

FACULTY

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MASTER OF ARTS IN MATHEMATICS

The Master of Arts in Mathematics degree program has been placed on inactive status. Graduate mathematics courses from the following list will be offered on a limited basis for students in the Master of Arts in Education—Mathematics program.

COURSE DESCRIPTIONS

MATHEMATICS

MATH 502G – Topics in Mathematics Education:

Technology

3 hours

The use of technology in teaching high school mathematics. Emphasis on curricular issues, assessment, and methods of instruction.

MATH 503G – Topics in Mathematics

3 hours

Selected topics in mathematics. May be repeated for credit up to six hours.

MATH 511G – Numerical Analysis

3 hours

The propagation of errors in computing, solution of linear systems of equations, solution of nonlinear equations, approximation of functions, numerical quadrature, numerical solution of ordinary differential equations.

Prerequisite: MATH 300 or consent of instructor.

MATH 515G – Complex Variables I

3 hours

An introduction to complex variables including sequences, series, analytic functions, Cauchy's Theorems, residues, poles, conformal mapping, and analytic continuation.

Prerequisites: MATH 461 or consent of instructor.

MATH 521G – Partial Differential Equations

3 hours

Theory and application of quasi-linear and linear equations of first order, series solutions, Cauchy-Kovalesky theorem, characteristics, canonical form, principle of superposition, equations of mathematical physics: the Laplace, wave, and heat equations, methods of solutions.

Prerequisite: MATH 365 and MATH 515G.

MATH 530G – Topics in Mathematical Modeling

3 hours

Selected topics in mathematical modeling. Prerequisite: MATH 365 and MATH 461 or consent of instructor.

MATH 561G – Mathematical Analysis I

3 hours

Point set topology, limits, continuity, derivatives, functions of bounded variation, rectifiable curves, infinite series, infinite products, Riemann-Stieltjes integral, and sequences of functions. Prerequisites: MATH 461 or consent of instructor.

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MATHEMATICS
AND
COMPUTER
SCIENCE

MATHEMATICS
AND
COMPUTER
SCIENCE

MATH 562G – Mathematical Analysis II

3 hours

Multivariable differential calculus, implicit functions, extrema, multiple Riemann integrals, Lebesgue integrals, Fourier series and Fourier integrals, and multiple Lebesgue integrals. Prerequisite: MATH 561G.

MATH 564G – Advanced Linear Algebra

3 hours

Vector spaces, linear transformations, linear functionals, eigenvalues, reduced forms of systems of equations, selected application of linear algebra. Prerequisite: MATH 357.

MATH 603G – Topics in Algebra

3 hours

Selected topics in algebra. May be repeated for credit up to 6 hours.

MATH 604G – Topics in Geometry

3 hours

Selected topics in geometry. May be repeated for credit up to 6 hours.

MATH 605G – Topics in Analysis

3 hours

Selected topics in analysis. May be repeated for credit up to 6 hours.

MATH 608G – Management of Instruction

2 hours

Prerequisite: Admission to MAE

MATH 621G – Theory of Ordinary Differential Equations

3 hours

A survey of existence theorems, uniqueness theorems, qualitative properties, and stability. Prerequisites: MATH 365 and MATH 461.

MATH 631G – Advanced Topics in Mathematical Modeling

3 hours

Selected advanced topics in mathematical modeling. Prerequisites: MATH 530G and consent of instructor.

MATH 632G – Principles of Applied Mathematics I

3 hours

Hilbert space theory, operator theory, and integral equations. Prerequisites: MATH 357, MATH 365, and MATH 461.

MATH 633G – Principles of Applied Mathematics II

3 hours

Green's functions, generalized functions, boundary value problems, spectral theory of second-order differential equations. Prerequisite: MATH 632G.

MATH 635G – Advanced Numerical Analysis

3 hours

Numerical solution of systems of ordinary differential equations, numerical solution of partial differential equations, convergence and stability analysis. Prerequisite: MATH 511G.

MATH 640G – Topology I

3 hours

Point set topology concepts: includes cardinality, closure, compactness, connectedness, continuity, homeomorphism, metric space, separation, sequence, subspace, and selected topics. Prerequisite: MATH 461 or consent of instructor.

MATH 641G – Topology II

3 hours

Tychonoff Theorem, Urysohn's Lemma and Metrization Theorem, Stone-Cech Compactification, Nagata-Smirnov Metrization Theorem, complete metric spaces, pointwise and compact convergence, compact-open topology, Ascoli's Theorem, and selected topics. Prerequisite: MATH 640G.

MATH 666G – Abstract Algebra I

3 hours

A study of groups, rings, integral domains, and fields. Prerequisite: MATH 367.

MATH 667G – Abstract Algebra II

3 hours

A study of field extensions including Galois Theory; selected topics from rings, groups, or modules. Prerequisite: MATH 666G.

MATH 671G – Real Variables I

3 hours

The theory of functions of a real variable. Prerequisites: MATH 561G and MATH 562G.

MATH 672G – Real Variables II

3 hours

General measure and integration theory. Prerequisite: MATH 671G.

MATH 676G – Complex Variables II

3 hours

A continuation of MATH 515G. Prerequisite: MATH 515G.

STATISTICS

STAT 570G – Mathematical Probability and Statistics I

3 hours

Mathematical development of discrete and continuous distributions, expected values, moments, and measures of dispersion. Prerequisite: STAT 290 or permission of instructor.

STAT 571G – Mathematical Probability and Statistics II

3 hours

Large and small sampling theory, correction analysis, test of hypotheses, and other aspects of statistical inference. Prerequisite: STAT 570G.