Probability

*and*

MATH 314 Mathematical Statistics

### Major in Economics (B.S.)

251 Principles of Macroeconomics

252 Principles of Microeconomics

315 Empirical Methods in Economics

351 Macroeconomic Theory

352 Microeconomic Theory

Students are strongly encouraged to take 315, 351 and 352 in their junior year.

*Plus:*

A set of courses in one of the three paths below.

*Allied requirements:*

*One of:*

MATH 109 Calculus with Review II

MATH 111 Calculus for Business and Social Science

MATH 113 Calculus I

*Plus either:*

QMCS 220 Statistics I

*or*

MATH 303 Statistics for the Applied Sciences

*or*

MATH 313 Probability

*and*

MATH 314 Mathematical Statistics

### Business Economics

A path which emphasizes additional tools for analyzing business situations as well as incorporating a basic foundation in the field of business.

311 Forecasting

332 Industrial Organization

401 Managerial Decision Making

*Plus:*

Eight credits in elective economics courses numbered 300 or above

ACCT 211 Financial Accounting

*Plus either:*

ACCT 213 Managerial Accounting

*or*

ACCT 313 Intermediate Accounting for Finance Majors

*Plus either:*

FINC 300 Finance for Non-Business Majors

*or*

FINC 321 Financial Management

### International Economics

A path which prepares students for careers in which an understanding of the complexities of cultural differences and international economic relationships is crucial.

345 Economics of Development and Growth

346 Country and Area Studies in Economics

348 International Economics

*Plus:*

Eight credits in elective economics courses numbered 300 or above (ECON 346 can only be included one time in fulfillment of the path requirement, and not as one of the additional electives)

Minor in a foreign language or significant study abroad experience approved by the department chair

**Mathematical Economics**

A path which prepares students for the core competencies necessary for graduate study in economics.

301 History of Economic Thought  
418 Mathematical Economics

*Plus one of:*

337 Economics of the Public Sector  
339 Labor Economics  
348 International Economics

*Plus:*

Eight credits in elective economics courses numbered 300 or above

MATH 114 Calculus II

MATH 200 Multi-Variable Calculus

MATH 210 Linear Algebra and Differential Equations

(Note: MATH 333 Applied Statistical Methods may be substituted for ECON 315)

**Minor in Economics**

251 Principles of Macroeconomics

252 Principles of Microeconomics

*Plus one of:*

351 Macroeconomic Theory

352 Microeconomic Theory

*Plus:*

Twelve credits in elective economics courses numbered 300 and above.

**101 The American Economy (251)**

The organization and functioning of the American economy; the course is designed to provide general education in economics for the average citizen. Each semester, topics of current interest will be analyzed using the tools and viewpoint of economic theory and policies. Designed for non-economics and non-business students.

**211 Current Economic Issues**

Poverty, health care, tax reform, international trade, crime, income inequality, inflation, and business mergers are some of the contemporary topics that raise interesting questions for public policy and economic analysis. This course will focus on a series of these macroeconomic and microeconomic topics. The goal is to develop economic concepts and analytical tools within a context of direct application to economic issues. Consideration of equity or fairness will be included in discussions of public policy. Student preferences will be considered in selecting many of the issues.

**251 Principles of Macroeconomics**

An introduction to macroeconomics: national income analysis, unemployment, price stability, and growth; monetary and fiscal policies; international trade and finance; application of economic theory to current problems. Students who enroll in this course are expected to be able to use high-school algebra.

**252 Principles of Microeconomics**

An introduction to microeconomics: theory of household (consumer) behavior, theory of the firm, market structures, market failures, economic efficiency, factor markets, and income distribution. Students who enroll in this course are expected to be able to use high-school algebra.

**295, 296, 297, 298 Topics**

The subject matter of these courses, announced in the annual *Class Schedule*, will vary from year to year, but will not duplicate existing courses. See the description of these courses at the beginning of the "Departments and Curricula" section of this catalog.

**301 History of Economic Thought**

A survey of the content and method of economics and an analysis of the theories of the great economists from the ancient Greeks to the present; mercantilism, physiocracy, the classical school and its critics, particularly Marx; the marginalist school; Alfred Marshall and Keynes, recent developments in economic thought.

Prerequisites: 251 and 252

## **Economics**

### **311 Forecasting**

An introduction to techniques used in forecasting with emphasis on analyzing economic and business data. The emphasis is on time-series data, although cross-sectional analysis is also covered. Techniques presented include variants of moving averages, variants of exponential smoothing, regression and ARIMA processes. This course fulfills the second-level Computer Competency requirement in the core curriculum.

Prerequisites: 251, 252 and QMCS 220

### **315 Empirical Methods in Economics (formerly 415)**

An introduction to the application of statistical models and methods to economic problems; simple and multiple linear regression models; generalized least-squares; model building and related topics. Emphasis is on use of econometric software to analyze data and to test hypotheses. This course fulfills the second-level Computer Competency requirement in the core curriculum.

Prerequisite: 251 and 252, QMCS 220 or MATH 303

### **321 Law and Economics**

The relationship between legal and economic aspects of selected issues: property rights, liability laws, product-safety legislation, discrimination, crime control, and related topics.

Prerequisites: 251, 252 or permission of instructor

### **326 Industry Studies**

This course provides an analysis of a particular industry or sector of the U.S. economy.

Among the topics included in the analysis will be: identification and description of the industry in question, past and present performance of the industry, the importance of the industry within the national and global economy, the level of competition present in the industry, and the role of government in this industry. Among the anticipated course offerings are Agricultural Economics, Economics of the Arts, Economics of Sports, Economics of Health Care, and Transportation Economics.

Prerequisites: 251 and 252

### **332 Industrial Organization**

Relationship between market structure, behavior and performance of business enterprises; government intervention and regulation; antitrust and other public-policy issues.

Prerequisites: 251, 252

### **333 Regional and Urban Economics**

Principles underlying the location of economic activity; land-use patterns; transfer cost; location and structure of urban areas; growth of cities and regions; urban and regional problems and policies.

Prerequisite: 252

### **335 Money, Financial Markets, and the Economy**

The nature, evolution, and functions of money; the role of depository financial institutions; structure of financial markets; principles of central banking; monetary theory and monetary policy; introduction to international banking and finance.

Prerequisites: 251, 252

### **337 Economics of the Public Sector**

This course examines the role of government in a modern economy. It develops a set of concepts that will allow students to evaluate policy alternatives. The following are among the particular topics likely to be addressed: externalities and environmental protection, education, the redistribution of income, health care, social insurance, taxation and tax reform, cost-benefit analysis, fiscal federalism, and state and local government finance. In each case, the focus is on whether intervention by government is appropriate, what the most effective form of any such intervention is, and how alternative policy interventions affect the private decisions made by citizens and business firms.

Prerequisite: 252

### **339 Labor Economics**

Labor supply and demand; determinants of the wage structure; education and training decisions; the role of labor unions; mobility and migration, discrimination; public policies in labor markets.

Prerequisite: 252

### **345 Economics of Development and Growth**

Nature and measures of economic growth and development; theories of growth; developed and less-developed nations; economic planning; selection and financing of projects for economic growth and human development; environment, resources, and limits to growth. This course fulfills the Human Diversity requirement in the core curriculum.

Prerequisites: 251, 252

### **346 Country and Area Studies in Economics**

An analysis of the economic system(s) of a particular country or region of the world. Among the topics included in the analysis will be: functioning of key sectors of the system; the role of govern-

ment in the economy; the resource base; the income distribution; trade and financial relations with other countries; contemporary economic issues and policies; past and present economic performance. Course offerings are anticipated for Japan, Russia, European Union, Latin America and Australia. Students may take this course more than once provided the specific country/region is not duplicated. This course fulfills the Human Diversity requirement in the core curriculum.  
Prerequisites: 251, 252

**348 International Economics**

Analysis of trade between nations and regions of the world; trade and trade policy; economic integration; foreign-exchange markets; global financial system and world payments; cross-border movement of resources; economic interdependency of nations and regions; the economic system in a global framework.  
Prerequisites: 251, 252

**349 Comparative Economic Systems**

Analysis of the tools used to evaluate alternative economic systems; study of the structure and performance of laissez faire, centralized planning, democratic socialism and market socialism; historical evolution of economic systems; consideration of efficiency, growth, and social welfare; case studies: United States., CIS, China, the new market economies of Central Europe, others.  
Prerequisites: 251, 252

**351 Macroeconomic Theory**

Theories of money, interest, income and expenditure, employment, and inflation; monetary and fiscal policies; introduction to the theory of growth.  
Prerequisites: 251, 252

**352 Microeconomic Theory**

Analysis of consumer behavior and demand theory; theory of production and costs; analysis of the firm and industry under various market structures; factor pricing; general equilibrium. Selected additional topics such as market failure, economics of information, welfare economics, income distribution.  
Prerequisites: 251, 252 and MATH 109 or 111 or 113 or equivalent.

**360 Experimental Economics**

Experimental economics refers to the practice of testing economic hypotheses by conducting controlled experiments rather than relying on more traditional econometric testing. This course provides a survey of experiments conducted by economists in a variety of areas. Discussion will focus on the basics of the theory being tested, the methodology employed, and the results for each experiment. In addition, attempts will be made to replicate some results by conducting these same experiments in the classroom. Topics may include experiments conducted in the theory of competitive markets, oligopoly markets, auctions, decision-making under risk and uncertainty, public good and search theory.  
Prerequisite: 251, 252, and one additional ECON course numbered 300 or higher

**370 Environmental and Natural Resource Economics**

This course employs economic principles to analyze the problems of environmental pollution and natural-resource depletion. Economic systems, such as the private-market mechanism, are evaluated with respect to their effectiveness in the management of natural resources and the environment. Domestic and international environmental policies are examined and critiqued.  
Prerequisite: 252

**401 Managerial Decision Making**

Microeconomic theory applied to business decision making. Emphasis on quantitative techniques applied to business decision making under uncertainty, demand and cost estimation, linear production models, pricing decisions, capital budgeting, inventory problems, and group decision making. Quantitative tools include linear regression, statistical decision analysis and linear programming.  
Prerequisites: 352, and QMCS 220 or MATH 333 or permission of the instructor

**418 Mathematical Economics**

Introduction to a mathematical treatment of models of economic behavior; economic content includes consumer theory, theory of the firm and selected topics in macroeconomics.  
Prerequisites: 351, 352, and MATH 200 or MATH 114 with permission of instructor

**470 Research in Economics**

The Research in Economics course deals with data collection and statistical analysis of economic hypotheses. It culminates in writing a research paper on a topic of the student's choosing.  
Prerequisite: senior standing and 315, or permission of the instructor

**475, 476, 477, 478 Experiential Learning**

See the description of these courses at the beginning of the "Departments and Curricula" section of this catalog.

## Engineering

### 483, 484, 485, 486 Seminar

See the description of these courses at the beginning of the “Departments and Curricula” section of this catalog.

### 487, 488, 489, 490 Topics

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### 491, 492, 493, 494 Research

See the description of these courses at the beginning of the “Departments and Curricula” section of this catalog.

### 495, 496, 497, 498 Individual Study

See the description of these courses at the beginning of the “Departments and Curricula” section of this catalog.

## Engineering (ENGR)

Bennett (chair), Jalkio, Kumar, Zimmerman

Faculty from other departments and adjunct faculty from industry teach specialized courses.

The University of St. Thomas offers two tracks in engineering:

- A program in mechanical engineering
- A pre-engineering program.

### Engineering

The bachelor of science in mechanical engineering (B.S.M.E.) is an applied engineering program, blending theory and research with practical engineering fundamentals. The program is academically rigorous, following Accreditation Board for Engineering and Technology (ABET) guidelines and complemented with a full liberal arts curriculum.

The mechanical engineering curriculum combines the study of basic sciences, general engineering, design engineering and mechanical engineering with the study of the liberal arts. Emphasis is placed on applied engineering.

The curriculum provides for a foundation in: theoretical and applied mechanics, materials, electrical-electronic fundamentals, computer-aided design and manufacturing, automation systems, thermodynamics heat transfer/fluid flow, manufacturing processes and practical design.

It is designed to develop a student's teamwork and communication skills while also providing comprehensive understanding of the design/manufacturing system.

Graduates will be prepared for direct entry into an engineering position in industry or for advanced study in an engineering graduate school.

### Pre-Engineering

*See Pre-Professional Programs*

### Major in Mechanical Engineering (B.S.M.E.)

150 Introduction to Engineering I (0 credit)

151 Introduction to Engineering II (0 credit)

171 Engineering Graphics

220 Engineering Mechanics I

221 Engineering Mechanics II

350 Electrical Engineering Principles

360 Manufacturing Processes

370 Engineering Materials

381 Thermodynamics

382 Heat Transfer and Fluid Flow

410 Control Systems and Automation

480 Engineering Design Clinic I

481 Engineering Design Clinic II

*Plus three of:*

351 Electronic Instrumentation and Control Laboratory

390 Packaging Fundamentals

420 Rapid Product Realization

430 Applications of Thermodynamics

440 Design with Plastics

450 Vibration and Control Theory