

MATHEMATICS (MATH)

MATH 5 Essential Topics from Pre Algebra

2 Units (Not Degree Applicable)

(May be taken for Pass/No Pass only)

Lecture: 36

Corequisite: MATH 51

Support will focus on essential pre-algebra skills needed for success in Elementary Algebra. Course is for students concurrently enrolled in Math 51. Pre-algebra review topics include order of operations, exponents, geometry, ratios and proportions, solving linear equations, basic graphing techniques, simplifying polynomial and rational expressions, greatest common factor, least common multiple, and applications.

Course Schedule

MATH 7 Essential Topics from Elementary Algebra

2 Units (Not Degree Applicable)

(May be taken for Pass/No Pass only)

Lecture: 36

Corequisite: MATH 71

Support will focus on essential elementary algebra skills needed for success in Intermediate Algebra. Course is for students concurrently enrolled in (Math 71). Elementary algebra review topics include real numbers and their properties, simplifying algebraic expressions, simplifying integer exponents, solving a variety of equations, graphing techniques, writing equations of lines, introduction to functions and relations, complex fractions, simplifying polynomial, rational, and radical expressions, and applications.

Course Schedule

MATH 13 Essential Topics from Intermediate Algebra

2 Units (Not Degree Applicable)

(May be taken for Pass/No Pass only)

Lecture: 36

Corequisite: MATH 130

Support will focus on essential algebra skills needed for success in College Algebra. Course is for students concurrently enrolled in (Math 130). Intermediate algebra review topics include simplifying algebraic expressions, simplifying integer and rational exponents, factoring polynomials, solving a variety of equations, solving systems of equations, graphing techniques, writing equations of lines, introduction to functions and relations, complex fractions, simplifying polynomial, rational, radical, exponential, and logarithmic expressions, expanding binomials, and applications.

Course Schedule

MATH 18 Essential Topics from Precalculus

2 Units (Degree Applicable)

(May be taken for Pass/No Pass only)

Lecture: 36

Corequisite: MATH 180

Support will focus on essential precalculus skills needed for success in calculus. Course is for students concurrently enrolled in Calculus and Analytic Geometry (Math 180) Precalculus review topics include basic functions and transformations, equations of lines, difference quotients, asymptotes, absolute value inequalities, zeros of polynomial functions, function composition, applications of geometry and Pythagorean theorem, areas under curves using geometric formulas, sequences and series.

Course Schedule

MATH 50 Pre-Algebra

3 Units (Not Degree Applicable)

Lecture: 54

Prerequisite: LERN 49 or appropriate placement.

Fundamental principles of mathematics designed to ease the transition from arithmetic to algebra. Concepts, computational skills, thinking skills and problem-solving skills are balanced to build proficiency in elementary topics from algebra and mastery in arithmetic.

Course Schedule

MATH 51 Elementary Algebra

4 Units (Not Degree Applicable)

Lecture: 72

Prerequisite: MATH 50 or appropriate placement

Basic algebra, equivalent to first year high school algebra. Includes: operations with signed numbers and algebraic expressions; linear, quadratic, rational, and radical equations; linear inequalities of one and two variables; slope, graphing, and equations of lines; introduction to functions; systems of linear equations; exponent rules; polynomial operations; scientific notation; factoring; rational expressions; variation; radicals; fractional exponents; formulas; applications.

Course Schedule

MATH 51A Elementary Algebra - First Half

3 Units (Not Degree Applicable)

Lecture: 54

Prerequisite: MATH 50 or appropriate placement

Contains the first half of elementary algebra. Operations with signed numbers and algebraic expressions, linear equations and inequalities, exponent rules, polynomial operations, scientific notation, factoring, solving quadratic equations by factoring, rational expressions and equations, formulas, variation, and applications.

Course Schedule

MATH 51B Elementary Algebra - Second Half**3 Units** (Not Degree Applicable)

Lecture: 54

Prerequisite: MATH 51A

Contains the second half of elementary algebra. Includes: Cartesian Coordinate System, slope, graphing, and equations of lines, solving systems of linear equations, algebraic operations with radicals, solving equations with radicals, solving second degree equations using methods of completing the square and the quadratic formula. Students must complete both MATH 51A and MATH 51B to have taken the equivalent of Elementary Algebra (MATH 51).

Course Schedule

MATH 61 Plane Geometry**3 Units** (Degree Applicable)

Lecture: 54

Prerequisite: MATH 51 or MATH 51B or appropriate placement

Points, lines, polygons and circles; their relationships to each other on plane surfaces; congruence, similarity and area. Introduction to inductive, deductive and indirect reasoning. The formal proof is introduced and practiced throughout the course. Stress is placed on accuracy of statement as a background for analytical and scientific reasoning.

Course Schedule

MATH 70S Integrated Intermediate Algebra**5 Units** (Degree Applicable)

Lecture: 90

Prerequisite: MATH 50 or appropriate placement.

Math 70S and 110S form a two-semester sequence that leads students through college level statistics. Simplification, solving of equations, graphing, and applications are covered. Each is applied to the following mathematical functions: polynomial, rational, radical, exponential and logarithmic. Rates and proportions, linear systems of equations, inequalities, sequence, series, design of experiments, one- and two-variable descriptive statistics are also covered.

Course Schedule

MATH 71 Intermediate Algebra**5 Units** (Degree Applicable)

Lecture: 90

Prerequisite: MATH 51 or MATH 51B or appropriate placement.

Extends concepts from elementary algebra to prepare students for college-level mathematics courses. Polynomial, rational, radical, exponential and logarithmic expressions are simplified, equations solved and functions graphed and studied; linear and nonlinear systems of equations and inequalities; conic sections; sequence, series and the binomial theorem

Course Schedule

MATH 71A Intermediate Algebra - First Half**3 Units** (Not Degree Applicable)

Lecture: 54

Prerequisite: MATH 51 or MATH 51B or appropriate placement.

Algebra of functions, polynomials, and rational expressions; functions and their graphs; systems of equations with two or three variables; absolute value and compound inequalities. Covers approximately half of the MATH 71 topics. A student must complete both MATH 71A and 71B to have taken the equivalent of MATH 71, Intermediate Algebra.

Course Schedule

MATH 71B Intermediate Algebra - Second Half**3 Units** (Degree Applicable)

Lecture: 54

Prerequisite: MATH 71A

Quadratic equations and graphs; exponents, radicals and logarithms; conic sections. Covers remaining MATH 71 topics. A student must complete both MATH 71A AND 71B to have taken the equivalent of MATH 71, Intermediate Algebra.

Course Schedule

MATH 71X Practical Intermediate Algebra**5 Units** (Degree Applicable)

Lecture: 90

Prerequisite: MATH 51 or MATH 51B or appropriate placement

Intermediate Algebra for the non-calculus path. Polynomial, rational, radical, exponential, and logarithmic expressions are simplified, equations solved, and real-world phenomena are modeled using least-squares methods, functions graphed and analyzed; linear and nonlinear systems of equations and inequalities; sequences, series, and probabilities; data gathering instruments are used to sample data for curve fitting.

Course Schedule

MATH 96 Strategies for Math Success**1 Unit** (Not Degree Applicable)

(May be taken for Pass/No Pass only)

Lecture: 18

Perspectives, understandings and strategies to utilize a learning system for acquiring, understanding, remembering and producing mathematical knowledge. Course is appropriate for all levels of mathematics students.

Course Schedule

MATH 99 Special Projects in Mathematics**2 Units** (Degree Applicable, CSU)

Lecture: 36

In order to offer selected students recognition for their academic interests and ability and the opportunity to explore their disciplines to greater depth, the math department from time to time offers Special Projects courses. The content of each course and the methods of study vary from semester to semester and depend on the particular project under consideration. Instructor authorization needed prior to enrollment.

Course Schedule

MATH 100 Survey of College Mathematics**3 Units** (Degree Applicable, CSU, UC)

Lecture: 54

Prerequisite: MATH 71 or MATH 71X or MATH 71B or appropriate placement

Mathematical methods and reasoning. Topics include: set theory, logic, counting methods, probability and statistics, with additional topics selected from numeration and mathematical systems, number theory, geometry, graph theory and mathematical modeling.

Course Schedule

MATH 110 Elementary Statistics**3 Units** (Degree Applicable, CSU, UC, C-ID #: MATH 110)

Lecture: 54

Prerequisite: MATH 71 or MATH 71X or MATH 71B or appropriate placement

Descriptive and inferential statistics and probability with emphasis on understanding statistical methods. Descriptive analysis of sample statistics, distribution of discrete and continuous random variables, estimation theory, tests of hypotheses, regression, correlation, and analysis of variance.

Course Schedule

MATH 110H Elementary Statistics - Honors**3 Units** (Degree Applicable, CSU, UC, C-ID #: MATH 110)

Lecture: 54

Prerequisite: (MATH 71 or MATH 71X or MATH 71B or appropriate placement) and acceptance into the Honors Program.

Descriptive and inferential statistics and probability with an emphasis on understanding statistical methods. Descriptive analysis of sample statistics, distribution of discrete and continuous random variables, estimation theory, tests of hypotheses, regression, correlation, and analysis of variance. An honors course designed to provide an enriched experience. May not receive credit for MATH 110 and MATH 110H.

Course Schedule

MATH 110S Integrated Statistics**5 Units** (Degree Applicable, CSU, UC)

Lecture: 90

Prerequisite: MATH 70S

MATH 110S is an elementary course in descriptive and inferential statistics. Observational and experimental studies, design of experiments, descriptive statistics, probability, discrete and continuous probability distributions, estimates, and hypothesis tests. For categorical data, inferences include one or two sample proportions, one- and two-way tables (chi-square goodness of fit). For quantitative data, inferences for one or two sample means, one-way ANOVA. Inferences in linear correlation and regression are included.

Course Schedule

MATH 120 Finite Mathematics**3 Units** (Degree Applicable, CSU, UC)

Lecture: 54

Prerequisite: MATH 71 or MATH 71X or MATH 71B or appropriate placement

Linear programming, matrix theory, probability, statistics, stochastic processes, Markov chains, and math of finance. Applications for business, economics, and social sciences.

Course Schedule

MATH 130 College Algebra**4 Units** (Degree Applicable, CSU, UC)

Lecture: 72

Prerequisite: MATH 71 or MATH 71B or appropriate placement

College-level Algebra course. Study of real numbers and sets, algebraic functions and relations, radicals and exponents, linear and quadratic equalities and inequalities, exponential and logarithmic functions, systems of linear and quadratic equations, complex numbers, series, theory of equations, mathematical induction and binomial formula.

Course Schedule

MATH 140 Calculus for Business**4 Units** (Degree Applicable, CSU, UC)

Lecture: 72

Prerequisite: MATH 130 or MATH 160 or appropriate placement

Calculus for business, social science, and non-science majors. Algebraic, logarithmic, and exponential functions; limits; differentiation with applications; various techniques of integration with applications; differential equations; multi variable calculus.

Course Schedule

MATH 150 Trigonometry**3 Units** (Degree Applicable, CSU)

Lecture: 54

Prerequisite: MATH 71 or MATH 71B or appropriate placement AND MATH 61 or passing score on current geometry competency test.

Trigonometric functions and inverse trigonometric functions and the graphical representations of these functions; solutions to right and oblique triangles with laws of sines and cosines; vectors; solutions to trigonometric equations; identities; polar coordinates; complex numbers and DeMoivre's Theorem.

Course Schedule

MATH 160 Precalculus Mathematics**4 Units** (Degree Applicable, CSU, UC)

Lecture: 72

Prerequisite: MATH 150 or appropriate placement

Prepares students for the calculus sequence. Real-valued functions, including algebraic, trigonometric, exponential, and logarithmic functions. Also includes proofs, inequalities, introductory analytical geometry, series, sequences, and vectors.

Course Schedule

MATH 180 Calculus and Analytic Geometry**4 Units** (Degree Applicable, CSU, UC)

Lecture: 72

Prerequisite: MATH 160 or appropriate placement

Differential and integral calculus with applications. Functions, limits, the derivative, curve sketching, optimization, and rules for differentiation of algebraic, exponential, logarithmic, and trigonometric functions with their inverses, with applications. Indefinite and definite integrals.

Course Schedule

MATH 181 Calculus and Analytic Geometry**4 Units** (Degree Applicable, CSU, UC)

Lecture: 72

Prerequisite: MATH 180

Differential and integral calculus with infinite series and applications. Includes applications of integration, techniques of integration, numerical integration, indeterminate forms and improper integrals, differential equations, and polar coordinates.

Course Schedule

MATH 245 A Transition to Advanced Mathematics**3 Units** (Degree Applicable, CSU, UC)

Lecture: 54

Prerequisite: MATH 181

A transition to the rigors of upper-division mathematics courses. Basic set theory and logic, relations, functions, mathematical induction, the well-ordering principle, countable and uncountable sets, the Schroder-Bernstein Theorem, the axiom of choice, Zorn's Lemma, the Heine-Borel Theorem, the Bolzano-Weierstrass Theorem. Special emphasis on how to present and understand mathematical proofs.

Course Schedule

MATH 260 Linear Algebra**3 Units** (Degree Applicable, CSU, UC)

Lecture: 54

Prerequisite: MATH 181

Matrices, linear systems, determinants, vector and inner product spaces, linear transforms, eigenvalues, and eigenvectors.

Course Schedule

MATH 280 Calculus and Analytic Geometry**5 Units** (Degree Applicable, CSU, UC, C-ID #: MATH 230)

Lecture: 90

Prerequisite: MATH 181

Multivariate and vector calculus, which includes vectors in two and three space and surfaces in space. Analysis of vector-valued functions. Partial derivatives, differentials, the chain rule, directional derivatives, and the gradient. Extrema of functions of several variables with applications. Multiple integrals in various coordinate systems with applications. Vector fields, line integrals, and independence of path. Green's Theorem, surface integrals, flux, divergence, and curl. Stokes' Theorem and the Divergence Theorem.

Course Schedule

MATH 285 Linear Algebra and Differential Equations**5 Units** (Degree Applicable, CSU, UC)

Lecture: 90

Prerequisite: MATH 280

First order ordinary differential equations, with applications and numerical methods. Solutions to higher order differential equations using undetermined coefficients, variation of parameters, and power series, with applications. Solutions to linear and non-linear systems of differential equations, including numerical solutions. Matrix algebra, solutions of linear systems of equations, and determinants. Vector spaces, linear independence, basis and dimension, subspace and inner product space, including the Gram-Schmidt procedure. Linear transformations, kernel and range, eigenvalues, eigenvectors, diagonalization and symmetric matrices.

Course Schedule

MATH 290 Differential Equations**4 Units** (Degree Applicable, CSU, UC)

Lecture: 72

Prerequisite: MATH 280

First-order ordinary differential equations, including separable, linear, homogeneous, Bernoulli, and exact, with applications and numerical methods. Solutions to higher-order differential equations using undetermined coefficients, variation of parameters, power series, and Laplace transforms, with applications. Solutions to linear and non-linear systems of differential equations, including numerical solutions.

Course Schedule