MATHEMATICS (MATH)

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 INTERMEDIATE ALGEBRA FOR STATISTICS 6 UNITS
5 hours lecture, 3 hours laboratory
An accelerated one-semester course to transfer-level Elementary Statistics (Math 160) covering 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 in a "just-in-time" approach rather than the standard sequence found in the traditional algebra path. Additional emphasis is placed on solving and graphing linear, exponential, and logarithmic equations; modeling with linear and exponential functions; and exponential and logarithmic functions as inverses of each other. This course is NOT intended for math, science, computer science, business, or engineering majors. **Non-degree applicable.**

097 PLANE GEOMETRY 3 UNITS
Prerequisite: Grade of "Pass" in MATH 090 or equivalent
3 hours lecture
Introduces essential vocabulary, properties and characteristics of geometric objects and geometric constructions. The concepts of plane geometry are developed inductively and then deductively. Computer-facilitated instruction offers a dynamic presentation of geometric concepts. **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 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, 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 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 and 110.*
AA/AS GE

120 MATHEMATICS FOR GENERAL EDUCATION 3 UNITS
Prerequisite: "C" grade or higher or "Pass" in MATH 103 or 110 or equivalent
3 hours lecture
This course covers topics from logic, set theory, probability, statistics and computer math that provide a very brief introduction to the structure of mathematical theories, the history of mathematics, and applications of mathematics to the real world. 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
Prerequisite: "C" grade or higher or "Pass" in MATH 103 or 110 and MATH 097 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
Corequisite: 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
Prerequisite: "C" grade or higher or "Pass" in MATH 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 097, 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
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 097, 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
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
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

199 SPECIAL STUDIES OR PROJECTS
(see page 38, Academic Policies and Procedures)

245 DISCRETE MATHEMATICS 3 UNITS
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
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
Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent
4 hours lecture
This is 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
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
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