

Course Descriptions

MATH 520. ABSTRACT ALGEBRA - 3 semester hours

Discussion of some fundamental structures of modern algebra, such as permutation groups, normal subgroups, quotient groups, isomorphisms, Cayley's Theorem, Sylow's Theorem, and some selected topics on rings. Prerequisites: MATH 425 and MATH 426 MODERN ALGEBRA

MATH 521. SEMINAR IN ABSTRACT ALGEBRA - 3 semester hours

Selected topics in vector spaces, linear transformations, matrices, modules, fields, extension fields, roots of polynomials, and the elements of Galois Theory. Prerequisite: MATH 520 ABSTRACT ALGEBRA

MATH 530. FUNCTIONS OF REAL VARIABLES - 3 semester hours

review of the Riemann integral, sets, functions, sequences and continuity. Lebesgue measure on the real line, sets of measure zero, measurable

functions, Lebesgue integral for bounded functions. Prerequisite: MATH 401 ADVANCED CALCULUS or the equivalent

MATH 531. MEASURE THEORY - 3 semester hours

Lebesgue integral for unbounded functions, monotonic functions, functions of bounded variation and absolute continuity, and integration in measured spaces. Prerequisite: MATH 530 FUNCTIONS OF REAL VARIABLES

MATH 533. FUNCTIONAL ANALYSIS - 3 semester hours

Metric spaces, L spaces, function spaces, normed linear spaces, Banach spaces P and dual spaces. Hahn-Banach theorem, open mapping theorem. Prerequisite: MATH 401 ADVANCED CALCULUS or the equivalent

MATH 534. ANALYTIC FUNCTION THEORY - 3 semester hours

Complex numbers, stereographic projection, sequences, elementary topology of the plane, fractional linear transformations, complex exponential and logarithmic functions, Cauchy-Riemann equations, analyticity and power series. Prerequisite: MATH 401 ADVANCED CALCULUS or the equivalent

MATH 535. ANALYTIC FUNCTION THEORY - 3 semester hours

Complex integration, Cauchy's theorem, Cauchy's integral formula, maximum modulus theorem, argument principle, Laurent's series, residues and the evaluation of real integrals. Prerequisite: MATH 534 ANALYTIC FUNCTION THEORY

MATH 536. ANALYTIC FUNCTION THEORY - 3 semester hours

Advanced topics in the theory of functions of complex variables such as harmonic functions, the Riemann mapping theorem, the Weierstrass product theorem, Mittag-Leffler's theorem, Riemann surfaces and functions of several complex variables. Prerequisite: MATH 535 ANALYTIC FUNCTION THEORY

MATH 545. GENERAL TOPOLOGY - 3 semester hours

Topological spaces, bases and subbases, local compactness, local connectedness, compactification, metric spaces and metrization, function spaces. Prerequisite: MATH 445 INTRODUCTION TO POINT SET TOPOLOGY or the equivalent

MATH 550. VECTOR AND TENSOR ANALYSIS - 3 semester hours

Algebra and calculus of vectors, application to geometry, vector and scalar fields, gradient, divergence, curl. Introduction to tensor analysis. Prerequisite: MATH 300 INTERMEDIATE ANALYTIC GEOMETRY AND CALCULUS

MATH 551. CONTINUUM MECHANICS - 3 semester hours

Analysis of strain and stress, stress tensor, deformation and rotation, classical theories of elastic solids and fluids, general equations of motion, linear elasticity, and other related topics. Prerequisite: MATH 550 VECTOR AND TENSOR ANALYSIS or equivalent

MATH 552. PARTIAL DIFFERENTIATION EQUATIONS - 3 semester hours

First order equations; classification and characteristics; Eigen functions expansions; Green function; difference methods; variational formulation of boundary value problems; the finite element method. Prerequisite: MATH 401 ADVANCED CALCULUS

MATH 553. DIFFERENTIAL EQUATIONS OF MATHEMATICAL PHYSICS - 3 semester hours

Initial and boundary value problems of mathematical physics, method of characteristics and separation of variables, Laplace equations, wave equations, and heat equations. Prerequisite: MATH 552 PARTIAL DIFFERENTIATION EQUATIONS or equivalent

MATH 599. RESEARCH AND THESIS - 3 to 6 semester hours

Mathematics Education

MAED 560. TEACHING MATHEMATICS IN THE ELEMENTARY SCHOOL I -

1 to 3 semester hours

Organized to acquaint the teacher with ideas of Piaget, Dienes, and others in guiding learning activities; to explore the materials of a developmental nature which aid in illustrating mathematical concepts; to interpret the major projects in mathematics in this country. The teacher will be provided the opportunity to select, create, and evaluate topics, materials, and approaches to teaching mathematics.

MAED 561. TEACHING MATHEMATICS IN THE ELEMENTARY SCHOOL II - 3 semester hours

With small groups and the aid of micro-teaching, in laboratory settings, the teacher will be able to try out units of work methods of teaching, and aids to learning. Under carefully supervised laboratory settings, the teacher will be able to evaluate content, methods, and materials in terms of the desired terminal behavior in the child.

MAED 562. SEMINAR IN MATHEMATICS EDUCATION I - 3 semester hours

Selected topics in mathematics curriculum and instruction. Topics include development of the mathematics curriculum in the United States, curriculum objectives and content, instructional techniques in the mathematics classroom.

MAED 563. SEMINAR IN MATHEMATICS EDUCATION II - 3 semester hours

Focuses on the teaching-learning process. A analysis of mathematics learning; examines research in mathematics education.

MAED 564. MODERN APPROACHES TO THE CONCEPT OF

ELEMENTARY MATHEMATICS - 3 semester hours

An innovative approach to teaching mathematics in a laboratory setting designed specifically for elementary school teachers, but may be taken by students who wish to broaden their concepts of elementary mathematics. Topics include basic concepts of numbers and fundamental operations, applications to measurement, probability, polynomials, statistics, matrices and determinants. Attention given to the place of these topics in the elementary school program.

MAED 565. PROBLEMS IN TEACHING MATHEMATICS - 3 or 6 semester hours

A course designed for candidates who select option A toward fulfilling the requirements for the Master of Education degree. Teachers and supervisors may participate in the internship for an academic year and receive six semester hours of credit for the course. Students are provided opportunities to work in a school setting under college supervision as a part of their program of studies. Provision will be made for consultation and follow-up of problems during the internship. Open to both elementary and secondary school teachers and supervisors.

MAED 566. ORAL AND/OR WRITTEN COMPREHENSIVE EXAMINATION - 0 semester hours

MAED 570. FOUNDATIONS OF MATHEMATICS - 3 semester hours

Examines the history and influence of mathematics as it parallels the history of man, the influence of mathematics as a deductive system of thought on the building of structures of knowledge in other disciplines, and related topics.

MAED 571. FUNDAMENTALS OF MODERN GEOMETRY - 3 semester hours

Selected topics in geometry for teachers of mathematics. Topics include deductive logic, incidence geometry, abstract deductive systems, distance, congruence, similarity, parallelism, Euclidean and non-Euclidean geometries.

MAED 572. FUNDAMENTALS OF MODERN ALGEBRA - 3 semester hours

Topics in modern algebra including sets, mappings, equivalence relations, groups homomorphism, isomorphism, rings, integral domains, fields, integers, rational numbers, real and complex numbers.

MAED 573. MATHEMATICAL ANALYSIS FOR TEACHERS I - 3 semester hours

Selected topics from arithmetic, algebra, geometry, trigonometry, and analytic geometry treated from an advanced point of view.

MAED 574. MATHEMATICAL ANALYSIS FOR TEACHERS II - 3 semester hours

Topics include elementary functions, algebra of functions, probability, and rate of change. Prerequisite: MAED 573 MATHEMATICAL ANALYSIS FOR TEACHERS I

MAED 575. CALCULUS - 4 semester hours

Inequalities, absolute values, limits, continuity, differentiation, integration and related topics. Treated from an advanced point of view for teachers of mathematics. Prerequisite: MAED 574 MATHEMATICAL ANALYSIS FOR TEACHERS II

MAED 590. INDEPENDENT STUDY - 3 semester hours

A course permitting the student to pursue topics of special interest which may not be available through other formal courses or which may be needed at a time when other courses are not offered.

MAED 591. MASTER'S PROJECT - 3 semester hours

The course is designed for candidates who select option B toward fulfilling the requirements for the Master of Education degree. Provides direction and supervision in the development of an approved project.

MAED 592. RESEARCH AND THESIS - 3 semester hours

Statistics

STAT 510. STATISTICAL PROCEDURES IN EDUCATION AND PSYCHOLOGY -

3 semester hours

general terminal course for graduate students enrolled in professional educational research, psychology, and

guidance, covering elementary and advanced statistical methods. Prerequisite: Enrollment in Graduate School

STAT 511. HOMOMETRY - 3 semester hours

The main techniques of statistical analysis as applied in the biological sciences are discussed. This course is of interest to students in social sciences as well. Probability, Binomial, Poisson and Normal models, confidence interval estimation and hypothesis testing. Analysis of variance, regression and analysis of covariance.

Prerequisite: STAT 480 PROBABILITY AND STATISTICS

STAT 580. DESIGN OF SURVEYS IN RESEARCH - 3 semester hours

Methods of constructing and analyzing designs for experimental investigations; simple random, stratified and multistage sampling designs; and questionnaire construction. Prerequisite: STAT 480 PROBABILITY AND STATISTICS

STAT 581. DESIGNS OF EXPERIMENTS IN RESEARCH - 3 semester hours

Methods of constructing and analyzing designs for experimental investigations; Latin square, split-plot, simple factorial designs; incomplete block designs. Prerequisite: STAT 480 PROBABILITY AND STATISTICS

STAT 582. SPECIAL TOPICS IN STATISTICS - 3 semester hours

A study of some selected topics not included in formal classes for example, nonparametric (distribution-free) methods, sequential methods, the study of power and efficiency of statistical methods, computer programming and canned programs applied to growth curve and multivariate analysis or Monte Carlo techniques. Prerequisite: STAT 480 PROBABILITY AND STATISTICS

STAT 595. RESEARCH METHODOLOGY - 3 semester hours

Nature of and limitations in applied research methodology with emphasis on formulation of statistical models and hypotheses and empirical tests of hypotheses especially relevant to social and behavioral science disciplines. Prerequisite: STAT 480 PROBABILITY AND STATISTICS