MATHEMATICS (MAT)

Students requiring a stronger foundation in mathematics may be placed in academic support course MAT 100 (see page 123).

MAT 111 Topics in Mathematics 3 Semester Hours

A survey of topics designed to foster an appreciation for mathematics by studying mathematical systems not ordinarily encountered in high school. Topics may include: probability, cryptography, logic, graph theory, voting and apportionment methods, history of mathematics, and others. Prerequisite: MAT 100 (with a grade of C - or higher) or placement. Offered every fall and spring. This course meets General Education Distribution Area Requirement II.A.

MAT 121 Elementary Functions with Trigonometry 4 Semester Hours

Concepts and manipulations of inequalities, absolute value, and functions of one variable: linear, quadratic, absolute value, polynomial, rational, exponential, logarithmic, and trigonometric functions; and introduction to analytic geometry. MAT 121 serves as preparation for MAT 211. Algebraic and pictorial points of view are stressed simultaneously. Prerequisite: MAT 100 (with grade of C - or higher), or placement. Offered every fall and spring. This course meets General Education Distribution Area Requirement II.A.

MAT 141 Probability and Statistics 3 Semester Hours

An introduction to basic statistical concepts: descriptive statistics, probability, the binomial and normal distributions, estimation, hypotheses tests, linear correlation and regression. Examples are drawn from disciplines of common interest to a variety of students Prerequisite: MAT 100 (with grade of C - or higher) or placement. Offered every fall and spring. This course meets General Education Distribution Area Requirement II.A.

MAT 200 Discrete Mathematics 3 Semester Hours

An introduction to the basic techniques of problem solving in discrete mathematics, including logic, set theory, relations and functions, counting principles, recurrence relations, and mathematical induction. Prerequisite: MAT 111 or above. Offered fall semester. This course meets General Education Distribution Area Requirement I.C. or II.A.

MAT 210 Math for Elementary Teachers 3 Semester Hours

Properties and algorithm of the real numbers are emphasized in this course. A course designed to enhance conceptual understanding of elementary mathematics. Pre-requisite: MAT 111 or above. Offered fall semester. This course meets General Education Distribution Area Requirement I.C. or II.A.

MAT 211 Analytic Geometry and Calculus I 4 Semester Hours

A study of functions, limits and continuity, differentiation of algebraic and trigonometric functions, applications of differentiation, antiderivatives, the definite integral, and the fundamental theorem of calculus. Prerequisite: MAT 121 (with a grade of C - or higher) or placement. Offered every fall and spring. This course meets General Education Distribution Area Requirement II.A.

MAT 221 Analytic Geometry and Calculus II 4 Semester Hours

Applications of the integral, transcendental functions and their derivatives, introduction to differential equations, techniques of integration, improper integrals and indeterminate forms, and infinite series. Prerequisite: MAT 211 (with grade of C - or higher) or placement. Offered fall semester. This course meets General Education Distribution Area Requirement II.A.

MAT 231 Analytic Geometry and Calculus III 4 Semester Hours

Calculus of several variables; plane and solid analytic geometry; parametric equations; vectors and vector functions; non-Cartesian coordinate systems; partial differentiation; multiple integration; and introduction to theorems of vector calculus. Prerequisite: MAT 221 (with grade of C - or higher). Offered spring semester.

MAT 251 Introduction to Scientific Computing 3 Semester Hours

An introduction to computer programming and problem-solving using a high-level programming language. Standard scientific programming applications (e.g., techniques for numeric integration and finding roots of functions) will serve as motivating examples in the understanding of program design and algorithm development. Prerequisite: MAT 211 (with a grade of C- or higher). Offered fall semesters of odd-numbered years. This course meets General Education Distribution Area Requirements II.A. or II.C.

MAT 341 Linear Algebra 3 Semester Hours

Simultaneous linear equations; vectors; matrices; vector spaces; linear transformations; determinants; and eigenvalues. Prerequisite: MAT 211 (with grade of C - or higher) or permission of instructor. Offered spring of odd-numbered years.

MAT 351 Differential Equations 3 Semester Hours
Solution techniques for first order ordinary differential equations; second order linear differential equations and linear systems; series solutions; and Laplace transforms. Prerequisite: MAT 221. Offered spring of even-numbered years.

MAT 361 Modern Algebra 3 Semester Hours
Basic algebraic structures; a review of set theory; equivalence relations; theory of groups, rings, integral domains, and fields; quotient structures; homomorphisms; rational, real, and complex fields; and polynomial rings. Prerequisite: MAT 200 and MAT 341 or permission of instructor. Offered fall of odd-numbered years.

MAT 410 Euclidean Geometry 3 Semester Hours
An axiomatic approach to the study and development of Euclidean geometry, with an introduction to non-Euclidean geometry. Prerequisite: MAT 200. Offered spring of even-numbered years.

MAT 411 Real Analysis 3 Semester Hours
A study of the real numbers including some topology of the real line; sequences and series; continuity, differentiation, integration, and sequences and series of functions. Prerequisites: MAT 200 and MAT 221. Offered fall of even-numbered years.

MAT 412 Complex Variables 3 Semester Hours
Algebra, topology, and geometric representation of complex numbers; analytic functions of a complex variable, including integration, Taylor and Laurent series, residues, and an introduction to conformal mapping. Prerequisite: MAT 231, or permission of instructor. Offered fall of even-numbered years.

MAT 450 Math Seminar 1 Semester Hour
Written and oral presentations by students of the results of extensive research on advanced topics selected by the faculty and students. Prerequisite: permission of instructor. Offered fall semester.