

Graduate

MATH 532 Introduction to Number Systems (3)

Background concepts and terminology in sets, relations, mapping. Cartesian products; equivalence relations; elementary properties of the counting numbers; numeration systems; arithmetic in base 10 and bases other than 10; divisibility and primes; Euclidean Algorithm; Fundamental Theorem of Arithmetic consequences; the ring of integers modulo m ; Fermat's Theorem, elementary properties of the rational numbers; existence of irrational numbers.

MATH 535 Algebra for Teachers (3)

Sets, real number system, theory of polynomials, elementary functions, determinants and matrices. (Prerequisite: MATH 242 or consent of the instructor)

MATH 536 Geometry for Teachers (3)

Foundations of geometry, nature of proof, coordinate systems, Euclidean, non- Euclidean and projective geometry.

MATH 577 Fourier Series (3)

Study of approximations of functions by orthogonal systems of functions; Fourier series; orthonormal systems and generalized Fourier series, applications to boundary value problems. (Prerequisites: MATH 243 and 251)

MATH 578 Laplace Transforms (3)

Definitions and elementary properties; transform of discontinuous functions; inverse transformations; convolution theorems, application to ordinary differential equations. (Prerequisites: MATH 242 and 251)

MATH 599 Research and Conference (3)

May not be repeated for graduate credit. (Prerequisite-site: Graduate standing and twelve [12] hours of senior undergraduate or graduate mathematics)

MATH 631 Introduction to the Foundation of Mathematics (3)

Evolution of Mathematical ideals and methods, relations to logic; the axiomatic method; the infinite paradoxes; contradictions. (Prerequisite: Graduate standing)

MATH 633 Theory of Functions of Variables (3)

The fundamental part of the theory of functions of a real variable; the topology of the real line, limit, continuity, differentiation, integration, sequences and series of functions. (Prerequisite: MATH 439)

MATH 634 Theory of Functions of Complex Variables (3)

The fundamental part of the theory of functions of a complex variable; complex number system, limits continuity, derivatives of complex functions, integration in the complex domain. (Prerequisite: MATH 460 or consent of instructor)

MATH 636 Topology (3)

Introduction to the study of point set topology: topological spaces, metric space, the topology of the real line and real plane, continuous functions, homeomorphisms, product spaces, compactness, connectivity, separation theorems. (Prerequisites: MATH 439 or instructor's consent)

MATH 637 Functional Analysis (3)

Introduction to functional analysis: finite and infinite dimensional vector spaces norms and inner products, Banach space, Hilbert space, L -space, linear operators. (Prerequisites: MATH 636 and MATH 633 or instructor's consent)

MATH 638 Partial Differential Equations (3)

Definitions of equations and their solutions: method of Jacobi and Monge, solutions by quadrature, existence theorems, separation of variables, elliptic, parabolic and hyperbolic systems, and operational methods. (Prerequisites: MATH 251)

MATH 732 Theory of Numbers (3)

Elementary properties of integers, the theorems of Fermat and Wilson the theory of congruencies, quadratic residues, the reciprocity theorem, Diophantine equations, definite and indefinite binary quadratic forms, ternary quadratic forms, regular and irregular forms. (Prerequisite: MATH 331)

MATH 733 Abstract Algebra (3)

Advanced topics in modern algebra: generally the topics will be in one or more of the areas: group theory, theory of rings and fields, homological algebra. (Prerequisite: MATH 331 or consent of instructor)

MATH 790 Independent Study (3)

Graduate standing / approval of advisor.

MATH 831 Theory of Probability (3)

Theory of expectation, dependent and independent variables, Tchebycheff's inequality, the probability integral applications to statistical theory. (Prerequisite: MATH 473 and 474)

MATH 832 Finite Differences (3)

Tables of differences, difference formulas, finite integration with applications, interpolation, approximate integration, beta and gamma functions, difference equations.

MATH 832 Mathematical Statistics (3)

Moments, distributions of functions of random variable, internal estimation, limiting distributions, sufficient statistics, point estimation, and statistical hypothesis. (Prerequisite: MATH 474)

MATH 832 Research Problems (3)

Investigation by the student of a specific problem in mathematics. (Prerequisite: Approval of the department chairperson)