

of Arts degree, provides an opportunity for students who wish to study a variety of societies, cultures and nations and the relationships among them. The diversity within the program makes it possible for students to develop a portion of their major in terms of their personal interests and goals.

All students in the program complete a core of courses that offers a broad overview of the world, along with an individually designed area of emphasis. Possible areas of emphasis include Asia, Comparative Twentieth-Century Studies, East-West Relations, Europe, International Thought and U.S.-Russian Relations.

Because of the interdisciplinary nature of the international studies major, faculty members represent many academic departments, including Art, Business Administration, Earth Science, Economics, English, Modern Languages and Cultures, History, Philosophy and Religion, Political Science, Sociology and Anthropology, and Teacher Education. In determining an area of emphasis, students work with the director of the international studies program.

Major Program Requirements

Bachelor of Arts in International Studies

(36 hours, 3 hours of cognates and 300-level fluency in a second language)

International Studies Core (6 hours)

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| INTL 101 | International Studies (3) |
| INTL 407 | Seminar in International Studies (3) |

International Studies Electives (30 hours)

- 12 hours chosen from the following:
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| ECON 223 | Economics of the Developing Countries (4) |
| PSCI 328 | Politics in the Third World (4) |
| PSCI 335 | International Relations (4) |
| SOC 208 | Introduction to Cultural Anthropology (4) |
- 18 hours of Area Emphasis Courses (see list below)

Cognates (3 hours plus 300-level fluency in a second language)

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| GEOL 104 | Regional Geography (3) |
| MLCF 202, | French IV |
| MLCG 202 | German IV |
| MLCS 215 | Professional Spanish (4) |
- 12 hours of the non-cognate courses must be at the 300 level or above.

Minor Program Requirements

Students minoring in international studies will complete 21 semester hours in the program, not including the language requirement. Of these 21 hours, 6 must be at the 300 level or above. The 21 required hours will include: International Studies 101 and 407; 9 hours from the specified core courses; and 6 hours in the area of emphasis, not to include courses taken to satisfy distribution requirements. Geology 104 is also required.

Majors and minors will complete at least one 300-level language course (2-4 semester hours) or its equivalent. Prerequisites are 12 semester hours (or the equivalent) in French, German or Spanish or comparable requirements in other modern

languages. Prerequisites may be waived through placement exams.

Completion of study or an internship abroad is highly desirable and strongly encouraged.

Required Courses

All majors and minors in the program will complete the following two courses:

101. International Studies (SOCIAL SCIENCE) (3). Historical, cultural, political and economic relationships among the diverse peoples of the world. Offered as needed.

407. Seminar in International Studies (3). Research and discussion of selected topics related to students' areas of emphasis. Each student will complete an individual research project culminating in a formal paper. Offered as needed.

Area of Emphasis Courses

These courses will be chosen in consultation with the advisor and with the approval of the International Studies Committee. The area of emphasis should be identified by the end of the sophomore year.

Majors will complete 18 semester hours from the following courses; minors will complete 6 semester hours. Courses used to fulfill the core requirement will not count toward the area of emphasis. (For course descriptions, see the appropriate department sections elsewhere in this catalog.)

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| AHIS 211 | Western Art I (3). |
| AHIS 212 | Western Art II (3). |
| BAD 337 | International Marketing (3). |
| BAD 347 | Management of Multinational Firms (3). |
| ECON 223 | Economics of Developing Countries (NON-WESTERN) (4). |
| ECON 319 | International Economics (4). |
| ENGL 255 | Studies in Non-Western Literature (NON-WESTERN) (4). |

All other Modern Language courses at the 200 level or above.

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| HIST 101 | East Asian Civilization I (NON-WESTERN) (4). |
| HIST 102 | East Asian Civilization II (NON-WESTERN) (4). |
| HIST 103 | Western Civilization I (4). |
| HIST 104 | Western Civilization II (4). |
| HIST 320 | Germany in the 20th Century (4). |
| PSCI 328 | Politics in the Third World (NON-WESTERN) (4). |
| RELG 102 | Religions of the West (3). |
| RELG 105 | Religions of the East (NON-WESTERN) (3). |
| RELG 302 | Studies in Eastern Religion (NON-WESTERN) (3). |
| SOC 208 | Cultural Anthropology and Ethnography (NON-WESTERN) (4). |
| TED 473 | Comparative International Education (3). |

Mathematics

Mission Statement

The Department of Mathematics is committed to providing all students with high-quality instruction and support. The department serves students at all levels of preparation and with interest in various fields of study. Faculty members, with diverse areas of expertise, work with the common goal of fos-

tering in students an appreciation for the beauty and relevance of mathematics. Faculty members also help students develop mathematical, analytic, and problem solving skills. For students interested in pursuing careers that require a deeper understanding of mathematics, the department offers a range of courses at the advanced level. Courses are offered in the areas of Pure Mathematics, Applied Mathematics, as well as Statistics. These courses provide students with the depth and breadth of knowledge required for graduate studies in Mathematics and related fields.

Major Program Requirements

Bachelor of Arts in Mathematics

(37 hours of Mathematics)

Mathematics B.A. Core (22 hours)

MATH 135, 205, 215	Calculus I, II, III (4, 4, 4)
MATH 303	Linear Algebra and Matrices (3)
MATH 313	Abstract Algebra (3)
MATH 403	Number Theory (3)
or MATH 405	Real Analysis (3)
MATH 420	Capstone: Mathematics

Mathematics B.A. Electives (15 hours)

15 hours of mathematics classes numbered above 215

Bachelor of Arts with Teacher Certification in Mathematics

See the Teacher Education section of the catalog.

Minor Program Requirements

For students majoring in other academic disciplines, a mathematics minor can enhance prospects for graduate or professional studies and increase employment opportunities. The minor requires 23 semester hours in the department, including Mathematics 135, 205, 303 and 12 semester hours of electives from mathematics courses numbered 215 or higher.

The highly sequential nature of the mathematics curriculum makes it essential that prerequisite mathematical knowledge and skills be mastered prior to enrollment in any mathematics course. A student's score on the Mathematics Placement Examination (given during freshman orientation and available at other times in the Academic Services Office), as well as a student's Math ACT or SAT score, are critical in the selection of freshman courses. A grade of C- or better is required for fulfillment of all prerequisite courses.

Each mathematics major must have an assigned faculty member from within the department as an advisor for his or her mathematics program.

The semesters listed after course descriptions indicate when courses are expected to be offered. Schedules are subject to change; students should confirm semester offerings with the department when planning degree programs.

Introductory Courses

099. Developmental Mathematics (3). Topics include the real number system, basic operations, fractions, signed numbers, factoring, exponents, roots, decimals, percent and proportion, topics from plane geometry, and an introduction

to algebra. Emphasis is on development of arithmetic skills and mastery of basic algebraic concepts. College credit only; hours will not count toward graduation requirements. (Prerequisite: Mathematics Placement Policy.) (Must be repeated if grade earned is NC, D or F.) Fall.

100. Mathematics for the Liberal Arts (MATHEMATICS BASIC SKILLS) (4). Covers the following topics: problem solving, sets, logic (truth tables and symbols), probability (counting techniques and expected value), statistics (measure of central tendency and normal curve), consumer mathematics (percentage, interest, installment buying and annuities), primes, composites, LCM and GCF, and graphing linear equations. Does not satisfy the prerequisite for further mathematics courses. (Prerequisite: Mathematics 099 or Mathematics Placement Policy.) Spring.

101. Intermediate Algebra (MATHEMATICS BASIC SKILLS) (4). Fundamental operations with algebraic expressions, linear and quadratic equations, graphs, systems of equations, applications and functions. (Prerequisite: Mathematics 099 or Mathematics Placement Policy.) Fall, spring.

103. Fundamentals of Modern Mathematics I (3). An introduction to problem solving, logic, set theory, number systems, operations, number theory, and algorithms. (Prerequisite: Mathematics 101 or Mathematics Placement Policy.) Fall.

113. Fundamentals of Modern Mathematics II (3). An introduction to probability and statistics, geometry, measurement and the use of mathematical methods, tools, and technology. (Prerequisite: Mathematics 103.) Spring.

115. Pre-Calculus Mathematics (4). An introduction to the theory of functions related to exponential, logarithmic, rational, polynomial and trigonometric functions. Theorems on rational and complex zeros of polynomials and systems of linear equations. (Prerequisite: Mathematics 101 or Mathematics Placement Policy.) Fall, spring.

Analysis

135. Calculus and Analytic Geometry I (4). Topics include mathematical modeling, transcendental functions, parametric equations and functions in parametric form, limits, continuity, differentiation, integration, and related applications. (Prerequisite: Mathematics 115 or Mathematics Placement Policy.) Fall, spring.

205. Calculus and Analytic Geometry II (4). Topics include principles of integral evaluation, applications of the definite integral to geometry, science, and engineering, mathematical modeling with first-order differential equations, sequences, infinite series, and various tests of convergence. (Prerequisite: Mathematics 135 or Mathematics Placement Policy.) Fall, spring.

215. Calculus and Analytic Geometry III (4). Topics include analytic geometry, polar coordinates and curves, three-dimensional space, vectors and vector-valued functions, par-

tial derivatives, multiple integrals, and various topics in vector calculus. (Prerequisite: Mathematics 205.) Spring.

305. Differential Equations (3). Solutions of various types of ordinary differential equations, linear equations with constant coefficients, the Laplace Transform, systems of equations, and series solutions. (Prerequisite: Mathematics 205.) Spring.

405. Real Analysis (3). Theory of functions of a real variable; sequences and series, limits, continuity, derivatives, the Riemann integral and other topics. (Prerequisites: Mathematics 215 and 303.) Fall '10.

Applied Mathematics

104. Finite Mathematics (3). An introduction to systems of linear equations, matrix theory, linear programming, set theory, logic, probability, and other topics. (Prerequisite: Mathematics 101 or Mathematics Placement Policy.) Fall, spring.

204. Elementary Statistics (3). An introduction to the basic principles of statistics, computation of statistics, probability distributions, estimation, confidence intervals, hypothesis testing, and correlation and regression. (Prerequisites: Mathematics 104 or 115 or Mathematics Placement Policy.) Fall, spring.

216. Discrete Mathematics (3). An introduction to Boolean algebra, combinatorics, graph theory, recursion, set theory, and trees. (Prerequisite: Mathematics 135.) Spring .

304. Theory of Probability (3). Descriptive statistics, probability and counting techniques, discrete and continuous distributions, moment generating functions, multivariate and conditional distributions, the correlation coefficient, and least squares regression. (Prerequisite: Mathematics 205.) Fall.

314. Theory of Mathematical Statistics (3). Sampling theory, point and interval estimation, order statistics, tests of hypothesis, nonparametric methods, statistical quality control, and experimental design. (Prerequisite: Mathematics 304.) Spring .

324. Numerical Analysis (3). An introduction to numerical analysis in finding roots of polynomials, polynomial approximation, finite difference calculus, summation calculus, and selected topics in computer programming. (Prerequisite: Mathematics 205; Mathematics 303 recommended.) Fall.

Foundations

303. Linear Algebra and Matrices (3). Matrices, determinants, systems of linear equations, vector spaces, linear transformations, eigenvectors and eigenvalues. (Prerequisite: Mathematics 205.) Fall.

313. Abstract Algebra (3). An introduction to the theory of groups, rings, and fields. (Prerequisite: Mathematics 303.) Spring.

323. Geometry (3). A survey of topics in geometry including historical topics, elements of logic, foundations in Euclidean geometry, and introduction to non-Euclidean geometry using the hyperbolic model. This course emphasizes different methods of proof. (Prerequisite: Mathematics 205.) Spring.

403. Number Theory (3). Divisibility, primes, congruences, multiplicative functions, primitive roots, quadratic residues, quadratic reciprocity, and other topics. (Prerequisite: Mathematics 313.) Fall.

Special and Advanced Courses

199. Exploratory Internship (1-3).

220. History of Mathematics (3). A survey of major developments in mathematics from ancient through modern times, with emphasis placed on individuals who made significant contributions to the discipline. (Prerequisite: English 101 and Math 135.) Fall.

299. Experimental Course (1-3).

309. Topics in Mathematics (1-3). Topics of interest to faculty and students. Sample topics include, but are not limited to, numerical analysis, graph theory, advanced discrete math, advanced multivariable calculus, partial differential equations, history of mathematics. May be repeated for credit if the topic is different. Offered as needed.

399. Professional Internship (1-12).

410. Advanced Topics in Mathematics (1-3). Advanced topics of interest to faculty and students. Sample topics include, but are not limited to, complex analysis, topology, operations research, advanced topics in linear algebra, abstract algebra, geometry and statistics. May be repeated for credit if the topic is different. Offered as needed.

420. Capstone: Mathematics (1). Students will deepen their understanding of the content of core undergraduate mathematics courses while investigating the relevance of mathematics to other fields of study. Among those instruments used to assess student performance will be a written report. An oral presentation is also required. (Prerequisites: Mathematics 313.) Spring.

451. Independent Study (1-3). Advanced topics for students planning further study in mathematics. (Prerequisites: B average in mathematics and department chairperson's written permission.)

499. Advanced Experimental Course (1-3).

Modern Languages and Cultures

Mission Statement

The Program in Modern Languages and Cultures serves the Adrian College Basic Skills requirement in the following languages: American Sign Language, Arabic, French, German, Japanese and Spanish. A major in the MLC Department