

# MATHEMATICS (MATH)

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## **MATH S054 Prealgebra**

3 credits (3+0)

Topics include operations and applications of whole numbers, integers, fractions, decimals, ratios and proportions, percents, geometry and measures, evaluation of algebraic expressions and applications.

**Prerequisite:** Placement test.

## **MATH S055 Elementary Algebra**

4 credits (4+0)

Introductory algebra course. Topics Include evaluating and simplifying algebraic expressions, polynomials, factoring, integer exponents, rational expressions, solutions of linear equations and inequalities, quadratic equations and graphs of lines.

**Prerequisite:** MATH S054 with a P, or math placement test.

## **MATH S105 Intermediate Algebra**

4 credits (4+0)

Topics include expressions, equations and applications involving linear, quadratic, rational and radical functions; graphs of linear and quadratic functions; functions and their inverses; introduction to exponential and logarithmic functions; and systems of linear equations.

**Prerequisite:** MATH S055 with (C 2.00 or better), or placement test.

## **MATH S113 \*Concepts and Contemporary Applications of Mathematics**

3 credits (3+0)

GER. Applications of mathematics in modern society. Topics include voting systems, management science, probability and statistics. Problem solving is emphasized.

**Prerequisite:** MATH S105 with (C 2.00 or better), or placement test.

## **MATH S151 \*College Algebra for Calculus**

4 credits (4+0)

GER. A detailed study of algebraic, logarithmic and exponential functions; systems of equations; applications.

**Prerequisite:** MATH S105 with (C 2.00 or better), or placement test.

## **MATH S152 \*Trigonometry**

3 credits (3+0)

GER. A study of trigonometric functions including graphing, identities, inverse trigonometric functions, solving equations and polar coordinates; applications.

**Prerequisite:** MATH S151 with (C 2.00 or better), or placement test.

## **MATH S211 Mathematics for Elementary School Teachers I**

3 credits (3+0)

Designed for elementary education majors. Topics include sets, functions, numeration systems, integers, elementary number theory and rational numbers. Recommended: MATH S151 (C 2.00 or better).

**Prerequisite:** MATH S105 (B 3.00 or better) or placement test.

## **MATH S212 Mathematics for Elementary School Teachers II**

3 credits (3+0)

Designed for elementary education majors. Topics include real numbers, informal geometry, measurement, statistics, and probability. Recommended: MATH S151 (C 2.00 or better).

**Prerequisite:** MATH S105 (B 3.00 or better) or placement test.

## **MATH S251 \*Calculus I**

4 credits (4+0)

GER. A first course in single-variable calculus. Topics include limits; continuity and differentiation of functions; applications of the derivative to graphing, optimization, and rates of change; definite and indefinite integration; and the Fundamental Theorem of Calculus.

**Prerequisite:** MATH S151 and MATH S152 with C (2.00) or higher, or placement test.

## **MATH S252 \*Calculus II**

4 credits (4+0)

GER. Further topics in single-variable calculus, including techniques of integration; applications of integration; convergence of sequences and series; parameterized curves; and polar coordinates.

**Prerequisite:** MATH S251 with (C 2.00 or better).

## **MATH S253 \*Calculus III**

4 credits (4+0)

GER. Multivariable calculus. Topics include vectors in 2- and 3-dimensions; differential calculus of functions of several variables; multiple integration; vector calculus, including Green's and Stokes' Theorem; and applications.

**Prerequisite:** MATH S252 with (C 2.00 or better).

## **MATH S265 Introduction to Mathematical Proofs**

3 credits (3+0)

Designed for students majoring in mathematics. A study of proof techniques used in mathematics. Topics include logic, elementary set theory, relations, and functions.

**Prerequisite:** MATH S251 with (C 2.00 or better) or instructor approval.

## **MATH S302 Differential Equations**

3 credits (3+0)

First order differential equations, higher order linear differential equations, systems of linear differential equations, power series, Laplace Transform, numerical methods, and applications.

**Prerequisite:** MATH S253 with (C 2.00 or better) or instructor approval.

## **MATH S305 Geometry**

3 credits (3+0)

Selected topics from Euclidean geometry, hyperbolic geometry, elliptic geometry, projective geometry or affine geometry.

**Prerequisite:** MATH S251 with (C 2.00 or better).

## **MATH S314 Linear Algebra**

3 credits (3+0)

Linear equations, finite dimensional vector spaces, matrices, determinants, linear transformations, eigenvalues, inner product spaces.

**Prerequisite:** MATH S251 with (C 2.00 or better).

**MATH S392 Junior Seminar**

1 credit (1+0)

Advanced topics in mathematics that are not found in other course offerings. Possible topics include topology, number theory, and problem solving. Pass/Fail grading. May be repeated for credit.

**Prerequisite:** MATH S252 (formerly 201) and MATH S265 (formerly MATH 215) both with (C 2.00 or better).

**MATH S401 Introduction to Real Analysis**

3 credits (3+0)

A thorough development of continuity, convergence of sequences and series of numbers, convergence of sequences and series of functions.

**Prerequisite:** MATH S252 and MATH S265 both with (C 2.00 or better).

**MATH S405 Abstract Algebra**

3 credits (3+0)

Study of algebraic structures including groups, rings, integral domains, and fields.

**Prerequisite:** MATH S265 with (C 2.00 or better).

**MATH S410 Complex Variables**

3 credits (3+0)

Complex numbers and their algebraic properties; functions of complex variables; calculus of complex functions; selected applications.

**Prerequisite:** MATH S252 with (C 2.00 or better).

**MATH S411 History of Mathematics**

3 credits (3+0)

Topics in the history of mathematics from antiquity to the present.

**Prerequisite:** MATH S251 with (C 2.00 or better).

**MATH S460 Mathematical Modeling**

3 credits (3+0)

Introduces the process of developing, analyzing and interpreting mathematical models. Specific areas of application will depend on student majors and/or areas of interest. Topics will be selected from applications of mathematical and statistical methods to the biological and physical sciences. Not repeatable for credit.

**Prerequisite:** MATH S251 with (C 2.00 or better).

**MATH S492 Senior Seminar**

1 credit (1+0)

Advanced topics in mathematics that are not found in other course offerings. Possible topics include topology, number theory, and problem solving. Students are required to give presentations. Pass/Fail grading. May be repeated for credit.

**Prerequisites:** MATH S392 and departmental approval.