

# MATHEMATICS (MATH)

## MATH 500 INDEPENDENT STUDY OR RESEARCH1-3 Credits

Study or research in an area of special interest. The number of credit hours is determined by the topic and the amount of work required. Permission of instructor, department chair and academic dean required.

**Add Consent:** Instructor Consent

## MATH 526 OPERATIONS RESEARCH3 Credits

Game theory, linear programming, simplex method, duality, transportation and assignment problems, introduction to dynamic programming, and queuing theory. Applications of business and industrial perspectives.

**Prerequisites:** MATH 138 or MATH 151 and MATH 232 or MATH 331

**Dual-listed:** MATH 426

## MATH 527 NUMBER THEORY3 Credits

Introduction to the Ring of integers, Euclidean Rings, Chinese Remainder Theorem, divisibility, primes, primitive roots, indices, congruencies, Diophantine equations, quadratic reciprocity, number-theoretic functions, and cryptography, with an emphasis on applications.

**Prerequisites:** MATH 237 or permission of the instructor

**Dual-listed:** MATH 427

## MATH 530 TOPICS IN MATHEMATICS1-3 Credits

Topics to meet the needs of students who have completed the regular course of study.

**Add Consent:** Instructor Consent

**Notes:** Can be repeated with different emphasis for a maximum of six (6) credit hours.

## MATH 533 STATISTICAL METHODS AND DATA ANALYSIS3 Credits

Statistical research methods and modeling of statistical problems. Chi-square tests, analysis of variance, one-way and multi-factorial designs, multiple regression and correlation. Nonparametric methods. Use of calculators and personal computer software.

**Prerequisites:** MATH 232 or MATH 331

**Dual-listed:** MATH 433

## MATH 534 INTRODUCTORY ANALYSIS3 Credits

Structure and topology of the real number line. Completeness, compactness, connectedness. Rigorous treatment of limits, sequences, series, convergence, functions and continuity, derivatives, and selected topics on measure and integration theory.

**Prerequisites:** MATH 237

**Dual-listed:** MATH 434

## MATH 535 SAMPLING TECHNIQUES3 Credits

Statistical survey methods, sampling techniques, point and interval estimation of population parameters, population size determination, and communication of sample survey results. Applications from business, the natural sciences, and the social sciences.

**Prerequisites:** MATH 232 or MATH 331

**Dual-listed:** MATH 435

## MATH 537 MODERN ALGEBRA3 Credits

Axiomatic approach to rings, integral domains, polynomials, fields, ideals and factor rings, selected topics in abstract algebra, and an introduction to vector spaces and algebraic coding theory.

**Prerequisites:** MATH 429

**Dual-listed:** MATH 437

## MATH 538 NUMERICAL ANALYSIS3 Credits

Numerical modeling of phenomena using interpolation and approximation, systems of linear equations, integration, and numerical solutions of differential equations.

**Prerequisites:** MATH 252 and MATH 330

**Dual-listed:** MATH 438

## MATH 539 THEORY OF STATISTICS3 Credits

Joint distribution concepts, conditional expectations, method of distribution functions, transformation, method of moment-generating functions, order statistics, sampling distributions, central limit theorem, continuous and discrete random variables.

**Prerequisites:** MATH 151 and MATH 232 or MATH 331

**Dual-listed:** MATH 439

## MATH 540 MATHEMATICS EDUCATION STANDARDS3 Credits

An integrated content/pedagogy course on mathematics teaching, assessment, and curriculum standards, based on major content areas of the K-12 curriculum.

**Dual-listed:** MATH 440

**Requirements:** Fifty percent of endorsement completed.

## MATH 541 COMBINATORICS3 Credits

Basic Counting Rules, Graph Theory, Generating Functions, Recurrence Relations, Inclusion and Exclusion with prime numbers, Polya's Theory of Counting, the Pigeonhole Principle and Latin Squares

**Prerequisites:** MATH 151 or MATH 138

**Dual-listed:** MATH 441

## MATH 600 INDEPENDENT STUDY OR RESEARCH1-3 Credits

Study or research in an area of special interest. The number of credit hours is determined by the topic and the amount of work required.

**Add Consent:** Instructor Consent

**Requirements:** Permission of instructor and academic dean required.

## MATH 630 MATHEMATICS TOPICS FOR TEACHERS1-3 Credits

Mathematics topics of interest to classroom teachers at all grade levels. Credit variable with topic.

**Notes:** Can be repeated with different emphasis for a maximum of six (6) credit hours.

## MATH 631 MATHEMATICS FOR MANAGEMENT3 Credits

Quantitative methods for managerial, educational administration and public policy applications. Topics from discrete math, data analysis and operations research areas.

## MATH 634 MATHEMATICS CURRICULUM3 Credits

Mathematics curriculum in elementary and secondary schools, with emphasis on current trends and issues in mathematics education.

**Add Consent:** Instructor Consent

## MATH 655 SCHOLARLY PROJECT1-3 Credits

For students selecting Plan II, as listed under Program Requirements. Scholarly project pertaining to a field of specialization. Designed in consultation with the student's graduate committee and includes an extensive paper summarizing the project.

**Add Consent:** Instructor Consent

**Notes:** Must complete a total of three (3) credit hours.

**Requirements:** May be repeated for up to three (3) credit hours. Students must complete a total of three (3) credit hours. Prior to registration, the proposal must be approved by the student's committee and Dean of Graduate Studies.

**MATH 660 THESIS RESEARCH1-6 Credits**

For students selecting Plan I, as listed under Program Requirements.

Original investigations in mathematics leading to the master's thesis.

**Add Consent:** Instructor Consent

**Requirements:** Must complete six (6) credit hours; prior to registration, the proposal must be approved by the student's committee and Dean of Graduate Studies.