

At least three of the courses used for the minor must be taken on campus at Lewis & Clark.

A minimum of 12 semester credits must be discrete to the minor (in other words, may not be used in any other set of major or minor requirements).

FORTHCOMING OVERSEAS STUDY PROGRAMS

General Culture

Cuba. 2012 spring

Santiago de los Caballeros, Dominican Republic. Annual: fall, spring

Cuenca, Ecuador. Annual: spring, summer

Language Intensive

Santo Domingo, Dominican Republic. Annual: one semester or full year

Santiago or Valparaíso, Chile. Annual: one semester or full year

SPONSORING FACULTY

Franya Berkman, assistant professor of music.

Matthew N. Johnston, assistant professor of art history.

Bruce M. Podobnik, associate professor of sociology.

Mathieu P. Raillard, associate professor of Hispanic studies.

Juan Carlos Toledano Redondo, associate professor of Hispanic studies.

Freddy O. Vilches, assistant professor of Hispanic studies.

Wendy Woodrich, senior lecturer in Spanish.

Elliott Young, associate professor of history.

LAS 200 LATIN AMERICAN CULTURAL STUDIES

Young, Vilches

Content: Theoretical approaches to the study of Latin American culture.

Focused study of particular writers, artists, and musicians. Topics include indigenismo, nationalism, post-colonialism, the African diaspora, borderlands, and hybridity. Interdisciplinary approach integrates literary, historical, and anthropological modes of inquiry in this team-taught, bilingual class. To earn Hispanic studies credit, students must do their papers in Spanish.

Prerequisite and/or restriction: Spanish 201. For students who wish to earn Hispanic studies credit, Spanish 301.

Taught: Alternate years, 4 semester credits.

Mathematical Sciences

CHAIR: JEFFREY S. ELY

The mathematical sciences—mathematics, statistics, and computer science—continue to play a central role in the evolution of civilization. With a focus on patterns and structure, and with methodologies based on computation and representation of information, the mathematical sciences foster coherence and understanding that enable technology and broaden insights about the world of natural science.

The goal of the department is to acquaint students with this role as it relates to developments within the mathematical sciences as well as to applications to other disciplines. The department focuses on two distinct but complementary responsibilities: the mathematical sciences as an essential component of a liberal arts education and the mathematical sciences as a major course of study.

The department's courses present the many facets of the mathematical sciences: as a way of structuring the world of knowledge, as an art form, as an enabler in other disciplines, and as a historical force. As a consequence, the department provides the requisite mathematical, computational, and statistical content and methodology for allied disciplines as well as three comprehensive major programs.

THE MAJOR PROGRAMS

The department supports three majors: one in mathematics, one in computer science and mathematics, and one in computer science.

Students intending to major in any of these programs should have four years of high school mathematics, including, at a minimum, two years of algebra, a course in geometry, and a course in precalculus mathematics (including analytical geometry and trigonometry). Most well-prepared students begin their college mathematics programs with Calculus (Mathematics 131, 132, or 233) and their college computer science programs with Computer Science I (Computer Science 171). Students who have received Advanced Placement credit in calculus or computer science should consult with a member of the department for proper placement. For students without strong backgrounds in mathematics, the department offers Elementary Functions (Mathematics 115) to prepare them for work in calculus and computer science.

Students with interest in a professional career in the mathematical sciences should plan their curriculum to meet specific goals, as follows:

For graduate study in mathematics, Abstract Algebra I and II (Mathematics 421, 422); Advanced Calculus I and II (Mathematics 441, 442); as many additional upper-division mathematics courses as possible. These students should also be aware that many graduate programs require a reading knowledge of one or two foreign languages, usually chosen from among French, German, and Russian.

For graduate study in computer science, Theory of Computation (Computer Science 465).

For graduate study in statistics or a career in actuarial science, Numerical Analysis (Mathematics 345); Probability and Statistics I and II (Mathematics 451, 452).

For teaching in secondary or middle school, Number Theory (Mathematics 315); Geometry (Mathematics 355); Abstract Algebra I (Mathematics 421); Probability and Statistics I (Mathematics 451).

For a career in industry or applied mathematics, Statistical Concepts and Methods (Mathematics 255); Numerical Analysis (Mathematics 345); Complex Variables (Mathematics 365).

Students majoring in mathematics may also earn a minor in computer science; otherwise, students may not earn more than one major or minor from the department.

MAJOR REQUIREMENTS: COMPUTER SCIENCE

A minimum of 44 semester credits in the mathematical sciences numbered 171 and above,* including the following:

- Computer Science 171, 172, 230, and 383.
- Computer Science 277 or 393.
- Mathematics 255.
- At least 20 additional semester credits in computer science numbered 200 or above.

MAJOR REQUIREMENTS: COMPUTER SCIENCE AND MATHEMATICS

A minimum of 40 semester credits in the mathematical sciences numbered 171 and above,* including the following:

- Computer Science 171, 172, and 383.
- Computer Science 277 or 393.
- Mathematics 215 and 225.
- At least 8 additional semester credits in mathematics courses numbered 200 or above.

*To apply Mathematics 490 or Computer Science 495 to a major or minor requires consent of the department chair.

- At least 8 additional semester credits in computer science courses at the 300 or 400* level.

Computer Science 230 does not count toward this major.

MAJOR REQUIREMENTS: MATHEMATICS

A minimum of 36 semester credits in mathematics courses numbered 171 and above,* including the following:

- Computer Science 171.
- Mathematics 215, 225, and 233.
- At least 16 additional semester credits at the 300 or 400* level, at least 12 of which must be in mathematics courses.

Computer Science 230 does not count toward this major.

MINOR REQUIREMENTS: COMPUTER SCIENCE

A minimum of 20 semester credits, including the following:

- Sixteen semester credits in computer science courses numbered 171 and above.
- Computer Science 230 or 4 semester credits in mathematics courses numbered 115 and above.

MINOR REQUIREMENTS: MATHEMATICS

A minimum of 16 semester credits in mathematics courses numbered 171 and above,* including the following:

- Mathematics 215 and 225.
- At least 4 semester credits in mathematics at the 300 or 400* level.

(For information about Lewis & Clark's 3-2 cooperative program in computer science with the OGI School of Science & Engineering, see the Engineering listing in this catalog.)

HONORS

The honors program in the mathematical sciences usually consists of either (a) a yearlong independent research project or (b) a summer research project followed by a one-semester independent study, culminating in an appropriate oral presentation and written form. After completing the 100- and 200-level courses required for one of the majors and enrolling in at least one course at the 300 or 400 level, an interested student with a cumulative GPA of 3.500 or higher, both in the major and overall, should consult the chair or the student's advisor concerning development and completion of a project.

RESOURCES FOR NONMAJORS

The following courses are designed with nonmajors in mind:

Review of Algebra (Mathematics 055), designed for those not prepared to take college-level mathematics, addresses second- and third-year high school mathematics.

Perspectives in Mathematics (Mathematics 103), Perspectives in Statistics (Mathematics 105), and Perspectives in Computer Science (Computer Science 107) stress connections among contemporary mathematics, statistics, computer science, and modern society.

Elementary Functions (Mathematics 115) provides experience with the functions encountered in introductory calculus or computer science courses.

Statistical Concepts and Methods (Mathematics 255) introduces the main ideas of modern statistics, with applications to problems encountered in various disciplines, especially the natural sciences.

FACILITIES

Lewis & Clark maintains microcomputer laboratories containing Windows and Apple computers in the library, several classroom facilities, and residence halls. All Lewis & Clark students have access to this computing machinery 24 hours

a day, 7 days a week, for use in assigned coursework and independent projects. In addition, the department has two labs of 40 personal computers running LINUX and a small lab of 3 to 4 computers near the faculty offices. Students are encouraged to bring their own microcomputers to campus and use them independently or as terminals to access Lewis & Clark's file servers. To assist students, Lewis & Clark supports a discount purchase program for microcomputers.

FACULTY AND STAFF

Paul T. Allen, assistant professor of mathematics. Geometric analysis, differential equations, mathematical relativity.

Suanne Benowicz, director of the Math Skills Center.

Naiomi T. Cameron, assistant professor of mathematics. Enumerative combinatorics, graph theory.

Yung-Pin Chen, associate professor of statistics. Statistics, sequential designs. Probability, stochastic processes.

Peter Drake, associate professor of computer science. Artificial intelligence/cognitive science. Programming languages.

Jeffrey S. Ely, associate professor of computer science. Computer graphics, numerical analysis.

John W. Krussel, professor of mathematics. Graph theory, combinatorics, cryptography.

Jens Mache, professor of computer science. Operating systems, computer architecture, parallel and distributed systems, computer networks.

Elizabeth Stanhope, assistant professor of mathematics. Differential geometry, spectral geometry.

Iva Stavrov, assistant professor of mathematics. Differential geometry, algebraic topology.

Computer Science

CS 107 PERSPECTIVES IN COMPUTER SCIENCE

Staff

Content: Introduction to computer science. Topics chosen from the following: programming languages, digital logic and computer architecture, algorithms. Programming concepts including applications of loops, assignment and "if" statements, arrays, user-defined functions. Emphasis on the writing of programs illustrating these concepts. Students who have received credit (including transfer credit) for Computer Science 171 or its equivalent may not register for this course.

Prerequisite and/or restriction: Mathematics 055 or equivalent.

Taught: Annually, 4 semester credits. May not be taken for credit if AP Computer Science credit has been granted.

CS 171 COMPUTER SCIENCE I

Staff

Content: Basic techniques for solving problems amenable to solution through the use of a high-level computer programming language. Emphasis on solving a problem via a program and on the skills to write programs solving complex problems. Variables, data types, branches, loops, arrays, functional decomposition.

Prerequisite and/or restriction: Mathematics 115 or equivalent.

Taught: Each semester, 4 semester credits.

CS 172 COMPUTER SCIENCE II

Staff

Content: Data structures and algorithmic techniques that are fundamental in programming solutions to complex problems. Abstract data types, lists, stacks, queues, trees, graphs. Array-based and linked structures. Use and simple analysis of iterative and recursive algorithms. Introduction to object-oriented programming.

Prerequisite and/or restriction: Computer Science 171 or consent of instructor.

Taught: Each semester, 4 semester credits.

CS 230 COMPUTATIONAL MATHEMATICS

Ely

Content: Overview of the kinds of problems that arise in calculus and physics. Emphasis on computer solutions. Topics include differentiation, integration, nonlinear equations, linear systems, ordinary differential equations, approximation, curve fitting.

Prerequisite and/or restriction: Mathematics 115 or equivalent. Computer Science 171.

Taught: Annually, 4 semester credits.

CS 277 COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGES

Ely, Mache

Content: Computer design concepts and assembly languages. Topics chosen from the following: digital logic; arithmetic/logic unit design; bus structures; VLSI implementation; SIMD, MIMD, and RISC architectures; instruction sets; memory addressing modes; parameter passing; macro facilities.

Prerequisite and/or restriction: Computer Science 172.

Taught: Annually, 4 semester credits.

CS 363 OPERATING SYSTEMS

Mache

Content: Basic principles, policies, design issues, and construction of computer operating systems. Memory management, scheduling, synchronization of concurrent processes, input-output.

Prerequisite and/or restriction: Computer Science 277.

Taught: Alternate years, 4 semester credits.

CS 367 COMPUTER GRAPHICS

Ely

Content: Two- and three-dimensional computer graphics. Line, circle, filling, windowing, clipping algorithms, three-dimensional perspective projections, hidden line removal, shading, light models.

Prerequisite and/or restriction: Computer Science 172. Computer science 230 or equivalent. Familiarity with trigonometry, vectors helpful.

Taught: Annually, 4 semester credits.

CS 369 ARTIFICIAL INTELLIGENCE

Drake

Content: Design and construction of intelligent computer systems. Agents and environments; blind and informed search; heuristics; game play, minimax, and alpha-beta pruning; robotics; machine learning; philosophical issues including definitions of intelligence.

Prerequisite and/or restriction: Computer Science 172.

Taught: Alternate years, 4 semester credits.

CS 373 PROGRAMMING LANGUAGE STRUCTURES

Drake, Ely

Content: Organization, structure, syntax, and grammar of computer programming languages. Basic concepts and special-purpose facilities in several representative high-level languages. Manual and automatic memory management, control structures, scope of declarations, higher-order functions, macros, object-oriented programming.

Prerequisite and/or restriction: Computer Science 172.

Taught: Alternate years, 4 semester credits.

CS 383 ALGORITHM DESIGN AND ANALYSIS

Drake, Mache

Content: Introduction to the design and analysis of algorithms. Balanced binary search trees; bit vectors; hash tables; heaps; dynamic programming; algorithms including incremental, divide and conquer, greedy, graph.

Prerequisite and/or restriction: Computer Science 172. Mathematics 215 or Computer Science 230.

Taught: Annually, 4 semester credits.

CS 393 COMPUTER NETWORKS

Mache

Content: The structure, implementation, and theoretical underpinnings of computer networks. Topic areas include Internet protocols, client-server computing, distributed applications.

Prerequisite and/or restriction: Computer Science 172.

Taught: Alternate years, 4 semester credits.

CS 465 THEORY OF COMPUTATION

Staff

Content: Basic theoretical foundations of computer science including finite state and pushdown automata, Turing machines, computability, the halting problem, regular expressions, NP-completeness, the relationship between grammars and automata.

Prerequisite and/or restriction: Computer Science 172. Mathematics 215.

Taught: Alternate years, 4 semester credits.

CS 467 ADVANCED COMPUTER GRAPHICS

Ely

Content: Advanced three-dimensional computer graphics. Z-buffer algorithms, Phong smooth shading, ray tracing, texture mapping, spline patches.

Prerequisite and/or restriction: Computer Science 367.

Taught: Alternate years, 4 semester credits.

CS 487 ADVANCED ALGORITHMS

Drake, Mache

Content: Advanced study of algorithm design and implementation. Preparation for programming competitions. Topics chosen from the following: dynamic programming, graph algorithms, network flow and matching, backtracking, constructing all subsets, constructing all permutations, high-precision arithmetic, geometric algorithms.

Prerequisite and/or restriction: Computer Science 383.

Taught: Annually, 4 semester credits.

CS 488 SOFTWARE DEVELOPMENT

Drake

Content: Development of large software systems by teams of programmers. Problem specification, system design, testing, software frameworks, design patterns.

Prerequisite and/or restriction: Computer Science 373 or 383.

Taught: Alternate years, 4 semester credits.

CS 495 TOPICS IN COMPUTER SCIENCE

Staff

Content: Determined by student and/or faculty interest. May continue topics from an existing course or explore new areas.

Prerequisite and/or restriction: Consent of instructor.

Taught: Alternate years, 4 semester credits. May be taken three times for credit under different topics.

Mathematics and Statistics

MATH 055 REVIEW OF ALGEBRA

Benowicz

Content: Solving linear, absolute value, quadratic, exponential, and logarithmic equations. Introduction to functions and their graphs. Conic sections, polynomial operations including factoring and rules for exponents, rational and radical expressions, inequalities and systems of equations.

Prerequisite and/or restriction: None.

Taught: Each semester, 4 semester credits, credit-no credit. Not counted toward the 128 semester credits needed for graduation.

MATH 103 PERSPECTIVES IN MATHEMATICS

Staff

Content: For nonmajors. Selected topics illustrating mathematics as a way of representing and understanding patterns and structures, as an art, as an enabler in other disciplines, and as a historical force. Emphasis changes from semester to semester, reflecting the expertise and interests of the faculty member teaching the course. For further information consult the appropriate faculty member before registration.

Prerequisite and/or restriction: Mathematics 055 or equivalent.

Taught: Annually, 4 semester credits.

MATH 105 PERSPECTIVES IN STATISTICS

Staff

Content: Data analysis, data production, statistical inference. Data analysis: methods and ideas for organizing and describing data using graphs, numerical summaries, and other statistical descriptions. Data production: methods for selecting samples and designing experiments to produce data that can give clear answers to specific questions. Statistical inference: methods for moving beyond the data to draw conclusions about some wider universe.

Note: Students who have received credit for Economics 103, Psychology 200, or AP Statistics may not take this course for credit.

Prerequisite and/or restriction: Mathematics 055 or equivalent.

Taught: Annually, 4 semester credits.

MATH 115 ELEMENTARY FUNCTIONS

Staff

Content: The basic functions encountered in calculus, discrete mathematics, and computer science: polynomial, rational, exponential, logarithmic, and trigonometric functions and their inverses. Graphs of these functions, their use in problem solving, their analytical properties.

Prerequisite and/or restriction: Mathematics 055 or equivalent.

Taught: Each semester, 4 semester credits. May not be taken for credit if AP Calculus credit has been granted.

MATH 131 CALCULUS I

Staff

Content: Basic analytical and quantitative reasoning and problem-solving skills that depend on the concept of the limit. Continuity, the derivative and its applications, the Fundamental Theorem of Calculus, introduction to the definite integral with applications.

Prerequisite and/or restriction: Mathematics 115 or equivalent.

Taught: Each semester, 4 semester credits. May not be taken for credit if AP Calculus credit has been granted.

MATH 132 CALCULUS II

Staff

Content: Further development of the definite integral including techniques of integration, applications of the definite integral, indeterminate forms, and improper integrals. Sequences, series of constants, power series, Taylor polynomials and series, introduction to elementary differential equations.

Prerequisite and/or restriction: Mathematics 131 or equivalent.

Taught: Each semester, 4 semester credits. May not be taken for credit if AP Calculus BC credit has been granted.

MATH 215 DISCRETE MATHEMATICS

Staff

Content: Basic techniques of abstract formal reasoning and representation used in the mathematical sciences. First order logic, elementary set theory, proof by induction and other techniques, enumeration, relations and functions, graphs, recurrence relations.

Prerequisite and/or restriction: Mathematics 132 or equivalent.

Taught: Each semester, 4 semester credits.

MATH 225 LINEAR ALGEBRA

Staff

Content: Basic skills and concepts that evolve from the study of systems of linear equations. Systems of linear equations, Euclidean vector spaces and function spaces, linear transformations, matrices and determinants, inner product spaces, eigenvalue problems, symmetric transformations.

Prerequisite and/or restriction: Mathematics 132 or equivalent.

Taught: Each semester, 4 semester credits.

MATH 233 CALCULUS III

Staff

Content: Basic analytical and quantitative skills in the theory of functions of several variables. Partial differentiation; gradients; multiple integrals; theorems of Green, Gauss, and Stokes.

Prerequisite and/or restriction: Mathematics 132 or equivalent.

Taught: Annually, 4 semester credits.

MATH 235 DIFFERENTIAL EQUATIONS

Staff

Content: Basic methods, theory, and applications of differential equations. Solutions and the qualitative behavior of solutions of linear and nonlinear differential equations and of systems of differential equations, Laplace transform methods, numerical techniques.

Prerequisite and/or restriction: Mathematics 132 or equivalent.

Taught: Annually, 4 semester credits.

MATH 244 MATH PRACTICUM

Benowicz

Content: Tutoring opportunities (two to four hours onsite per week) at community schools to include one-on-one tutoring or classroom aid for site supervisor. Written reports and consultation with instructor required during semester. Specific math courses or grade levels to be determined by student, site supervisor, and instructor.

Prerequisite and/or restriction: Consent of instructor.

Taught: Each semester, 1-2 credits, credit-no credit. May be taken twice for credit with at most 2 credits counted toward math major.

MATH 255 STATISTICAL CONCEPTS AND METHODS

Chen

Content: Introduction to principal statistical concepts and methods with emphasis on data. Statistical thinking, the application of statistical methods to other disciplines, and the communication of statistics, both verbally and in writing. Exploratory data analysis, random variables, regression analysis, data production, and statistical inference. Mathematical tools and skills used to address problems posed by collecting, analyzing, and modeling data.

Prerequisite and/or restriction: Mathematics 131 or equivalent.

Taught: Annually, 4 semester credits.

MATH 281 PUTNAM EXAM PREPARATION

Stavrov

Content: Emphasis on problem-solving skills required for success on the Putnam Exam. Participation in the exam is required to earn credit.

Prerequisite and/or restriction: None.

Taught: Annually, 1 semester credit, credit-no credit. May be taken twice for credit.

MATH 282 MODELING COMPETITION PREPARATION

Stanhope

Content: Emphasis on mathematical modeling skills required for success in the COMAP Mathematical Modeling Competition and Interdisciplinary Modeling Competition. Participation in the competition is required to earn credit.

Prerequisite and/or restriction: None.

Taught: Annually, 1 semester credit, credit-no credit. May be taken twice for credit.

MATH 315 NUMBER THEORY

Staff

Content: Divisibility properties of the integers, unique factorization, linear Diophantine equations, congruences, Fermat's and Wilson's theorems, arithmetic functions. Other topics selected from the following: primitive roots and indices, quadratic reciprocity, the theory of prime numbers, continued fractions, sums of squares, analytic number theory.

Prerequisite and/or restriction: Mathematics 215 or consent of instructor.

Taught: Alternate years, 4 semester credits.

MATH 325 COMBINATORICS

Cameron, Krussel

Content: Introduction to combinatorial theory, including one or more of the following: enumeration, algebraic enumeration, optimization, graph theory, coding theory, design theory, finite geometries, Latin squares, posets, lattices, Polya counting, Ramsey theory.

Prerequisite and/or restriction: Mathematics 215 and 225 or consent of instructor.

Taught: Alternate years, 4 semester credits.

MATH 345 NUMERICAL ANALYSIS

Ely

Content: The theoretical basis, error analysis, and practical techniques of numerical computations. Topics chosen from the following: solutions of systems of linear equations, solutions of nonlinear equations, numerical integration and differentiation, solutions of ordinary differential equations, eigenvalue problems, interpolation, approximation.

Prerequisite and/or restriction: Computer Science 171. Mathematics 225 and 233.

Taught: Alternate years, 4 semester credits.

MATH 355 GEOMETRY

Staff

Content: Concepts of geometry encompassing both Euclidean and non-Euclidean geometries. Parallelism, distance, angles, triangles, other geometric notions studied from the viewpoint of logic and foundations, transformations or differential geometry.

Prerequisite and/or restriction: Mathematics 215 or consent of instructor.

Taught: Alternate years, 4 semester credits.

MATH 358 TOPOLOGY

Stanhope, Stavrov

Content: Concepts of topology. Set theory, metric spaces, topological spaces, continuity, compactness, connectedness, and topological equivalence.

Prerequisite and/or restriction: Mathematics 215 or consent of instructor.

Taught: Alternate years, 4 semester credits.

MATH 365 COMPLEX VARIABLES

Staff

Content: Concepts of complex analysis. Complex number system, analytic functions, integration of functions of a complex variable, power series representation, conformal mappings, residue theory.

Prerequisite and/or restriction: Math 233 or consent of instructor.

Taught: Alternate years, 4 semester credits.

MATH 421, 422 ABSTRACT ALGEBRA I, II

Cameron, Krussel

Content: A two-semester sequence in abstract algebraic systems. Structure of groups, subgroups, quotient groups, homomorphisms, Fundamental Isomorphism Theorems, rings, ideals, integral domains, polynomial rings, matrix rings, fields, Galois theory, advanced topics in linear algebra.

Prerequisite and/or restriction: Mathematics 215 and 225 or consent of instructor.

Taught: Alternate years, 4 semester credits each.

MATH 441, 442 ADVANCED CALCULUS I, II

Stanhope, Stavrov

Content: A two-semester sequence in the theory of the calculus. Development of the ability to understand, construct, and write proofs in analysis. Limits, continuity, differentiation, integration, applications, generalizations.

Prerequisite and/or restriction: For Mathematics 441, Mathematics 215. For Mathematics 442, Mathematics 441, 225, and 233 or consent of instructor.

Taught: Alternate years, 4 semester credits each.

MATH 451, 452 PROBABILITY AND STATISTICS I, II

Chen

Content: A two-semester sequence in the theory of probability and mathematical statistics. Elementary probability, discrete and continuous random variables, distributions, limit theorems, point estimation, hypothesis testing, linear models, analysis of variance, nonparametric statistics.

Prerequisite and/or restriction: Mathematics 215 and 233 or consent of instructor.
Taught: Alternate years, 4 semester credits each.

MATH 490 TOPICS IN MATHEMATICS

Staff

Content: Determined by student and/or faculty interest. May continue topics from an existing course or explore new areas.

Prerequisite and/or restriction: Consent of instructor.

Taught: Alternate years (contingent on student interest and faculty availability), 4 semester credits. May be taken three times for credit under different topics.

Molecular Biology

See Biochemistry and Molecular Biology in this catalog.

Music

CHAIR: ELEONORA MARIA BECK

Music is an artistic and social language. It is abstract, yet also emotional and communicative. To understand music takes experience, reason, and words, but it also requires imitating it and creating anew. We speak both about music and in it.

Lewis & Clark offers opportunities in music for the person first exploring the art as well as for the serious student who aspires to a professional career. It is the fundamental mission of the Department of Music to enable students at all levels to experience music as a perpetually liberating and enriching element in their lives.

The curriculum encompasses many courses, private lessons, and ensembles, all of which are available to the nonmajor as well as the music major. Instruction emphasizes the integration of performance studies, knowledge of the literature, and theoretical concepts. Many courses concentrate on music as a reflection of various societies and cultures, Western and non-Western.

The Department of Music faculty consists of active performers, composers, and scholars, all of whom are dedicated teachers.

THE MAJOR PROGRAM

In addition to the minimum major requirements, all students majoring in music pursue a senior project in composition, ethnomusicology, musicology, music education, or performance. A core curriculum is common for the first two years, with students pursuing appropriate concentrations in the junior and senior years. Declaring a music major by the sophomore year is advisable.

All majors and prospective majors are reviewed by the music faculty at the end of the fall semester of the sophomore year. Most students should be near the completion of common requirements in the major at this time. Transfer students and those who decide to declare a music major after the sophomore year must consult the department chair.

The review involves a short performance in the student's primary area of studio instruction, optional work samples in his or her primary area of interest (for students concentrating in composition, musicology, or ethnomusicology), and an interview about intended areas of concentration in the junior and senior years. In this formal advising opportunity, the entire music faculty is available to help each student plan to fulfill upper-division degree requirements and complete the senior project.

A satisfactory departmental review results in faculty approval of upper-division status as a music major, and is a prerequisite for Music 490 (Senior