MATH 013  Intermediate Algebra  5 Units
This course continues the Algebra sequence and is a prerequisite to transfer level math courses. Students will review elementary algebra topics and further their skills in solving absolute value in equations and inequalities, quadratic functions and complex numbers, radicals and rational exponents, exponential and logarithmic functions, inverse functions, and sequences and series.
Lecture Hours: 5  Lab Hours: None  Repeatable: No  Grading: O
Prerequisite: MATH 111 with P grade or equivalent
Advisory Level: Read: 3  Write: 3  Math: None
Transfer Status: None  Degree Applicable: AS
CSU GE: None  IGETC: None  District GE: None

MATH 014  Geometry  3 Units
Students will study logical proofs, simple constructions, and numerical calculations. The course involves the study of plane geometric figures and relationships.
Lecture Hours: 3  Lab Hours: None  Repeatable: No  Grading: O
Prerequisite: MATH 111 with P grade or placement based on math assessment
Advisory Level: Read: 3  Write: 3  Math: None
Transfer Status: None  Degree Applicable: AS
CSU GE: None  IGETC: None  District GE: None

MATH 020  College Algebra  3 Units
Students will solve 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. (C-ID MATH 150)
Lecture Hours: 3  Lab Hours: None  Repeatable: No  Grading: L
Prerequisite: MATH 013 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 020X  Just-In-Time Support for College Algebra  2 Units
Students will receive "just-in-time" review of the core prerequisite skills, competencies, and concepts needed in Precalculus. Intended for majors in science, technology, engineering, and mathematics who are concurrently enrolled in MATH 21 Precalculus. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, absolute value equations and inequalities, functions including composition and inverses, and an in-depth focus on quadratic functions. This course is appropriate for students who are confident in beginning algebra skills. This course is recommended for students advised to receive additional academic and concurrent support. Students are strongly encouraged to meet with an academic counselor.
Lecture Hours: 2  Lab Hours: None  Repeatable: No  Grading: K
Transfer Status: None  Degree Applicable: NAA
CSU GE: None  IGETC: None  District GE: None

MATH 025  Precalculus Algebra and Trigonometry  6 Units
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, vectors, polar coordinates and graphs, and conic sections. This course is an intensive combined course in college algebra and trigonometry designed primarily as preparation for calculus. Students may take both MATH 021 and MATH 025. (C-ID MATH 155)
Lecture Hours: 6  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: 3
Transfer Status: CSU/UC  Degree Applicable: AA/AS
CSU GE: B4  IGETC: 2A  District GE: B4
Credit by Exam: Yes
MATH 025X  Just-In-Time Support for Precalculus Algebra and Trigonometry  2 Units
Students will receive "just-in-time" review of the core prerequisite skills, competencies, and concepts needed in Precalculus Algebra and Trigonometry. Intended for majors in science, technology, engineering, and mathematics who are concurrently enrolled in MATH 25 Precalculus Algebra and Trigonometry. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, absolute value equations and inequalities, functions including composition and inverses, an in-depth focus on quadratic functions, and topics from geometry such as congruent and similar triangles properties. This course is appropriate for students who are confident in beginning algebra skills. This course is recommended for students advised to receive additional academic and concurrent support.
Students are strongly encouraged to meet with an academic counselor.
Lecture Hours: 2  Lab Hours: None  Repeatable: No  Grading: K
Advisory Level: Read: 3  Write: 3  Math: None
Transfer Status: No  Degree Applicable: NAA
Credit by Exam: Yes
CSU GE: None  IGETC: None  District GE: None

MATH 051 Mathematics for General Education  3 Units
Students will study topics including functions and models, geometry, problem solving, financial management, counting methods, and probability. This course is intended for transfer students with non-science majors. Successful completion of this course will fulfill the general education requirement in Mathematics for the California State University (CSU) system.
Lecture Hours: 3  Lab Hours: None  Repeatable: No  Grading: L
Prerequisite: MATH 013 with C or better or equivalent
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 052 Mathematics for Elementary Education  3 Units
Students will study topics from arithmetic, pre-algebra, elementary and intermediate algebra through in-depth exploration of the structures of the real number system and subsystems, elementary number theory, and the use of manipulatives to present mathematical concepts to children. Students will develop lesson plans and teaching techniques appropriate for an elementary school setting. Additionally, there will be an emphasis on comprehension and analysis of mathematical concepts and applications of logical reasoning. Mathematics 52 is designed especially for prospective elementary school teachers. (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
Students will study how to apply algebra to solve problems in economics, the behavioral sciences, and the social sciences. Course topics include 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 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 062 Calculus for Business and the Social Sciences  3 Units
Students study functions and graphs; limits; continuity; differentiation and integration of polynomials, rational functions, power functions, exponential functions, and logarithmic functions; partial differentiation; and applications of these topics in business and social science. This course includes single variable calculus and an introduction to multivariable calculus with applications for students majoring in business or social science. (C-ID MATH 140)
Lecture Hours: 3  Lab Hours: None  Repeatable: No  Grading: L
Prerequisite: MATH 020 or MATH 021 or MATH 025 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 063X Just-In-Time Support for Elementary Statistics  2 Units
Students will receive "just-in-time" review of skills, concepts and competencies needed to succeed in statistics. This course will cover topics from arithmetic, pre-algebra, elementary and intermediate algebra that are required for statistics. Students will also develop and practice study skills that promote success in MATH 063 Elementary Statistics. This course is recommended for students advised to receive additional academic and concurrent support. Students are strongly encouraged to meet with an academic counselor.
Lecture Hours: 2  Lab Hours: None  Repeatable: No  Grading: K
Advisory Level: Read: 3  Write: 3  Math: None
Transfer Status: None  Degree Applicable: NAA
Credit by Exam: Yes
CSU GE: None  IGETC: None  District GE: None

MATH 064 Discrete Mathematics  4 Units
Students prepare for further study in mathematics, computer science, or other sciences. Students will learn and apply concepts and ideas in logic, Boolean algebra, methods of proofs, induction, sequences, set theory, counting techniques, probability, recursion, relations, graphs, and trees. (C-ID MATH 160)
Lecture Hours: 4  Lab Hours: None  Repeatable: No  Grading: L
Prerequisite: (MATH 021 and MATH 022) or MATH 025 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 071  Calculus I With Analytic Geometry  5 Units
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. This is the first course in calculus for students majoring in mathematics, physical science, computer science, or engineering. (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 071H  Honors Calculus I With Analytic Geometry  5 Units
Students study functions and inverse functions, limits, the formal definition of the limit, 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. As an honors course the focus will extend the understanding the theory and application of differential calculus through projects, extended readings, or programming and computational problems. (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: 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 072  Calculus II with Analytic Geometry  5 Units
Students study 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 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
Students study the concepts of differential and integral calculus extended to multivariable functions. The course content includes vectors; dot products; cross products; surfaces in three dimensions; derivatives, integrals, arc length and curvature for vector-valued functions; partial derivatives; the chain rule; tangent planes; maximum and minimum values of functions of several variables; the Lagrange multiplier method; multiple integrals; and vector calculus. This is the third course in calculus for students majoring in mathematics, physical science, computer science, or engineering. (C-ID MATH 230)
Lecture Hours: 5 Lab Hours: None Repeatable: No Grading: L
Prerequisite: 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

MATH 078  Differential Equations  4 Units
Students will study ordinary differential equations and their applications, including methods for solving first order equations, linear equations of arbitrary 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 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
Students study systems of linear equations, matrices, determinants, vector spaces and their properties, linear transformations, eigenvalues and eigenvectors, diagonalization, inner product vector spaces, orthogonality, and applications. This course is designed for students majoring in mathematics, computer science, statistics, or engineering. (C-ID MATH 250)
Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
Prerequisite: 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

MATH 080  Discrete Structures for Computer Science  3 Units
Students will be introduced to the discrete structures used in Computer Science. Students will learn and apply concepts and ideas in the following topics: functions, relations, set theory, logic, methods of proof, counting principles, discrete probability, recursion, graphs, and trees. (C-ID COMP 152)
Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
Prerequisite: Take CIS 024C or CIS 054 or CIS 084 and MATH 025 or MATH 021 and MATH 022; with a 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 098  Directed Study in Mathematics  0.5-9 Units
Individual or small groups of students who would benefit from
Independent Study under the direction of faculty members in specific
or related disciplines may develop individualized learning contracts
designed to enhance their individual instructional programs. The
students and the faculty member in consultation with the Division Dean
determine appropriate learning objectives and activities as well as
the number of units to be earned. Instructions and the Learning Contract
forms are available in the Division office. Repeatable to a maximum of 9
units across all disciplines.
Lecture Hours: None  Lab Hours: 2.07  Repeatable: Yes  Grading: O
Prerequisite: Completion of the following course(s) and project approval
is required by sponsoring faculty, division dean, and Vice President of
Academic Affairs, MATH 025 or MATH 063 with C or better grade
Advisory Level: Read: 3  Write: 3  Math: None
Transfer Status: CSU  Degree Applicable: AA/AS
CSU GE: None  IGETC: None  District GE: None

MATH 111  Elementary Algebra  5 Units
Students will study operations on real numbers and algebraic
expressions, linear equations and inequalities, and algebraic methods
for solving application problems. They will also study systems of linear
equations, laws of exponents, operations on polynomials, solving
quadratic equations by factoring, and operations on rational expressions
and rational equations.
Lecture Hours: 5  Lab Hours: None  Repeatable: No  Grading: K
Recommended: Completion of MATH 512.
Advisory Level: Read: 3  Write: 3  Math: None
Transfer Status: None  Degree Applicable: NAA
CSU GE: None  IGETC: None  District GE: None

MATH 311  Pre-Algebra  3 Units
Students will study the fundamental operations in arithmetic and other
math concepts including a basic introduction to algebra. This course
is designed to give students the math foundation they need to be
successful in an elementary algebra course. Topics include: integers,
fractions, decimals, percents, order of operations, unit conversions,
algebraic expressions, equations, basic geometric shapes and graphing,
and simple applications.
Lecture Hours: 3  Lab Hours: None  Repeatable: No  Grading: K
Prerequisite: placement based on math assessment
Advisory Level: Read: 2  Write: 2  Math: None
Transfer Status: None  Degree Applicable: NAA
CSU GE: None  IGETC: None  District GE: None

MATH 501  Review of Common Core Integrated Mathematics I  0 Units
Students will review the concepts and ideas in Common Core Integrated
Mathematics I, including algebraic expressions and equations, functions,
congruence, expressing geometric properties with equations, and
interpreting categorical and quantitative data.
Lecture Hours: 3  Lab Hours: None  Repeatable: Yes  Grading: N
Recommended: Perform basic arithmetic operations, create linear
equations; solve linear equations in one variable, both algebraically and
graphically; define, evaluate, and compare basic linear functions; use
linear functions to model relationships among quantities; and solve
systems of linear equations in two variables.
Transfer Status: None  Degree Applicable: NC
CSU GE: None  IGETC: None  District GE: None

MATH 502  Review of Common Core Integrated Mathematics II  0 Units
Students will review the concepts and ideas in Common Core Integrated
Mathematics II, including algebraic expressions and equations, functions,
congruence, expressing geometric properties with equations, and
interpreting categorical and quantitative data.
Lecture Hours: 3  Lab Hours: None  Repeatable: Yes  Grading: N
Recommended: Completion of Common Core Integrated Mathematics I or
the equivalent.
Transfer Status: None  Degree Applicable: NC
CSU GE: None  IGETC: None  District GE: None

MATH 503  Review of Common Core Integrated Mathematics III  0 Units
Students will review the concepts and ideas in Common Core Integrated
Mathematics II, including algebraic expressions and equations, functions,
congruence, expressing geometric properties with equations, and
interpreting categorical and quantitative data.
Lecture Hours: 3  Lab Hours: None  Repeatable: Yes  Grading: N
Recommended: Completion of Common Core Integrated Mathematics II or
equivalent.
Transfer Status: None  Degree Applicable: NC
CSU GE: None  IGETC: None  District GE: None

MATH 512  Prealgebra  0 Units
This is a noncredit course designed to give students the mathematical
foundation they need to be successful in an elementary algebra course.
Topics include integers, fractions, decimals, percents, order of operations,
unit conversions, algebraic expressions, equations, basic geometric
shapes, graphing and basic applications.
Lecture Hours: 3  Lab Hours: None  Repeatable: Yes  Grading: N
Transfer Status: None  Degree Applicable: NC
CSU GE: None  IGETC: None  District GE: None

MATH 521  Math for Medical Assisting  0 Units
Students solve problems and do calculations encountered in the Medical
Assisting field. Basic math concepts are applied to problems such as
conversion within the Metric system and conversion between Decimal
and Metric systems.
Lecture Hours: 1.5  Lab Hours: None  Repeatable: Yes  Grading: N
Advisory Level: Read: 3  Write: 3  Math: None
Transfer Status: None  Degree Applicable: NC
CSU GE: None  IGETC: None  District GE: None