

**MATHEMATICS (MATH)****MATH 2 PRECALCULUS – 6 Units**

**Prerequisite:** MATH 102 with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 196 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 108 lecture total (when offered in the distance education format, hours will total 324)

**Note:** Students may take either MATH 2A and MATH 2B, or MATH 2 in order to meet transfer requirements. Successful completion of both MATH 2A and MATH 2B is the equivalent of MATH 2

**C-ID:** MATH 955

A course to prepare the student for MATH 3A (Calculus) utilizing function graphing technology. The content includes linear, absolute value, radical, polynomial, rational, logarithmic, exponential and trigonometric functions, conic sections, polar coordinates, matrices, parametric equations, and their applications. This course may be offered in a distance education format. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 2, MATH 2A, MATH 2B, and MATH 13

**MATH 2A PRECALCULUS COLLEGE ALGEBRA – 4 Units**

**Prerequisite:** MATH 102 with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 190 with a grade of C or higher

**Note:** Successful completion of both MATH 2A and MATH 2B is the equivalent of MATH 2.

**Class Hours:** 72 lecture total (when offered in the distance education format, hours will total 216)

**C-ID:** MATH 955 (with MATH 2B)

This college level course introduces functions and function algebra for majors in science, technology, engineering, and mathematics. The main focus is on linear, absolute value, polynomial, radical, rational, logarithmic and exponential functions. Students will learn algebraic techniques, modeling techniques and technology-based techniques for solving equations involving these functions and for investigating the graphs of these functions. This course may be offered in distance education format. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 2, MATH 2A, MATH 2B, and MATH 13

**MATH 2AS PRECALCULUS COLLEGE ALGEBRA WITH SUPPORT – 6 Units**

**Advisory:** ENGL 196 with a grade of C or higher

**Note:** Successful completion of both MATH 2AS and MATH 2B is the equivalent of MATH 2.

**Class Hours:** 108 lecture total

This course introduces precalculus college algebra with a support component that is designed to help the student who needs additional support to be successful. This college level course introduces functions and function algebra for majors in science, technology, engineering, and mathematics. The main focus is on linear, absolute value, polynomial, radical, rational, logarithmic and exponential functions. Students will learn algebraic techniques, modeling techniques, and technology-based techniques for solving equations involving these functions and for investigating the graphs of these functions. (CSU transferable)

**MATH 2B PRECALCULUS TRIGONOMETRY – 3 Units**

**Prerequisite:** MATH 2A with a minimum grade of C or better, or Math Placement Level 5 or higher

**Note:** Successful completion of both MATH 2A and MATH 2B is the equivalent of MATH 2.

**Class Hours:** 54 lecture total (when offered in the distance education format, hours will total 162)

**C-ID:** MATH 955 (with MATH 2A)

A college-level course on trigonometry utilizing function graphing technology. The content includes trigonometric functions of real numbers and angles, analytic trigonometry and applications, polar coordinates, parametric equations, and an introduction to vectors. This course may be offered in a distance education format. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 2, MATH 2A, MATH 2B, and MATH 13

**MATH 3A CALCULUS 3A – 4 Units**

**Prerequisite:** MATH 2 or MATH 2B with a grade of C or higher, or Math Placement Level 5 or higher

**Advisory:** ENGL 190 with a grade of C or higher

**Class Hours:** 72 lecture total (when offered in the distance education format, hours will total 216)

**C-ID:** MATH 210; MATH 900S (with MATH 3B)

This course is the first semester of a four-semester sequence covering differentiation of single variable functions, applications of the derivative, an introduction to integration, and an introduction to differential equations. This course may be offered in a distance education format. (CSU/UC transferable)

**MATH 3B CALCULUS 3B – 5 Units**

**Prerequisite:** MATH 3A with a grade of C or higher, or Math Placement Level 6 or higher

**Advisory:** ENGL 196 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 90 lecture total (when offered in the distance education format, hours will total 270)

**C-ID:** MATH 220; MATH 900S (with MATH 3A)

This course covers techniques of integration including substitution, integration by parts, and partial fractions; improper integrals; applications of integration to geometry and physics, such as finding areas, volumes and arc length, work, center of mass, and fluid force; sequences and series; absolute convergence and convergence tests; power series, Taylor series, and MacLaurin series; first-order ordinary differential equations and linear second-order differential equations; and parametric and polar curve differentiation and integration. This course may be offered in a distance education format. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 3B and MATH 9

**MATH 4A CALCULUS 4A – 4 Units**

**Prerequisite:** MATH 3B with a grade of C or higher, or Math Placement Level 7 or higher

**Advisory:** ENGL 196 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 72 lecture total

**C-ID:** MATH 230

This course covers vectors in two and three dimensions, multi-variable functions, partial differentiation, multiple integrals, line integrals, divergence, gradient, curl, Stokes' Theorem, Divergence Theorem, and Green's Theorem. (CSU/UC transferable)

**MATH 4B DIFFERENTIAL EQUATIONS – 4 Units**

**Prerequisite:** MATH 3B with a grade of C or higher, or Math Placement Level 7 or higher

**Advisory:** ENGL 190 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 72 lecture total

**C-ID:** MATH 240

An introduction to ordinary differential equations, using qualitative, numerical, and analytic methods to investigate solutions. The course covers first order equations, systems of first order equations and linear second order equations. Topics include matrix methods, use of complex variables, Laplace transforms, and series solutions. Applications involving modeling with differential equations are included throughout the course. (CSU/UC transferable)

**MATH 6 LINEAR ALGEBRA – 3 Units**

**Prerequisite:** MATH 3A with a grade of C or higher, or Math Placement Level 6 or higher

**Class Hours:** 54 lecture total

**C-ID:** MATH 250

A first course in linear algebra, this course provides a thorough treatment of systems of linear equations, including row operations, Gaussian elimination, and matrix algebra. Properties of vectors and the theory of vector spaces are covered. Topics include linear independence, inner products, orthogonality, eigenvectors, eigenspaces, and linear transformations. Applications are included throughout the course. (CSU/UC transferable)

**MATH 8 FINITE MATHEMATICS – 3 Units**

**Prerequisite:** MATH 102 with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 190 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 54 lecture total

**C-ID:** MATH 130

The course covers sets, matrices, and systems of equations and inequalities; linear programming; combinatorial techniques, introduction to probability; and mathematics of finance. The course is intended to provide (along with MATH 9) the mathematical skills needed for entry into upper division Business, Social, and Behavioral Science courses.

(CSU/UC transferable)

### MATH 9 SURVEY OF CALCULUS – 4 Units

**Prerequisite:** MATH 102 with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 196 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 72 lecture total

**C-ID:** MATH 140

A course in analytic geometry, differential and integral calculus for students whose major requires a short course in calculus without the depth offered in MATH 3A. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 3B and MATH 9

### MATH 10 PLANE TRIGONOMETRY – 3 Units

**Prerequisite:** MATH 102 with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 190 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 54 lecture total

**C-ID:** MATH 851

The study of trigonometric functions, their inverses and their graphs, identities and proofs related to trigonometric expressions, trigonometric equations, solving right triangles, solving oblique triangles using the Law of Cosines and the Law of Sines, polar coordinates, introduction to vectors and conic sections. (CSU transferable)

### MATH 11 PATTERNS OF MATHEMATICAL THOUGHT – 3 Units

**Prerequisite:** MATH 102 with a grade of C or higher, or Math Placement Level 4 or higher

**Class Hours:** 54 lecture total

A one-semester survey course emphasizing mathematical reasoning. Various applications of mathematics are covered with topics selected from: Geometry, Statistics, Management Science, Number Theory, Social Science, and Computer Science. The course is designed to give students an understanding of some of the vocabulary and methods of mathematics with a focus on ideas. (CSU/UC transferable)

### MATH 13 COLLEGE ALGEBRA FOR LIBERAL ARTS – 3 Units (formerly MATH 1)

**Prerequisite:** MATH 102 with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 190 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 54 lecture total (when offered in the distance education format, hours will total 162)

**C-ID:** MATH 150

This is a college level course that introduces functions and function algebra for majors in the Liberal Arts. The main focus is on linear, polynomial, rational, radical, absolute value, logarithmic and exponential functions and equations. Students will learn algebraic techniques, modeling techniques and technology-based techniques for solving equations and inequalities involving these functions and for investigating the graphs of these functions. This course also covers systems of equations. This course may be offered in a distance education format. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 2, MATH 2A, MATH 2B, and MATH 13

### MATH 14 INTRODUCTION TO STATISTICS – 4 Units

**Prerequisite:** MATH 102, MATH 102X, or MATH 114 with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 190 with a grade of C or higher, or English Placement Level 6 or higher

**Class Hours:** 72 lecture total (when offered in the distance education format, hours will total 216)

**C-ID:** MATH 110

An introductory course in statistics designed to show the role of modern statistical methods in the process of decision making. Concepts are introduced by example rather than by rigorous mathematical theory. The following topics will be covered: measures of central tendency and dispersion, regression and correlation, probability, sampling distributions including the normal, t, and chi-square, statistical inference using confidence intervals and hypotheses testing. This course may be offered in a distance education format. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 14 and MATH 14S

### MATH 14S STATISTICS WITH SUPPORT – 6 Units

**Class Hours:** 108 lecture total

An introductory course in statistics with a support component that is designed to help the student who needs additional support to be successful. It will show the role of modern statistical methods in the process of decision making. Concepts are introduced by example rather than by rigorous mathematical theory. The following topics will be covered: measures of central tendency and dispersion, regression and correlation, probability, sampling distributions including the normal, t, and CHI-square, and statistical inference using confidence intervals and hypotheses testing. (CSU/UC transferable) \*UC transfer limit – maximum credit one course between MATH 14 and MATH 14S

### MATH 41A CONCEPTS OF ELEMENTARY MATHEMATICS – 3 Units

**Prerequisite:** MATH 102 with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 190 with a grade of C or higher, or English Placement Level 6 or higher

**Note:** This course is valuable for students intending to become elementary school teachers.

**Class Hours:** 54 lecture total

**C-ID:** MATH 120

Emphasis is on development of quantitative reasoning skills through in-depth investigations of mathematics topics, which include: patterns and sequences, inductive and deductive reasoning, problem solving, logic, set theory, set of real numbers and its subsets. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 41A and MATH 41B

### MATH 41B CONCEPTS OF ELEMENTARY MATHEMATICS – 3 Units

**Prerequisite:** MATH 102 or MATH 102X with a grade of C or higher, or Math Placement Level 4 or higher

**Advisory:** ENGL 196 with a grade of C or higher, or English Placement Level 6 or higher

**Notes:**

1. MATH 41A is not a prerequisite for MATH 41B.
2. This course is valuable for students intending to become elementary school teachers.

**Class Hours:** 54 lecture total

Survey of the elements of mathematics usually taught in the elementary grades from an advanced standpoint. Emphasis is on geometry, probability and statistics. (CSU/UC\* transferable) \*UC transfer limit – maximum credit one course between MATH 41A and MATH 41B

### MATH 100 TECHNICAL APPLICATIONS OF MATHEMATICS – 3 Units

**Prerequisite:** MATH 240 or MATH 260 with a grade of C or higher, or MATH 230E with a grade of P, or Math Placement Level 2 or higher

**Advisory:** ENGL 280 with a grade of C or higher, or English Placement Level 5 or higher.

**Class Hours:** 54 lecture total

This course blends mathematical topics with practical technical applications. Emphasis is placed on the use of mathematics in solving problems involving arithmetic, algebra, and plane geometry. Practical applications are provided for specific technical occupations.

### MATH 101 BASIC ALGEBRA – 3 Units

**Prerequisite:** MATH 240 or MATH 260 with a grade of C or higher, or MATH 230E or MATH 260B with a grade of P, or Math Placement Level 2 or higher

**Advisory:** ENGL 280 with a grade of C or higher, or English Placement Level 5 or higher

**Class Hours:** 54 lecture total (when offered in the distance education format, hours will total 162)

A first course in algebra designed to cover the basic concepts and operations of algebra including solving linear equations, exponent laws, arithmetic and factoring of polynomials, and graphing linear equations in two variables. Applications are encountered throughout the course. This course may be offered in a distance education format.

### MATH 101L BASIC ALGEBRA LAB – 1 Unit

**Grading:** Pass/No Pass Only

**Corequisite:** MATH 101 Class

**Hours:** 54 lab total

This course provides students with hands-on activities that reinforce the concepts of the lecture course, MATH 101. The laboratory is designed to provide students with an opportunity to further investigate the solving of linear equations, exponent laws, arithmetic and factoring of polynomials,

and graphing linear equations in two variables.

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**MATH 102 INTERMEDIATE ALGEBRA – 5 Units**

Prerequisite: MATH 101 with a grade of C or higher, or Math Placement Level 3 or higher

Advisory: ENGL 190 with a grade of C or higher, or English Placement Level 6 or higher

Class Hours: 90 lecture total (when offered in the distance education format, hours will total 270)

A second course in algebra at the developmental level. This course prepares the student to take a baccalaureate level general education mathematics course. Topics covered include equations and functions of the following types: quadratic, exponential, logarithmic, rational, and radical. The course also covers systems of linear equations and inequalities in two variables and quadratic inequalities in one variable. Applied problems are encountered throughout the course. This course may be offered in a distance education format.

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**MATH 102X INTERMEDIATE ALGEBRA WITH SUPPORT – 7 Units**

Prerequisite: MATH 240 or MATH 260 with a grade of C or higher, or MATH 260B with a grade of P, or Math Placement Level 2

Class Hours: 117 lecture/27 lab total

This course is intended for students who would place themselves into a Math 101 level class and recommended for students with little or no knowledge of algebra. In Math 102X students will review procedures and concepts from Basic Algebra, through a just in time approach, do activities that promote a deeper understanding of Basic Algebra and Intermediate Algebra, and learn study skills that promote success in Intermediate Algebra. Topics covered include equations and functions of the following types: quadratic, exponential, logarithmic, rational, and radical. The course also covers systems of linear equations and inequalities in two variables and quadratic inequalities in one variable. Applied problems are encountered throughout the course.

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**MATH 110 ESSENTIAL MATH (FOR AN ASSOCIATE DEGREE) – 3 Units**

Prerequisite: MATH 100 or MATH 101 with a grade of C or higher, or Math Placement Level 3 or higher

Advisory: ENGL 280 with a grade of C or higher, or English Placement Level 5 or higher

Class Hours: 54 lecture total (when offered in the distance education format, hours will total 162)

This course is designed to provide a survey of mathematical topics that are appropriate for students pursuing an Associate Degree. Topics included are number sense, algebra, geometry, probability and statistics. This course may be offered in a distance education format.

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**MATH 114 PRE-STATISTICS – 5 Units**

Advisory: ENGL 280 with a grade of C or higher, or English Placement Level 5 or higher

Note: Students may take either MATH 101 and 102, or MATH 102X, or MATH 114 in order to meet the prerequisite for MATH 14.

Class Hours: 90 lecture total (when offered in the distance education format, hours will total 270)

This course prepares students who do not plan to major in math, science, computer science or business for transfer-level Statistics. It is an accelerated course that prepares students for transfer-level Statistics. Topics include ratios, rates, and proportional reasoning, arithmetic reasoning using fractions, decimals and percents, evaluating expressions, analyzing algebraic forms to understand statistical measures, functions, use of linear functions to model bivariate data, and graphical and numerical descriptive statistics for quantitative and categorical data. This course may be offered in a distance education format.

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**MATH 150 MATH STUDY SKILLS– 1 Unit (formerly GS 100)**

Grading: Pass/No Pass Option

Note: Students do not necessarily need to be concurrently enrolled in a math class.

Class Hours: 18 lecture total

This course is designed to assist students in learning mathematics through the development of successful study skills and exam-taking methods. This course addresses learning styles, how to read a math book, completing homework assignments, how to take notes and exams, strategies for solving word problems, and techniques for overcoming math anxiety.

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**MATH 220 BASIC MATHEMATICS – 3 Units**

Advisory: ENGL 260 with a grade of C or higher, or English Placement Level 3 or higher

Class Hours: 54 lecture total

A course covering the basic skills of addition, subtraction, multiplication and division of whole numbers, fractions, and decimals, with word problem applications. Subjects also taught include prime numbers, order of operations, ratios, and proportions.

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**MATH 240 PRE-ALGEBRA – 3 Units**

Prerequisite: MATH 220 with a grade of C or higher, or MATH 210D with a grade of P, or Math Placement Level 1 or higher

Advisory: ENGL 260 with a grade of C or higher, or English Placement Level 3 or higher

Class Hours: 54 lecture total

This course provides a transition from arithmetic to algebra, covering a review of arithmetic operations; introducing the concepts of variables and signed numbers; the properties of addition, subtraction, multiplication and division containing variables; solution of equations and word problems. This course prepares the student for entry into MATH 101, 100, and/or BUAD 106.

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**MATH 260 BASIC MATH AND PRE-ALGEBRA – 5 Units**

Advisory: ENGL 260 with a grade of C or higher, or English Placement Level 3 or higher

Class Hours: 90 lecture total

This course covers topics from arithmetic through an introduction to algebra. Topics include basic operations on whole numbers, fractions, mixed numbers, decimal numbers, and signed numbers, along with presenting word problem applications for each. Additional topics include order of operations, ratio and proportion, solving percent problems, and an introduction to variables and beginning concepts of algebra. Algebraic concepts to be introduced include addition, subtraction, multiplication, and division of algebraic expressions and solving algebraic equations.

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**MATH 260A Math My Way – 2 Units**

Grading: Pass/No Pass Only

Class Hours: 108 lab total (when offered in the distance education format, hours will total 108)

This course will cover topics in arithmetic including but not limited to operations on whole numbers, fractions, and decimals. Development and applications of ratios and proportions will be included as well. A portion of this course may be offered in a distance education format.

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**MATH 260B Math My Way – Pre-Algebra – 2 Units**

Grading: Pass/No Pass Only

Class Hours: 108 lab total (when offered in the distance education format, hours will total 108)

This course provides a transition from arithmetic to algebra. It covers a review of arithmetic operations, including the properties of addition, subtraction, multiplication, and division. It introduces the concepts of variables and signed numbers to find the solutions to equations and word problems. This course prepares the student for entry into MATH 101, 100, and/or BUAD 106. A portion of this course may be offered in a distance education format.