

MATHEMATICS (MATH)

MATH 0010. Problem Solving

Units: 4

Prerequisite: Completion of Intermediate Algebra or equivalent with grade of "C" or better, or appropriate placement

Hours: 72 lecture

Individual and small-group problem solving geared toward real life situations and nontraditional problems. Problem solving strategies include: draw a diagram, eliminate possibilities, make a systematic list, look for a pattern, guess and check, solve an easier related problem, subproblems, use manipulatives, work backward, act it out, unit analysis, use algebra, finite differences, and many others. Divergent thinking and technical communication skills of writing and oral presentation are enhanced. Designed to teach students to think more effectively and vastly increase their problem solving ability. (CSU)

MATH 0011. Data Science for All

Units: 4

Prerequisite: Completion of Intermediate Algebra or equivalent with grade of "C" or better, or appropriate placement

Hours: 108 (54 lecture, 54 laboratory)

Designed for students from any major, provides high-level understanding of how data, statistics, and inference are inter-related. Introduces the core concepts of data science, including statistical inference and computational thinking. Teaches critical concepts and skills in computer programming and statistical inference while working with real data, such as economic data, geographic data, and social networks. Prepares students to make more data-driven decisions, gaining experience with machine learning and with the practical application of statistical concepts like hypothesis testing, confidence intervals via bootstrapping, regression, inference for regression, and predictive modeling while considering the social issues surrounding data privacy and data ownership. (C-ID MATH 110) (CSU, UC)

MATH 0012. College Algebra

Units: 4,6

Prerequisite: Completion of Intermediate Algebra or equivalent with grade of "C" or better, or appropriate placement

Hours: 72 lecture (4 units); 108 lecture (6 units)

Study of algebra topics beyond Intermediate Algebra; including functions, graphs, logarithms, systems of equations, analytic geometry, and sequences and series. (CSU-with unit limitation, UC-with unit limitation)

MATH 0012S. Just in Time Support for Math 12 College Algebra

Units: 2

Corequisite: Concurrent enrollment in Math 12

Hours: 36 lecture

Just in time support covering the core prerequisite skills, competencies, and concepts from College Algebra. Intended for students who are concurrently enrolled in Math 12. Topics include competencies from Intermediate Algebra that are needed to understand the basics of College Algebra. (not degree applicable) (pass/no pass grading)

MATH 0013S. Just in Time Support for Introduction to Statistics

Units: 2

Corequisite: Concurrent enrollment in STAT C1000

Hours: 36 lecture

Just in time support option covering the core prerequisite skills, competencies, and concepts for Introduction to Statistics. Intended for students who are concurrently enrolled in STAT C1000. Topics include concepts from arithmetic, pre-algebra, elementary and intermediate algebra, and descriptive statistics that are needed to understand the basics of college-level statistics. Concepts are taught through the context of descriptive data analysis including an introduction to technologies such as Desmos, Excel, Statcrunch, Minitab, SPSS or graphing calculators. Recommended for students taking STAT C1000 with little or no recent algebra knowledge. (not transferable) (not degree applicable) (pass/no pass grading)

MATH 0015. Discrete Mathematics

Units: 4

Prerequisite: Completion of MATH 30 with grade of "C" or better

Hours: 72 lecture

Study of set theory, relations and functions, logic, combinatorics and probability, algorithms, computability, matrix algebra, graph theory, recurrence relations, number theory including modular arithmetic. Various forms of mathematical proof are developed: proof by induction, proof by contradiction. (CSU, UC)

MATH 0016A. Calculus for Social and Life Sciences

Units: 4

Prerequisite: Completion of MATH 12 with grade of "C" or better or placement by matriculation assessment process

Advisory: Not recommended for students with grade of "C" or better in MATH 30

Hours: 72 lecture

Review of functions, limits, differentiation and integration of algebraic functions, calculus for exponential and logarithmic functions, applications of calculus in social and life sciences. This course is not intended for students majoring in mathematics, engineering, physics, or chemistry. (CSU, UC-with unit limitation)

MATH 0016B. Calculus for Social and Life Sciences

Units: 4

Prerequisite: Completion of MATH 16A or 30 with grade of "C" or better

Advisory: Completion of MATH 27 with grade of "C" or better

Hours: 72 lecture

Differentiation and integration of trigonometric functions, functions of several variables, partial derivatives, double integrals, introduction to differential equations, sequences and series, applications of calculus in the social and life sciences. (CSU, UC-with unit limitation)

MATH 0017. Concepts of Mathematics

Units: 3

Prerequisite: Completion of Intermediate Algebra and Geometry or equivalent with grade of "C" or better, or appropriate placement

Hours: 54 lecture

Exploration of mathematical patterns and relations, formulation of conjectures based on the explorations, proving (or disproving) the conjectures. Includes different problem solving techniques, number theory, probability, statistics, sequences and series, and geometry. Intended for students interested in elementary education. (CSU, UC-with unit limitation)

MATH 0017S. Concepts of Mathematics Support*Units: 2*

Corequisite: Concurrent enrollment in Math 17

Hours: 36 lecture

Concurrent support for competency and concepts from Euclidean Geometry. Intended for students concurrently enrolled in Math 17. (not degree applicable) (pass/no pass grading)

MATH 0018. The Nature of Mathematics*Units: 3*

Prerequisite: Completion of Intermediate Algebra or equivalent with grade of "C" or better, or appropriate placement

Hours: 54 lecture

Introduces students to the art and application of mathematics in the world around them. Topics include mathematical modeling, voting and apportionment, and mathematical reasoning with applications chosen from a variety of disciplines. Not recommended for students entering elementary school teaching or business. (CSU, UC-with unit limitation)

MATH 0019. Mathematical Concepts for Elementary School Teachers*Units: 3*

Prerequisite: Completion of Intermediate Algebra or equivalent with grade of "C" or better, or appropriate placement

Hours: 54 lecture

Focuses on the development of quantitative reasoning skills through in-depth, integrated explorations of topics in mathematics, including the real number system and its subsystems. The emphasis is on comprehension and analysis of mathematical concepts and applications of logical systems. (C-ID MATH 120) (CSU, UC)

MATH 0024. Modern Business Mathematics*Units: 3*

Prerequisite: Two years of high school algebra or MATH D or MATH G with grade(s) of "C" or better, or placement by matriculation assessment process

Hours: 54 lecture

Applications of mathematics in economics and business contexts. Topics include tables and graphs, functions, finance (interest and exponential models), rates of change including applications and optimization, and linear programming. (CSU, UC)

MATH 0024S. Just in Time Support for Math 24 Modern Business Mathematics*Unit: 1.5*

Corequisite: Concurrent enrollment in Math 24

Hours: 27 lecture

Just in time support option covering the core prerequisite skills, competencies, and concepts for Modern Business Mathematics. Intended for students who are concurrently enrolled in MATH 24. Topics include numeracy; computational skills; the vocabulary of algebra; simplification, manipulation and evaluation of expressions and functions; solving and graphing linear equations and inequalities in one and two variables; solving and graphing systems of equations in two variables; factoring; algebraic operations on polynomial and rational expressions. Recommended for students taking Math 24 with little or no recent algebra knowledge. (not degree applicable) (pass/no pass grading)

MATH 0027. Trigonometry*Units: 4*

Formerly known as MATH 8

Prerequisite: Completion of Intermediate Algebra or equivalent with grade of "C" or better, or appropriate placement

Hours: 72 lecture

Fundamentals of trigonometry. Topics include review of algebraic functions, definitions of trigonometric and circular functions, graphs, identities and applications. Other material includes solving trigonometric equations, solving triangles using the Laws of Sines and Cosines, parametric equations, vectors, polar coordinates and graphs, and polar representations of complex numbers. (CSU)

MATH 0028. Independent Study*Units: 1-3*

Designed for students interested in furthering their knowledge at an independent study level in an area where no specific curriculum offering is currently available. Independent study might include, but is not limited to, research papers, special subject area projects, and research projects. See Independent Study page in catalog. (CSU, UC-with unit limitation)

MATH 0029. Pre-Calculus Mathematics*Units: 4*

Prerequisite: Completion of MATH 27 with grade of "C" or appropriate placement

Hours: 72 lecture

Study of polynomials, rational functions, exponential and logarithmic functions, trigonometric functions, systems of linear equations, rectangular and polar coordinates, conic sections, complex number systems, and sequences and series. (CSU, UC-with unit limitation)

MATH 0030. Analytical Geometry and Calculus I*Units: 4*

Prerequisite: Completion of MATH 12 and MATH 27, or MATH 29 with grades of "C" or better, or appropriate placement

Hours: 72 lecture

Introduction to differential and integral calculus. Content includes limits, continuity, differentiation and integration of algebraic, trigonometric, exponential, logarithmic, hyperbolic and other transcendental functions; as well as application problems. (C-ID MATH 210) (combined with MATH 31, C-ID MATH 900S) (CSU, UC-with unit limitation)

MATH 0030S. Just in Time Support for Math 30 Calculus I*Units: 2*

Corequisite: Concurrent enrollment in Math 30

Hours: 36 lecture

Just in time support covering the core prerequisite skills, competencies, and concepts from Calculus I. Intended for students who are concurrently enrolled in Math 30. Topics include competencies from College Algebra and Trigonometry that are needed to understand the basics of Calculus. (CSU)

MATH 0031. Analytical Geometry and Calculus II*Units: 4*

Prerequisite: Completion of MATH 30 with grade of "C" or better

Hours: 72 lecture

Continuation of MATH 30. Content includes techniques of integration, improper integrals, applications of integration, infinite series, parametric equations and polar coordinates. (C-ID MATH 220) (combined with MATH 30, C-ID MATH 900S) (CSU, UC-with unit limitation)

MATH 0031S. Just in Time Support for Math 31 Calculus II*Units: 2*

Corequisite: Concurrent enrollment in Math 31

Hours: 36 lecture

Just in time support covering core prerequisite skills, competencies, and concepts from Calculus II. Intended for students who are concurrently enrolled in Math 31. Topics include competencies from foundational skills in algebra, trigonometry, and first semester calculus that are needed to understand the basics of Calculus II. (CSU)

MATH 0032. Analytical Geometry and Calculus III*Units: 4*

Prerequisite: Completion of MATH 31 with grade of "C" or better

Hours: 72 lecture

Continuation of MATH 31. Vectors and analytic geometry in the plane and space; functions of several variables; partial differentiation, multiple integrals, and application problems; vector functions and their derivatives; motion in space; and surface and line integrals, Stokes' and Green's Theorems, and the Divergence Theorem. (C-ID MATH 230) (CSU, UC)

MATH 0033. Differential Equations and Linear Algebra*Units: 6*

Prerequisite: Completion of MATH 31 with grade of "C" or better

Advisory: Completion of MATH 32 with grade of "C" or better strongly recommended

Hours: 108 lecture

First and second order ordinary differential equations, linear differential equations, numerical methods and series solutions, Laplace transforms, modeling and stability theory, systems of linear differential equations, matrices, determinants, vector spaces, linear transformations, orthogonality, eigenvalues and eigenvectors. (C-ID MATH 910S) (CSU, UC)

MATH 0042. Business Calculus*Units: 4*

Prerequisite: Completion of Intermediate Algebra or equivalent with grade of "C" or better, or appropriate placement

Advisory: Completion of MATH 12 strongly recommended, especially for students who have not recently taken Intermediate Algebra

Hours: 72 lecture

Introduction to differential and integral calculus with particular emphasis on applications in the fields of business, economics, and social sciences. Includes: concepts of a function, limits, derivatives, integrals of polynomial, exponential and logarithmic functions, optimization problems, and calculus of functions of more than one variable.

Recommended for Business Majors transferring to CSU, Sacramento. Not recommended for students with credit for MATH 30. (C-ID MATH 140) (CSU, UC-with unit limitation)

MATH 0042S. Just in Time Support for Math 42 Business Calculus*Units: 2*

Corequisite: Concurrent enrollment in Math 42

Hours: 36 lecture

Just in time support option covering the core prerequisite skills, competencies, and concepts for Business Calculus. Intended for students who are concurrently enrolled in MATH 42. Topics include numeracy; computational skills; the vocabulary of algebra; simplification, manipulation and evaluation of expressions and functions; solving and graphing linear equations and inequalities in one and two variables; solving and graphing systems of equations in two variables; factoring; algebraic operations on polynomial and rational expressions. Recommended for students taking Math 42 with little or no recent algebra knowledge. (not degree applicable) (pass/no pass grading)

MATH 0584. Math Success-Overcoming Math Anxiety*Unit: 1*

Hours: 18 lecture

Designed to assist students to recognize common fears and misconceptions of mathematics and develop personal strategies to overcome math and test anxiety. Specific study skills and strategies are discussed. Individual math learning styles are analyzed. (not degree applicable)

MATH 0812S. Just in Time Support for Math 12 College Algebra*Units: 0*

Corequisite: Concurrent enrollment in Math 12

Hours: 36 lecture

Just in time support covering the core prerequisite skills, competencies, and concepts from College Algebra. Intended for students who are concurrently enrolled in Math 12. Topics include competencies from Intermediate Algebra that are needed to understand the basics of College Algebra. (pass/no pass grading) (noncredit)

MATH 0813S. Just in Time Support for Introduction to Statistics*Units: 0*

Corequisite: Concurrent enrollment in STAT C1000

Hours: 36 lecture

Just in time support option covering the core prerequisite skills, competencies, and concepts for Elementary Statistics. Intended for students who are concurrently enrolled in STAT C1000. Topics include concepts from arithmetic, pre-algebra, elementary and intermediate algebra, and descriptive statistics that are needed to understand the basics of college-level statistics. Concepts are taught through the context of descriptive data analysis including an introduction to technologies such as Desmos, Excel, Statcrunch, Minitab, SPSS or graphing calculators. Recommended for students taking STAT C1000 with little or no recent algebra knowledge. (pass/no pass grading) (noncredit)

MATH 0824S. Just in Time Support for Math 24 Modern Business Mathematics*Units: 0*

Formerly known as MATH 824

Corequisite: Concurrent enrollment in Math 24

Hours: 27 lecture

Just in time support option covering the core prerequisite skills, competencies, and concepts for Modern Business Mathematics. Intended for students who are concurrently enrolled in MATH 24. Topics include numeracy; computational skills; the vocabulary of algebra; simplification, manipulation and evaluation of expressions and functions; solving and graphing linear equations and inequalities in one and two variables; solving and graphing systems of equations in two variables; factoring; algebraic operations on polynomial and rational expressions. Recommended for students taking Math 24 with little or no recent algebra knowledge. (noncredit)

MATH 0842S. Just in Time Support for Math 42 Business Calculus

Units: 0

Formerly known as MATH 842

Corequisite: Concurrent enrollment in Math 42

Hours: 36 lecture

Just in time support option covering the core prerequisite skills, competencies, and concepts for Business Calculus. Intended for students who are concurrently enrolled in Math 42. Topics include numeracy; computational skills; the vocabulary of algebra; simplification, manipulation and evaluation of expressions and functions; solving and graphing linear equations and inequalities in one and two variables; solving and graphing systems of equations in two variables; factoring; algebraic operations on polynomial and rational expressions. Recommended for students taking Math 42 with little or no recent algebra knowledge. (noncredit)