

MATHEMATICS (MATH)

MATH 013 Intermediate Algebra 5 Units

This is a second semester algebra course that includes topics used in college-level math courses. Students will review the first course in algebra and explore further the real number system, properties of algebraic systems, absolute values in equations and inequalities, complex numbers, properties of rational exponents and logarithms, roots and radicals, functions, inverse functions, and introduction to sequences and series. Content may include determinants, Cramer's rule, matrices, simultaneous solutions of sets of equations, or conic sections.

Lecture Hours: 5 Lab Hours: None Repeatable: No Grading: O
Recommended: Introductory Algebra or high school Math 1 is strongly recommended
Advisory Level: Read: 3 Write: 3 Math: None
Transfer Status: None Degree Applicable: AS
CSU GE: None IGETC: None District GE: None
Credit by Exam: Yes

MATH 014 Geometry 3 Units

The course involves the study of plane geometric figures and relationships. Students will study logical proofs, constructions, and numerical calculations. Additional topics in solid geometry and analytic geometry may be covered. This course is highly recommended for anyone who has not taken or wishes to review high school geometry.

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: O
Recommended: Completion of MATH 013 or equivalent
Advisory Level: Read: 3 Write: 3 Math: 3
Transfer Status: None Degree Applicable: AS
CSU GE: None IGETC: None District GE: None
Credit by Exam: Yes

MATH 020 College Algebra for Liberal Arts 3 Units

This course covers solving equations and related applications for polynomial, absolute value, rational, radical, exponential, and logarithmic functions. Students will also analyze problems involving inequalities, systems of equations, matrices, complex numbers, sequences, and series.

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
Prerequisite: MATH 013 with C or better, or placement based on multiple measures
Advisory Level: Read: 3 Write: 3 Math: None
Transfer Status: CSU/UC Degree Applicable: AA/AS
CSU GE: B4 IGETC: 2A District GE: B4
Credit by Exam: Yes

MATH 021 Precalculus Algebra 4 Units

This course is designed to prepare students for the level of algebra required in calculus. Topics will include basic algebraic concepts, complex numbers, equations and inequalities, graphs of functions, systems of equations and inequalities, linear and quadratic functions, polynomial functions of higher degree, rational, exponential and logarithmic functions, matrices and determinants and analytic geometry. Students will not receive credit for both MATH 021 and MATH 025.

Lecture Hours: 4 Lab Hours: None Repeatable: No Grading: L
Prerequisite: MATH 013 or MATH 016 with C or better or placement by multiple measures
Advisory Level: Read: 3 Write: 3 Math: None
Transfer Status: CSU/UC Degree Applicable: AA/AS
CSU GE: B4 IGETC: 2A District GE: B4
Credit by Exam: Yes

MATH 021L Precalculus Support 0.5 Units

The objective of this course is to review the core prerequisite skills and concepts needed for precalculus, and to go along with MATH 021. Topics include a review of computational skills developed in algebra, factoring, operations on polynomial, radical and rational expressions, exponential and logarithmic expressions, and equations. This course is intended for students majoring in BSTEM who are concurrently enrolled in MATH 021.

Lecture Hours: None Lab Hours: 1.5 Repeatable: No Grading: K
Corequisite: MATH 021
Advisory Level: Read: 3 Write: 3 Math: None
Transfer Status: None Degree Applicable: NAA
CSU GE: None IGETC: None District GE: None

MATH 022 Trigonometry 3 Units

This course in numerical and analytical trigonometry is designed to prepare students for the level of trigonometry and advanced algebraic concepts necessary for calculus. Topics include degree and radian measurements of angles, right triangle trigonometry, unit circle trigonometry, graphs of trigonometric functions, algebraic manipulation and proof of trigonometric identities, inverse trigonometric functions, solving trigonometric equations, the Laws of Sines and Cosines, vectors, the polar coordinate system, and roots and powers of complex numbers (De Moivre's Theorem). Students will not receive credit for both MATH 022 and MATH 025. (C-ID MATH 851)

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
Prerequisite: (MATH 013 and MATH 014) or MATH 016; all with C or better or placement by multiple measures
Advisory Level: Read: 3 Write: 3 Math: None
Transfer Status: CSU Degree Applicable: AA/AS
CSU GE: B4 IGETC: None District GE: B4
Credit by Exam: Yes

MATH 025 Precalculus Algebra and Trigonometry 6 Units

This course is an intensive combined course in college algebra and trigonometry designed primarily as preparation for calculus. Students will study basic algebraic concepts, complex numbers, equations and inequalities, graphs of functions, system of equations and inequalities, linear and quadratic functions, polynomial functions of higher degree, rational, exponential, logarithmic, and trigonometric functions, inverse functions, basic identities, trigonometric equations, solving right triangles, solving triangles using the Law of Cosines and the Law of Sines, vectors, polar coordinates, and analytic geometry. Students may take both MATH 021 and MATH 022 or take only MATH 025.

Lecture Hours: 6 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: (MATH 013 and MATH 014) or MATH 016, all with C or better or placement by multiple measures
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4
 Credit by Exam: Yes

MATH 052 Math for Elementary Education 3 Units

This course covers arithmetic theory and operations necessary for the teaching of mathematical concepts to elementary school children. The course includes basic set theory and logic, number theory, numeration systems and their history, modular arithmetic, mathematical patterns and sequences, and the structure and properties of integers, real and rational numbers. In addition, it is designed for prospective multiple subject credential candidates. (C-ID MATH 120)

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: MATH 013 and MATH 014; both with C or better
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: None District GE: B4

MATH 061 Finite Mathematics 3 Units

Finite Mathematics is the application of skills acquired in algebra to problems in business, management, economics, and the social sciences. Course content includes systems of linear equations and inequalities, matrices, linear programming, set theory, counting techniques, probability theory, and the mathematics of finance. (C-ID MATH 130)

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: MATH 013 or MATH 016 both with C or better or placement by multiple measures
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4

MATH 062 Calculus for Business and Social Science 3 Units

This course presents a study of the techniques of calculus with emphasis placed on the application of these concepts for business and social science. The content includes functions and graphs, limits, continuity, differential and integral calculus of polynomials, rational functions, power functions, exponential functions, logarithmic and natural logarithmic functions, and applications of these topics in business and social science. (C-ID MATH 140)

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: Course taught at the level of intermediate algebra or placement as determined by the college's multiple measures assessment process
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4
 Credit by Exam: Yes

MATH 063 Elementary Statistics 3 Units

This course is an introduction to the study of statistics. Students will learn methods of collecting data, displaying data, descriptive statistics with emphasis on understanding variation, empirical probability, probability distributions, sampling distributions, confidence intervals and sample size, hypothesis testing, testing the difference between two independent population parameters, matched pairs analysis, one-way analysis of variance, chi-square tests, correlation and simple linear regression. (C-ID MATH 110)

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: Course taught at the level of intermediate algebra or placement as determined by the college's multiple measures assessment process
 Advisory Level: Read: 4 Write: 4 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4
 Credit by Exam: Yes

MATH 063X Statistics Support Statistics 2 Units

This course covers the underlying arithmetic and algebra skills and concepts that are needed for success in MATH 063 (Elementary Statistics). This course is intended for students who are concurrently enrolled in MATH 063.

Lecture Hours: 2 Lab Hours: None Repeatable: No Grading: K
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: None Degree Applicable: NAA
 CSU GE: None IGETC: None District GE: None

MATH 066 Calculus I Late Transcendentals for STEM 4 Units

This is the first course in calculus for students majoring in Computer Science, Data Science, or Economics, as well as the Natural Sciences, Technology, Engineering and Mathematics. Students will study functions, limits, continuity, techniques and applications of differentiation and integration, and the Fundamental Theorem of Calculus. (C-ID MATH 211)

Lecture Hours: 4 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: (MATH 021 and MATH 022) or MATH 025 all with C or better
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4

MATH 067 Calculus II Late Transcendentals for STEM 4 Units

This is the second course in calculus for students majoring in Computer Science, Data Science, as well as the Natural Sciences, Technology, Engineering, or Mathematics. Students will study techniques of integration and its applications, numerical integration, improper integrals, and introduction to differential equations. Topics also include sequences, infinite series, polynomial approximations of functions, power series including Taylor and MacLaurin series, and calculus of parametric and polar equations. (C-ID MATH 221)

Lecture Hours: 4 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: MATH 066 with C or better
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4

MATH 070 Discrete Mathematics 4 Units

This course is an introduction to the discrete and combinatorial mathematics that serves as a foundation for advanced courses in mathematics and computer science. Topics include logic, predicates and quantifiers, validity of arguments, mathematical proof techniques including induction, sequences, sets, Boolean algebras, recursive algorithms, functions, relations, elementary number theory, counting techniques, discrete probability, and an introduction to graphs and trees.

Lecture Hours: 4 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: (MATH 021 and MATH 022) or MATH 025, all with C or better, or placement by multiple measures
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4

MATH 071 Calculus I With Analytic Geometry 5 Units

This is the first course in calculus for students majoring in mathematics, physical science, computer science, or engineering. Students study functions and inverse functions, limits, the derivative as a limit, continuity, rules of differentiation, chain rule, implicit differentiation, applications of differentiation, linear approximations, related rates, optimization problems, antiderivatives, Riemann sums, the Fundamental Theorem of Calculus, and the substitution rule for integration. (C-ID MATH 210)

Lecture Hours: 5 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: (MATH 021 and MATH 022) or MATH 025, all with C or better
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4
 Credit by Exam: Yes

MATH 072 Calculus II With Analytic Geometry 5 Units

This is the second course in calculus and analytic geometry for students majoring in mathematics, physical sciences, computer science, or engineering. Topics included are techniques of integration, applications of integration to areas, volumes, average values of functions, arc lengths, surfaces of revolution, problems in physics and engineering, use of parametric equations and polar equations to plot curves and compute derivatives, areas and arc length, a thorough study of infinite sequences, infinite series, and power series, and an introduction to differential equations. (C-ID MATH 220)

Lecture Hours: 5 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: MATH 071 with C or better
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4
 Credit by Exam: Yes

MATH 073 Multivariable Calculus 5 Units

This is the third course in calculus for students majoring in mathematics, physical science, computer science, or engineering. In this course, the concepts of differential and integral calculus are extended to multivariable functions. The course content includes vectors in two and three dimensional space, vector-valued functions, differentials, gradients, multiple integrals, vector fields, line integrals, surface integrals, and vector calculus. (C-ID MATH 230)

Lecture Hours: 5 Lab Hours: None Repeatable: No Grading: L
 Prerequisite: MATH 067 or MATH 072 both with C or better
 Advisory Level: Read: 3 Write: 3 Math: None
 Transfer Status: CSU/UC Degree Applicable: AA/AS
 CSU GE: B4 IGETC: 2A District GE: B4
 Credit by Exam: Yes

MATH 078 Differential Equations 4 Units

The course is an introduction to ordinary differential equations including both quantitative and qualitative methods as well as applications from a variety of disciplines. It develops techniques and theories needed to solve ordinary differential equations and their applications, including methods for solving first-order differential equations, linear differential equations of higher orders, and systems of linear differential equations. Students are introduced to Laplace transforms, series solutions, and some theoretical aspects of differential equations such as existence and uniqueness of solutions, the phase plane, and stability of equilibrium solutions for autonomous equations. (C-ID MATH 240)

Lecture Hours: 4 Lab Hours: None Repeatable: No Grading: L

Prerequisite: MATH 072 or MATH 067 with C or better

Advisory Level: Read: 3 Write: 3 Math: None

Transfer Status: CSU/UC Degree Applicable: AA/AS

CSU GE: B4 IGETC: 2A District GE: B4

Credit by Exam: Yes

MATH 079 Linear Algebra 3 Units

This course is designed for students majoring in math, statistics, physics, computer science or engineering. It develops the techniques and theory needed to solve systems of linear equations using matrices and determinants. It also investigates the properties of vector spaces. These topics will be mainly presented including orthogonality and inner product spaces, eigenvalues and eigenvectors, linear transformations and their applications. (C-ID MATH 250)

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L

Prerequisite: MATH 067 or MATH 072 with C or better

Advisory Level: Read: 3 Write: 3 Math: None

Transfer Status: CSU/UC Degree Applicable: AA/AS

CSU GE: B4 IGETC: 2A District GE: B4

Credit by Exam: Yes