

FACULTY

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Samuel Lesseig, MS

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Shingmin Wang, PhD

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 502 – 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 503 – Topics in Mathematics

3 hours

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

MATH 511 – 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 515 – 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 521 – 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 515.

MATH 530 – Topics in Mathematical Modeling

3 hours

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

MATH 561 – 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 562 – 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 561.

MATH 564 – 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 603 – Topics in Algebra

3 hours

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

MATH 604 – Topics in Geometry

3 hours

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

MATH 605 – Topics in Analysis

3 hours

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

MATH 608 – Management of Instruction

2 hours

Prerequisite: Admission to MAE

MATH 621 – 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 631 – Advanced Topics in Mathematical Modeling

3 hours

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

MATH 632 – Principles of Applied Mathematics I

3 hours

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

MATH 633 – Principles of Applied Mathematics II

3 hours

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

MATH 635 – 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 511.

MATH 640 – 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 641 – 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 640.

MATH 666 – Abstract Algebra I

3 hours

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

MATH 667 – Abstract Algebra II

3 hours

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

MATH 671 – Real Variables I

3 hours

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

MATH 672 – Real Variables II

3 hours

General measure and integration theory. Prerequisite: MATH 671.

MATH 676 – Complex Variables II

3 hours

A continuation of MATH 515. Prerequisite: MATH 515.

STATISTICS

STAT 570 – 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 571 – 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 570.