

MATHEMATICS (MS)

MS 403 Vector Analysis (3)

Prerequisite(s): MS 227.

Algebra and calculus of vectors, Stokes theorem, and divergence theorem; applications to geometry, mass potential functions, electricity, and fluid flow.

MS 404 Mathematical Statistics II (3)

Prerequisite(s): MS 227 and 304.

Continuation of MS 304. The Central Limit Theorem, order statistics, functions of random variables, properties of estimators, confidence intervals, hypothesis testing, and least squares regression models.

MS 416 Advanced Calculus II (3)

Prerequisite(s): MS 415.

Selected topics from advanced calculus, elements of partial differentiation including the general theorems, Jacobians, topics on the theory of integration. This course is eligible for Faster Master's.

MS 423 Survey of Geometries (3)

Prerequisite(s): MS 323.

Selected topics from advanced Euclidean geometry, finite geometries, non-Euclidean geometry, and other geometries.

MS 451 Functions of a Complex Variable (3)

Prerequisite(s): MS 415.

Fundamental operations with complex numbers, differentiation and integration theorems, mapping, series, and residues. This course is eligible for Faster Master's.

MS 475 Seminar in Mathematics (WI) (3)

Prerequisites or corequisites for undergraduate: MS 415 or MS 441 or MS 451. Prerequisites for graduate: See Prerequisites for All Graduate Mathematics Courses. Goals include examining deeply the fundamental ideas of mathematics and connections among various branches of mathematics, exploring the historical development of major concepts, and further developing the habits of mind that define mathematical approaches to problems. This course is eligible for Faster Master's. (Writing Intensive Course)

MS 480 Introductory Topology (3)

Prerequisite(s): MS 415.

Basic topological concepts to include topological spaces, mapping, compactness, connectedness, and separation axioms. This course is eligible for Faster Master's.

MS 484 Partial Differential Equations (3)

Prerequisite(s): MS 227 and 344.

Standard methods of solution; separation of variables, Fourier Series, Laplace Transforms; selected applications. This course is eligible for Faster Master's.

MS 504 Applied Statistical Methods (3)

Prerequisite(s): MS 204 or MS 302 or ST 261.

Fundamental concepts of descriptive and inferential statistics, probability distributions, estimation, and hypothesis testing. Statistical software and/or scripting are used to facilitate analysis and interpretation of results. Emphasis on statistical techniques to analyze data. This course may only be taken at the undergraduate level upon approval for participation in the Faster Master's program.

MS 505 Basic Logic and Set Theory (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses. Basic topics in symbolic logic and naive set theory, including sets and set operations, symbolic logic, the language of set theory, and applications of set theory.

MS 515 Real Variables I (3)

Prerequisite(s): MS 416 or permission of the instructor.

Measure and measurable sets, measurable functions, Lebesgue integration, and convergence theorems.

MS 516 Real Variables II (3)

Prerequisite(s): MS 515.

Selected topics from absolute continuity and differentiation, LP-spaces, Hilbert spaces, and Banach spaces.

MS 517 Introduction to Functional Analysis (3)

Prerequisite(s): MS 352 and MS 415.

Introduction to the fundamental topics of functional analysis. Topics include metric spaces, completeness, linear operators, normed spaces and Banach spaces, inner product spaces, and Hilbert spaces. Objectives include the Riesz Representation Theorem, the Hahn-Banach Theorem, and the Contraction Mapping Theorem.

MS 523 Topics in Geometry for Teachers (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses.

Classical theorems, ideas, and constructions of Euclidean and non-Euclidean geometry in theorems of Ceva, Menelaus, Pappus, and Fererback; homothetic transformations, inversion, harmonic sets of points, and cevians.

MS 526 Topics in Analytical Geometry for Teachers (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses.

Applications of Euclidean and homogeneous coordinates, geometric transformations, trigonometric, and vector techniques to geometric problems.

MS 528 Theory of Equations and Functions for Teachers (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses.

Topics in the theory of polynomial and other equations, and in the properties of transcendental functions. The goal is the development of a deeper understanding of the equations and functions commonly encountered in precalculus mathematics. May require the use of computer software.

MS 530 Foundations in Calculus for Teachers (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses.

Theory, problem solving techniques, and applications of differential and integral calculus, including the use of graphing calculators and computer software. Recommended for students who are teaching or planning to teach Advanced Placement Calculus.

MS 533 Topics in Modern Analysis for Teachers (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses.

Logic and set theory, functions and sequences, structure and development of the real number system including completeness.

MS 535 Topics in Finite Mathematics for Teachers (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses.

Elementary combinatorial analysis, probability, vectors and matrices, game theory, linear programming, and model building in the social and physical sciences.

MS 537 Foundations in Algebra for the Secondary Teacher (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses.

Concepts of high school algebra from the perspective of ring theory.

MS 541 Abstract Algebra I (3)

Prerequisite(s): MS 441.

General group theory including cyclic groups and permutation groups, homomorphism and isomorphism theorems.

MS 542 Abstract Algebra II (3)

Prerequisite(s): MS 441.

Theory of rings, ideals, fields, and integral domains.

MS 549 Selected Topics in Mathematics for the Secondary Teacher (3)

Prerequisite(s): See Prerequisites for All Graduate Mathematics Courses.

Selected topics suitable for the secondary teacher; problem solving; secondary school mathematics from an advanced standpoint.

MS 552 Linear Algebra (3)

Prerequisite(s): MS 352 and MS 441.

Abstract treatment of finite dimensional vector spaces. Linear transformations, determinants, eigenvalues and eigenvectors, invariant subspaces, Rational and Jordan Canonical Forms, inner product spaces, unitary and normal operators, bilinear forms.

MS 588 Mathematics Internship (1-6)

Prerequisite(s): Requires a faculty recommendation and permission of the department head.

(1-6). This course allows the student to gain experience in a job involving mathematics. The department head will approve the number of credit hours based on the scope of the project. This course is repeatable up to a total of 6 credit hours. Grades: Pass/Fail.

MS 591 Seminar in Algebra (3)

Prerequisite(s): MS 541 and 542 or permission of instructor.

Selected topics in modern algebra beyond the scope of the graduate algebra sequence. Topics may be chosen from the theory of groups, rings, fields, or modules; linear algebra; homological algebra; or other topics, depending on student and instructor interests. May be duplicated for credit for a total of 6 semester hours.

MS 595 Seminar in Analysis (3)

Prerequisite(s): MS 515 and 516 or permission of the instructor.

Selected topics in modern analysis beyond the scope of the graduate analysis sequence. Topics may be chosen from the fields of real analysis (measure theory and integration, special functions, finite differences, functional equations, sequences and series), complex variables, Fourier and harmonic analysis, integral transforms, operator theory, or other topics, depending on student and instructor interests. May be duplicated for credit for a total of 6 semester hours.

MS 598 Directed Readings (3)

Prerequisite(s): Students must have two courses in the topical area chosen and approval by the faculty advisor in mathematics and the instructor.

Algebra, analysis, geometry, and topology. May be duplicated for credit for a total of 6 semester hours.

MS 599 Thesis (3)

Prerequisite(s): Approval of application for thesis option.

See "Thesis Option and Procedures." May be duplicated for credit for a total of 6 semester hours. Grade: Pass/Fail.