

MATHEMATICS

MAT-1A

Calculus I

(C-ID:MATH 210)

Prerequisite: MAT-10 or MAT-23 or qualifying placement level.

Description: Functions, limits, continuity, techniques and applications of differentiation, the Fundamental Theorem of Calculus, and basic integration. 72 hours lecture and 18 hours laboratory. (Letter Grade or Pass/No Pass option)

4.00 units

UC, CSU

MAT-1B

Calculus II

(C-ID:MATH 220)

Prerequisite: MAT-1A

Description: Techniques of integration, applications of integration, improper integrals, infinite sequences and series, parametric equations, and polar coordinates. 72 hours lecture and 18 hours laboratory. (Letter Grade, or Pass/No Pass option.)

4.00 units

UC, CSU

MAT-1C

Calculus III

(C-ID:MATH 230)

Prerequisite: MAT-1B

Description: Vectors in a plane and in space, vector functions, calculus on functions of multiple variables, partial derivatives, multiple integrals, line and surface integrals, Green's theorem, Stokes' theorem, Divergence theorem, and elementary applications to the physical and life sciences. 72 hours lecture 18 hours lecture. (Letter grade or Pass/No Pass option)

4.00 units

UC, CSU

MAT-2

Differential Equations

(C-ID:MATH 240)

Prerequisite: MAT-1B

Description: This is a course in 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) exists, and techniques for obtaining solutions, including linear first and second order differential equations, series solutions, Laplace transforms, linear systems, and elementary applications to the physical and biological sciences. 72 hours lecture. (Letter Grade, or Pass/No Pass option.)

4.00 units

UC, CSU

MAT-3

Linear Algebra

(C-ID:MATH 250)

Prerequisite: MAT-1B.

Description: Examines elementary vector space concepts and geometric interpretations and develops the techniques and theory to solve and classify systems of linear equations. Solution techniques include Gaussian and Gauss-Jordan elimination, Cramer's rule and inverse matrices. Investigates the properties of vectors in two, three and finite dimensions, leading to the notion of an abstract vector space. Vector space and matrix theory are presented including topics such as determinants, linear independence, bases and dimension of a vector space, linear transformations and their matrix representations, inner products, norms, orthogonality, eigenvalues, eigenvectors, and eigenspaces. Selected applications of linear algebra are included. 54 hours lecture. (Letter Grade, or Pass/No Pass option)

3.00 units

UC, CSU

MAT-5

Calculus for Business and Life Science

(C-ID:MATH 140)

Prerequisite: MAT-35 or appropriate placement.

Description: A study of the techniques of calculus for majors in business, business administration, life and social sciences. Emphasis on problem solving and applications. Topics include: Functions, graphs, limits, derivatives, integrals, exponential and logarithmic functions. 72 hours lecture. (Letter Grade or Pass/No Pass option.)

4.00 units

UC, CSU

MAT-10

Precalculus

(C-ID:MATH 155)

Prerequisite: MAT-36 or appropriate placement

Description: Preparation for calculus: Polynomial, absolute value, radical, rational, exponential, logarithmic, and trigonometric functions and their graphs; analytic geometry, polar coordinates, sequences, and series. Students cannot receive credit for MAT 10 if they have already received credit for MAT 23. 90 hours lecture. (Letter Grade or Pass/No Pass option)

5.00 units

UC, CSU

MAT-11**College Algebra**

(C-ID:MATH 155)

4.00 units

UC, CSU

Prerequisite: MAT-35 or qualifying placement level

Description: This course is intended for students majoring in Liberal Arts and Humanities. The topics covered in this course develop the understanding and use of real-world applications of polynomial, radical, rational, absolute value, exponential and logarithmic functions; systems of equations; polynomial equations; permutations and combinations; analytic geometry; and linear programming. 72 hours lecture. (Letter Grade or Pass/No Pass option)

MAT-12**Statistics**

(C-ID:SOCI 125)

4.00 units

UC, CSU

Prerequisite: MAT-35 or MAT-37 or MAT-42 or qualifying placement level.

Description: A comprehensive study of measures of central tendency and variation, correlation and linear regression, probability, the normal distribution, the t-distribution, the chi-square distribution, estimation, testing of hypotheses, analysis of variance, and the application of statistical software to data, including the interpretation of the relevance of the statistical findings. Applications using data from business, education, health science, life science, psychology, and the social sciences will be included. 72 hours lecture. (Letter Grade, or Pass/No Pass option.)

MAT-12H**Honors Statistics**

(C-ID:MATH 110)

4.00 units

UC, CSU

Prerequisite: MAT-35 or MAT-37 or MAT-42 or qualifying placement level.

Description: A comprehensive study of measures of central tendency and variation, correlation and linear regression, probability, the normal distribution, the t-distribution, the chi-square distribution, estimation, testing of hypotheses, analysis of variance, and the application of statistical software to data, including the interpretation of the relevance of the statistical findings. Applications using data from business, education, health science, life science, psychology, and the social sciences will be included. Honors course offers an enriched experience for accelerated students through limited class size, seminar format, focus on primary texts, and application of higher-level critical thinking skills. Students may not receive credit for both MAT-12 and MAT-12H. 72 hours lecture. (Letter Grade or Pass / No Pass option.)

MAT-15**Statway II****5.00 units**

UC, CSU

Prerequisite: MAT-45

Description: The second semester of a two-semester course that introduces the concepts of probability and statistics with requisite arithmetic and algebraic topics integrated throughout. It is structured to serve students planning to transfer and continue studies in humanities or social sciences. Statistics topics emphasize data analysis and include basic concepts of probability; confidence intervals; hypothesis tests for means, proportions, and variance; chi-squared tests; and ANOVA (Analysis of Variance). Algebra topics include proportional relationships (including variation) with applications, expressions, linear functions, and exponential functions. Learning strategies for success with an emphasis on study skills, resource acquisition, and maintaining a positive perspective towards learning are also discussed and applied. Both parts of Statway must be completed with a grade of "C" or better to receive credit for a transfer-level statistics course. 72 hours lecture and 54 hours laboratory. (Letter grade or Pass/No Pass)

MAT-23**Trigonometry and Precalculus****6.00 units**

UC, CSU

Prerequisite: MAT-35 or qualifying placement level.

Description: An accelerated college level math course designed to prepare students for calculus. Students will study polynomial, absolute value, radical, rational, exponential, and logarithmic functions, analytic geometry, and polar coordinates. The study of trigonometric functions, their inverses and their graphs, identities and proofs related to trigonometric expressions, trigonometric equations, solving right triangles, solving triangles using the Law of Cosines and the Law of Sines, and an introduction to vectors. Students who receive credit for MAT 23 cannot receive credit for MAT 10 and MAT 36. 90 hours lecture and 54 hours laboratory. (Letter Grade or Pass/No Pass option.)

MAT-25**Mathematics for the Liberal Arts Student****3.00 units**

UC, CSU

Prerequisite: MAT-35 or MAT-42 or qualifying placement level

Description: A college level survey course of selected topics from the history and development of mathematics, patterns and inductive reasoning, set theory and deductive reasoning, geometry, probability, statistics, and problem solving. You may cover 2 of the following topics: dimensional analysis, geometry, mathematics of different bases, or development of numerical systems from ancient cultures. It is designed for students majoring in liberal arts, education, or communication. Calculators or computers may be used for selected topics. 54 hours of lecture. (Letter grade or Pass/No Pass option)

MAT-26**Math for Elementary School Teachers****3.00 units**

UC, CSU

Prerequisite: MAT-35 or qualifying placement level

Description: This course is designed for pre-service elementary school teachers. The course will examine five content areas: numeration; number theory; properties of numbers; problem solving; and curriculum standards. 54 hours lecture. (Letter Grade, or Pass/No Pass option.)

MAT-35**Intermediate Algebra****5.00 units***Prerequisite: MAT-52*

Description: The concepts introduced in elementary algebra are presented again, but in greater depth. In addition to basic algebraic operations and graphing, students are introduced to functions, inverse functions, exponential and logarithmic functions, complex numbers, conic sections, nonlinear systems of equations, and sequences and series. 90 hours lecture. (Letter Grade or Pass/No Pass option)

MAT-36**Trigonometry****4.00 units**

(C-ID:MATH 851)

CSU

Prerequisite: MAT-35 or Appropriate. placement.

Description: The study of trigonometric functions, their inverses and their graphs; identities and proofs related to trigonometric expressions; solving trigonometric equations; solving right triangles; solving oblique triangles using the law of sines and cosines; polar coordinates; complex numbers; introduction to vectors and elements of geometry important to the foundation of trigonometry. 72 hours lecture. (Letter Grade or Pass/No Pass option)

MAT-37**Pre-Statistics****5.00 units***Prerequisite: MAT-65 or qualifying placement level*

Description: This is an intensive course that prepares students for transfer-level Statistics. Topics include working with numerical information (fractions, decimals, percentages), evaluating expressions related to statistical formulas, graphical and numerical descriptive statistics for quantitative and categorical data. Two-way tables, linear correlation and regression and an introduction to normal distribution. There is a focus on reading, writing, and critical thinking skills needed for college statistics. This course is appropriate for students who do not plan to major in math, science, computer science, business, technology, engineering and calculus intense fields in the social sciences. 72 hours lecture and 54 hours lab. (Letter grade or pass/no pass option)

MAT-45**Statway I****5.00 units***Prerequisite: MAT-64 or MAT-65, or qualifying placement level.**Advisory: ENG-50 or ENG-80 or REA-83, or qualification for English 1A.*

Description: The first semester of a two-semester course that introduces the concepts of probability and statistics with requisite arithmetic and algebraic topics integrated throughout. It is structured to serve students planning to transfer and continue studies in humanities or social sciences. Statistics topics emphasize data analysis and include methods for collecting data, graphical and numerical descriptive statistics, correlation, and simple linear regression. Learning strategies for success with an emphasis on study skills, resource acquisition, and maintaining a positive perspective towards learning are also discussed and applied. Both parts of Statway must be completed with a grade of "C" or better to receive credit for a transfer-level statistics course. (Letter grade Pass/No Pass)

MAT-52**Elementary Algebra****5.00 units***Prerequisite: None*

Description: Examines the four basic operations of real numbers without the use of any calculating device. Variables will be covered as they are involved in polynomials, fractions, linear equations, quadratic equations, systems of equations, inequalities, exponential and radical expressions, and absolute value. Factoring, graphing, and word problem applications will also be included. 90 hours lecture. (Non-degree credit course. Letter grade, or Pass/No Pass option.)

MAT-53**College Geometry****3.00 units***Prerequisite: MAT-52 or qualifying placement.*

Description: A course covering the study of plane geometry and three dimensional figures. These topics include angles, triangles, quadrilaterals, circles and solids, their formulas for measuring such figures, including perimeter, area and volume. Students create proofs of geometric concepts using postulates and theorems associated with geometric objects and their characteristics. 54 hours lecture. (Letter Grade or Pass/No Pass option)

MAT-81**JumpStart for Elementary Algebra****1.00 unit***Prerequisite: None.*

Description: Review of content of MAT-65 including basic arithmetic, estimation, variables, linear equations and their graphs. This is a self-paced, computer-based course. A diagnostic test will determine areas needing review and students will be required to master the identified topics. 9 lecture hours and 27 laboratory hours. (Non-degree credit course) (Pass/No Pass only)

MAT-82**JumpStart for Intermediate Algebra****1.00 unit***Prerequisite: None.*

Description: Review of content of MAT-52 including linear, quadratic, and rational expressions and equations, linear inequalities, radical expressions, linear systems and their applications, and absolute value. Factoring, graphing, and word problems applications will also be included. This is a self-paced, computer-based course. A diagnostic test will determine areas needing review and students will be required to master the identified topics. 9 lecture hours and 27 laboratory hours. (Non-degree credit course) (Pass/No Pass only)

MAT-98**Academic Excellence Seminar****0.50 units***Prerequisite: None.**Limitation on enrollment: Concurrent enrollment in First-year Experience Program.*

Description: Interactive seminar designed to augment students learning skills and experience in mathematics. May be taken a total of two times. 27 hours laboratory. (Non-degree credit course) (Pass/No Pass only)

MAT-105**Corequisite Support for Math 5****2.00 units***Prerequisite: Appropriate Placement.**Corequisite: MAT-5.*

Description: A concurrent co-requisite course containing geometry and algebra concepts designed to support students in Calculus for Business and Life Science. Topics include a review of skills developed in geometry and intermediate algebra: area and volume, factoring, graphing, operations on rational and radical expressions, linear, exponential and logarithmic expressions and equations, functions including composition and inverses, and an in-depth focus on linear and quadratic functions. Topics are taught strategically throughout the semester to provide a "just in time" instruction of skills needed to master concepts in MAT 5 as they arise in that course. A diverse approach to problem solving processes and enhancement of study strategies will prepare the student for later university courses. 36 hours lecture. (Pass/No Pass only)

MAT-112**Corequisite Support for Math 12****2.00 units***Prerequisite: Appropriate Placement.**Corequisite: MAT-12.*

Description: A concurrent corequisite course containing arithmetic and algebraic concepts designed to support students in Statistics. Topics include a review of skills developed in algebra: order of operations, scientific notation, conversion between fractions, decimals, and percents, solving linear equations, and using the symbols, notation, and vocabulary of algebra. Topics are taught strategically throughout the semester to provide a "just in time" instruction of skills needed to master concepts in MAT-12 as they arise in that course. A diverse approach to problem solving processes and enhancement of study strategies will prepare the student for later university courses. 36 hours lecture. (Pass/No Pass only)

MAT-125**Corequisite Support for Mat-25****2.00 units***Prerequisite: Appropriate Placement**Corequisite: MAT-25.*

Description: A concurrent corequisite course containing algebra concepts designed to support the students taking MAT-25 (Mathematics for Liberal Arts Students). Topics include a review of skills from an elementary and intermediate algebra course: Rounding integer values, translating phrases into mathematical expressions, solving problems using percent and decimals, evaluating expressions containing exponents, solving linear equations, applying the four basic operations to real numbers, graphing and writing linear equations using slope and y-intercept, and simplifying expressions using order of operations. Topics are taught strategically throughout the semester to provide "just in time" instruction of skills needed to master concepts in MAT 25 as they arise in that course. A diverse approach to problem solving processes and enhancement of study strategies will prepare the student for later university courses. 36 hours lecture. (Pass/No pass only)

MAT-136**Corequisite Support for Mat-36****2.00 units***Prerequisite: Appropriate Placement.**Corequisite: MAT-36.*

Description: A concurrent corequisite course containing algebra concepts designed to support students in Trigonometry. Topics include a review of skills developed in intermediate algebra: factoring, graphing linear and quadratic functions, operations on rational and radical expressions, linear and quadratic expressions and equations, and an in-depth focus on operations on functions, including composition and inverses. Topics are taught strategically throughout the semester to provide a "just in time" instruction of skills needed to master concepts in MAT-36 as they arise in that course. A diverse approach to problem solving processes and enhancement of study strategies will prepare the student for later university courses. 36 hours lecture. (Pass/No Pass only)