

MATHEMATICS (MATH)

010 JUST-IN-TIME-SUPPORT FOR INTERMEDIATE ALGEBRA 3 UNITS

Prerequisite: Appropriate placement
Corequisite: Concurrent enrollment in MATH 110 at Cuyamaca College
2.5 hours lecture, 1.5 hours laboratory
A review of the core prerequisite skills, competencies, and concepts for intermediate algebra. Intended for students who are concurrently enrolled in MATH 110, Intermediate Algebra, at Cuyamaca College. Review topics include: computational skills developed in pre-algebra, the vocabulary of algebra, translation from English to algebra, and evaluation of literal expressions and functions. Topics covered in more depth include: 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, solving quadratics using factoring, and rational equations. Recommended for students with little or no recent knowledge of algebra. A graphing calculator is required for this course. **Pass/No Pass only. Non-degree applicable.**

060 JUST-IN-TIME SUPPORT FOR ELEMENTARY STATISTICS 2 UNITS

Prerequisite: Appropriate placement
Corequisite: Concurrent enrollment in MATH 160 at Cuyamaca College
2 hours lecture
A review of the core prerequisite skills, competencies, and concepts needed in statistics. Intended for students who are concurrently enrolled in MATH 160, Elementary Statistics, at Cuyamaca College. 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. Additional emphasis is placed on solving and graphing linear equations and modeling with linear functions. **Pass/No Pass only. Non-degree applicable.**

075 INTERMEDIATE ALGEBRA FOR MATH 175 2 UNITS

Prerequisite: Appropriate placement
Corequisite: Concurrent enrollment in MATH 175 at Cuyamaca College
2 hours lecture
A review of the core prerequisite skills, competencies, and concepts needed in college algebra. Intended for majors in science, technology, engineering, and mathematics who are concurrently enrolled in MATH 175, College Algebra, at Cuyamaca College. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, absolute value equations and inequalities, exponential and logarithmic expressions and equations, conic sections, functions including composition and inverses, and an in-depth focus on quadratic functions. This course is appropriate for students who are confident in their graphing and beginning algebra skills. A graphing calculator is required for this course. **Pass/No Pass only. Non-degree applicable.**

076 INTERMEDIATE ALGEBRA FOR MATH 176 2 UNITS

Prerequisite: Appropriate placement
Corequisite: Concurrent enrollment in MATH 176 at Cuyamaca College
2 hours lecture
A review of the core prerequisite skills, competencies, and concepts needed in pre-calculus. Intended for majors in science, technology, engineering, and mathematics who are concurrently enrolled in MATH 176, Precalculus, at Cuyamaca College. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, absolute value equations and inequalities, exponential and logarithmic expressions and equations, conic sections, functions including composition and inverses, an in-depth focus on quadratic functions, and a review of topics from geometry. This course is appropriate for students who are confident in their graphing and beginning algebra skills. A graphing calculator is required for this course. **Pass/No Pass only. Non-degree applicable.**

078 INTERMEDIATE ALGEBRA FOR MATH 178 2 UNITS

Prerequisite: Appropriate placement
Corequisite: Concurrent enrollment in MATH 178 at Cuyamaca College
2 hours lecture
A review of the core prerequisite skills, competencies, and concepts needed in business calculus. Intended for majors in science, technology, engineering, and mathematics who are concurrently enrolled in MATH 178, Calculus for Business, Social and Behavioral Sciences at Cuyamaca College. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, linear, exponential and logarithmic expressions and equations, an introduction to matrices, functions including composition and inverses, and an in-depth focus on quadratic functions. This course is appropriate for students who are confident in their graphing and beginning algebra skills. A graphing calculator is required for this course. *Not open to students with credit in MATH 180.* **Pass/No Pass only. Non-degree applicable.**

088 PRE-ALGEBRA 4 UNITS

4 hours lecture, 1 hour laboratory
Operations with signed numbers are emphasized. The derivation and use of selected measurement concepts and the development of pre-algebra ideas such as variable and equations are included. Measurement, area and volume formulas for fundamental shapes are stressed. These topics are explored in the context of problem solving and appropriate calculator use. **Pass/No Pass only. Non-degree applicable.**

090 ELEMENTARY ALGEBRA 5 UNITS

Recommended Preparation: Grade of "Pass" in MATH 088 or equivalent
5 hours lecture, 1 hour laboratory
The first of a two-course sequence in algebra intended to help prepare students for transfer level mathematics. An introduction to the following topics is included: the vocabulary of algebra, translation from English to algebra, evaluation of literal expressions, and functions. Topics covered in more depth include: 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, rational, and radical expressions; solving quadratics using factoring; and rational equations.

Computational techniques developed in pre-algebra are prerequisite skills for this course. Recommended for students with little or no recent knowledge of algebra. **Pass/No Pass only. Non-degree applicable.**

096 FOUNDATIONS FOR STATISTICS AND QUANTITATIVE REASONING 6 UNITS

6 hours lecture
An accelerated one-semester course to transfer-level Elementary Statistics (Math 160) or Quantitative Reasoning (Math 120). Math 096 covers core 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. The core arithmetic and algebra skills needed to understand the concepts, formulas, and graphs used in transfer-level statistics are investigated as needed. Additional emphasis is placed on solving and graphing linear equations; modeling with linear functions; solving contextualized problems; and dimensional analysis. This course is NOT intended for math, science, computer science, business, or engineering majors. **Pass/No Pass only. Non-degree applicable.**

103 INTERMEDIATE ALGEBRA 3 UNITS

Prerequisite: Grade of "Pass" in MATH 090 or equivalent
3 hours lecture, 1 hour laboratory
The second of a two-course sequence in algebra. This course completes some topics from the first course, such as factoring and operations on rational and radical expressions, and includes the addition of new topics such as exponential and logarithmic expressions and equations, and conic sections. The concept of functions is developed including composition and inverses. Quadratic functions are covered in depth. Computational techniques developed in beginning algebra are prerequisite skills for this course. This course is appropriate for students with knowledge of beginning algebra or who have had at least two years of high school algebra but have not used it for several years. *Maximum of 5 units can be earned for taking MATH 103, 106 and 110.*
AA/AS GE

106 INTERMEDIATE ALGEBRA FOR ENGLISH LANGUAGE LEARNERS 4 UNITS

3.5 hours lecture, 1.5 hours laboratory
This is an accelerated one-semester algebra course for English language learners. Students enrolled in this course should concurrently enroll in ESL 021. This course leads to Math 075, Math 076, Math 078, Math 120 and Math 160. This course covers core concepts from arithmetic, pre-algebra, elementary and intermediate algebra, and general education mathematics. The core arithmetic and algebra skills needed to understand the concepts, formulas, and graphs used in Intermediate Algebra are investigated in a "just-in-time" approach. Intermediate Algebra topics include: solving and graphing linear equations and inequalities in one and two variables, solving and graphing systems of equations in two variables, arithmetic operations and factoring polynomials, solving quadratic equation using factoring, problem solving, and modeling with linear, quadratic, and exponential functions. Recommended for ESL students with little or no recent knowledge of algebra. A graphing calculator is required for this course. *Maximum of 5 units can be earned for taking MATH 103, 106 and 110.*
AA/AS GE

110 INTERMEDIATE ALGEBRA FOR BUSINESS, MATH, SCIENCE AND ENGINEERING MAJORS 5 UNITS

Prerequisite: Grade of "Pass" in MATH 090 or equivalent

5 hours lecture

The second of a two-course sequence in algebra. This course completes some topics from the first course, such as factoring and operations on rational and radical expressions, and includes the addition of new topics such as absolute value equations and inequalities, exponential and logarithmic expressions and equations, conic sections, and an introduction to matrices and sequences and series. The concept of functions is developed including composition and inverses. Quadratic functions are covered in depth. Computational techniques developed in beginning algebra are prerequisite skills for this course. This course is appropriate for students with knowledge of beginning algebra or who have had at least two years of high school algebra but have not used it for several years. Graphing calculators are required for this course. *Maximum of 5 units can be earned for taking MATH 103, 106 and 110.*

AA/AS GE

120 QUANTITATIVE REASONING 3 UNITS

Prerequisite: "C" grade or higher or "Pass" in MATH 096 or 103 or 110 or equivalent

3 hours lecture

The students will survey the historical development of mathematics and apply topics such as logic, geometry, probability, statistics, problem solving, sequences and patterns, numeration systems, and personal finance to develop quantitative reasoning skills. Designed for students who do not intend to prepare for a career in science or business.

AA/AS GE, CSU, CSU GE, IGETC, UC credit limit

125 STRUCTURE AND CONCEPTS OF ELEMENTARY MATHEMATICS I 3 UNITS

C-ID MATH 120

Prerequisite: "C" grade or higher or "Pass" in MATH 103 or 110 or equivalent

3 hours lecture, 1 hour laboratory

In blending the mathematical topics of sets, whole numbers, numeration, number theory, integers, rational and irrational numbers, measurement, relations, functions and logic, the course will investigate the interrelationships of these topics using a problem-solving approach and appropriate use of technology.

AA/AS GE, CSU, CSU GE, IGETC, UC credit limit

126 STRUCTURE AND CONCEPTS OF ELEMENTARY MATHEMATICS II 3 UNITS

Prerequisite: "C" grade or higher or "Pass" in MATH 125 or equivalent

3 hours lecture, 1 hour laboratory

In blending the mathematical topics of statistics, probability, measurement, coordinate geometry, plane geometry, solid geometry, logic, relations and functions, the course will investigate the interrelationships of these topics using a problem-solving approach and appropriate use of technology.

CSU, CSU GE, IGETC, UC credit limit

128 CHILDREN'S MATHEMATICAL THINKING 1.5 UNITS

Prerequisite: Math 125 or equivalent or concurrent enrollment in Math 125

1.5 hours lecture

Children's mathematical thinking and in-depth analyses of children's understanding of operations (addition, subtraction, multiplication, division) and place value. Students will observe individual children solving mathematics problems.

CSU

160 ELEMENTARY STATISTICS 4 UNITS

C-ID MATH 110

Prerequisite: "C" grade or higher or "Pass" in MATH 096 or 103 or 110 or equivalent

4 hours lecture

The use of probability techniques, hypothesis testing, and predictive techniques to facilitate decision-making. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance, chi-square and t-tests; and application of technology for statistical analysis including the interpretation of the relevance of the statistical findings. Applications using data from disciplines including business, social sciences, psychology, life science, health science, and education.

AA/AS GE, CSU, CSU GE, IGETC, UC credit limit

170 ANALYTIC TRIGONOMETRY 3 UNITS

Prerequisite: "C" grade or higher or "Pass" in MATH 110 or equivalent

3 hours lecture

Theoretical approach to the study of the trigonometric functions with emphasis on circular functions, trigonometric identities, trigonometric equations, graphical methods, vectors and applications, complex numbers, and solving triangles with applications. *Successful completion of MATH 170, 175 is equivalent to the successful completion of MATH 176.*

AA/AS GE, CSU, CSU GE

175 COLLEGE ALGEBRA 4 UNITS

C-ID MATH 151

Prerequisite: "C" grade or higher or "Pass" in MATH 110 or equivalent (MATH 103 does not meet the prerequisite)

4 hours lecture

College level course in algebra for majors in science, technology, engineering, and mathematics: polynomial, rational, radical, exponential, absolute value, and logarithmic functions; systems of equations; theory of polynomial equations; and analytic geometry.

Maximum of 7 units can be earned for successfully completing any combination of MATH 170, 175, 176.

AA/AS GE, CSU, CSU GE, IGETC, UC credit limit

176 PRECALCULUS: FUNCTIONS AND GRAPHS 6 UNITS

Prerequisite: "C" grade or higher or "Pass" in MATH 110 or equivalent (MATH 103 does not meet the prerequisite)

6 hours lecture

Preparation for calculus: polynomial, absolute value, radical, rational, exponential, logarithmic, and trigonometric functions and their graphs; analytic geometry, polar coordinates. *Maximum of 7 units can be earned for successfully completing any combination of MATH 170, 175, 176.*

AA/AS GE, CSU, CSU GE, IGETC, UC credit limit

178 CALCULUS FOR BUSINESS, SOCIAL AND BEHAVIORAL SCIENCES 4 UNITS

C-ID MATH 140

Prerequisite: "C" grade or higher or "Pass" in MATH 110 or equivalent (MATH 103 does not meet the prerequisite)

4 hours lecture

Presents a study of the techniques of calculus with emphasis placed on the application of these concepts to business and management related problems. The applications of derivatives and integrals of functions including polynomials, rational, exponential and logarithmic functions are studied. *Not open to students with credit in MATH 180.*

AA/AS GE, CSU, CSU GE, IGETC, UC credit limit

180 ANALYTIC GEOMETRY AND CALCULUS I 5 UNITS

C-ID MATH 210, 900S

Prerequisite: "C" grade or higher or "Pass" in MATH 170 and 175, or MATH 176 or equivalent

5 hours lecture

Graphic, numeric and analytic approaches to the study of analytic geometry, limits and continuity of functions, and introductory differential and integral calculus. Applications involving analysis of algebraic, exponential, logarithmic, trigonometric and hyperbolic functions from a variety of disciplines including science, business and engineering. First of three courses designed to provide serious science students with a solid introduction to the theory and techniques of analysis.

AA/AS GE, CSU, CSU GE, IGETC, UC credit limit

245 DISCRETE MATHEMATICS 3 UNITS

C-ID MATH 160

Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent

3 hours lecture

Introduction to discrete mathematics. Includes basic logic, methods of proof, sequences, elementary number theory, basic set theory, elementary counting techniques, relations, and recurrence relations.

AA/AS GE, CSU, CSU GE, IGETC, UC

280 ANALYTIC GEOMETRY AND CALCULUS II 4 UNITS

C-ID MATH 220, 900S

Prerequisite: "C" grade or higher or "Pass" in MATH 180 or equivalent

4 hours lecture

A second course in differential and integral calculus of a single variable: integration; techniques of integration; infinite sequences and series; polar and parametric equations; applications of integration. Primarily for science, technology, engineering and math majors.

AA/AS GE, CSU, CSU GE, IGETC, UC

281 MULTIVARIABLE CALCULUS 4 UNITS

C-ID MATH 230

Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent

4 hours lecture

The third of a three-course sequence in calculus. Topics include vector valued functions, calculus of functions of more than one variable, partial derivatives, multiple integration, Green's Theorem, Stokes' Theorem, and divergence theorem.

AA/AS GE, CSU, CSU GE, IGETC, UC

284 LINEAR ALGEBRA 3 UNITS

C-ID MATH 250, 910S

Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent

3 hours lecture

This course develops the techniques and theory needed to solve and classify systems of linear equations. Solution techniques include row operations, Gaussian elimination, and matrix algebra. Investigates the properties of vectors in two and three dimensions, leading to the notion of an abstract vector space. Vector space and matrix theory are presented including topics such as inner products, norms, orthogonality, eigenvalues, eigenspaces, and linear transformations. Selected applications of linear algebra are included.

AA/AS GE, CSU, CSU GE, IGETC, UC

285 DIFFERENTIAL EQUATIONS 3 UNITS

C-ID MATH 240, 910S

Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent

3 hours lecture

This course is an introduction to ordinary differential equations including both quantitative and qualitative methods as well as applications

from a variety of disciplines. Introduces the theoretical aspects of differential equations, including establishing when solution(s) exist, and techniques for obtaining solutions, including series solutions, singular points, Laplace transforms and linear systems.

CSU, CSU GE, IGETC, UC