MATHEMATICS

The Mathematics program is to foster an environment that both challenges and supports its students. The primary purposes of the educational program offered by the department are

- Prepare students for transfer to baccalaureate-granting institutions.
- Nurture an appreciation of the role of mathematics in life.
- Enhance our students' ability to utilize mathematics and critical thinking in their lives.
- Support business and industry in economic development by providing a highly educated work-force.

Associate in Science Transfer Degrees

- Mathematics - Associate in Science Transfer Degree (https://lbcc-public.courseleaf.com/degrees-certificates/mathematics/mathematics-ast/)

Associate in Science Degrees

- Mathematics - Associate in Science (https://lbcc-public.courseleaf.com/degrees-certificates/mathematics/mathematics-as/)

MATH 21A   5 units
Statistics Pathway A
90 hours lecture
Prerequisite: MATH 815.
Grading: letter grade.
Part A of the two-course Statway series. Math 21A and 21B together condense the sequence of beginning algebra, intermediate algebra and statistics into a two-semester sequence. Students will study: experiment and observational study design, sample methods, data measures, graphical techniques, scatter plots, correlation and regression, probability, sampling, exponential functions, residual plots, two-way tables, probability, the normal distribution and z-scores, and probability distributions. Emphasis is on the collection and analysis of actual data. Algebraic skills and techniques are integrated into the presentation of statistical methods. This course is intended for non-STEM majors. Math 21A and 21B together provide STAT 1 credit.
Transferable to CSU Only

MATH 21B (C-ID MATH 110)   5 units
Statistics Pathway B
90 hours lecture
Prerequisite: MATH 21A.
Grading: letter grade.
Part B of the two-course Statway series. Math 21A and 21B together condense the sequence of beginning algebra, intermediate algebra and statistics into a two-semester sequence. Students will study: averages, variability, graphical techniques, probability, probability distributions, normal distribution, Chi-Square distributions, hypothesis testing, sampling, estimation and confidence intervals, correlation, prediction, linear regression, and ANOVA analysis. Emphasis is on the collection and analysis of data and how inferences about a population are made from a sample. Algebraic skills are integrated into the presentation of statistical methods. This course is intended for non-STEM majors. Math 21A and 21B together provide STAT 1 credit.
Transferable to both UC and CSU; see counselor for limitations

MATH 27   3 units
Probability and Statistics for Elementary Teachers
54 hours lecture, 18 hours laboratory
Prerequisite: MATH 130, 130B, 140 or one year of high school intermediate algebra with a grade of B or better, and MATH 28 and MATH 120 or one year high school geometry.
Grading: letter grade.
Probability and Statistics for Elementary Teachers is a general education course that is strongly recommended for prospective elementary teachers. This activity-based course covers such topics as probability, statistics, representing and interpreting data, and variability.
Transferable to both UC and CSU; see counselor for limitations

MATH 28 (C-ID MATH 120)   3 units
Mathematics for Elementary Teaching I
54 hours lecture, 18 hours laboratory
Prerequisite: MATH 140 or MATH 130 or MATH 130B or one year of high school intermediate algebra with a grade of B or better as reflected by the second semester grade.
Recommended Preparation: ENGL 1, ENGL 1H, ENGL 1S, or ESL 1S.
Grading: letter grade.
This course is one of several courses designed for prospective elementary teachers. Topics that are covered include pattern recognition, problem solving, sets, numeration systems, number theory, and models and algorithms for operations with whole numbers, integers, rational numbers and decimals. Writing is emphasized throughout the course, as is the problem solving process. The lab incorporates individual and group activities in the exploration of topics.
Transferable to both UC and CSU; see counselor for limitations

MATH 29   3 units
Math for Elementary Teaching II
54 hours lecture, 18 hours laboratory
Prerequisite: MATH 28 and MATH 120 or one year of high school geometry.
Grading: letter grade.
This course is designed for prospective elementary teachers. Topics include basic geometric vocabulary and notation, constructions, congruence, similarity, measurement, the Pythagorean Theorem, motion geometry and tessellations. The problem-solving process is emphasized throughout the course. The course incorporates group activities and exploration of topics through the use of manipulatives and a geometry drawing utility. Writing is emphasized throughout the course.
Transferable to both UC and CSU; see counselor for limitations

MATH 37 (C-ID MATH 130)   3 units
Finite Mathematics
54 hours lecture
Prerequisite: MATH 130 or MATH 130B or MATH 140.
Grading: letter grade.
This course is a study of linear equations, systems of linear equations and inequalities, matrices, matrix applications, sets and counting, probability, and statistics.
Transferable to both UC and CSU; see counselor for limitations

MATH 40   3 units
Trigonometry
54 hours lecture
Prerequisite: MATH 130, 130B, 140 or one year of high school intermediate algebra with a grade of B or better as reflected by the second semester grade, and MATH 120 or one year high school geometry.
Grading: letter grade.
The topics covered in this course include right triangle trigonometry, circular functions, inverse functions, identities and formulas, graphing, trigonometric equations, the Law of Sines and the Law of Cosines, and complex numbers and polar coordinates.
Transferable to CSU Only

MATH 45   4 units
College Algebra
72 hours lecture
Prerequisite: MATH 130 or MATH 130B or MATH 140.
Grading: letter grade.
This course covers advanced algebra topics, including linear, quadratic, polynomial, exponential and logarithmic functions; graphs of functions; inverse functions; systems of equations and inequalities; the Binomial Theorem; and conics. A graphing utility is required for this course. Students preparing for MATH 60 should take MATH 50 instead. This course is not open for credit to students registered in or with credit in MATH 50.
Transferable to both UC and CSU; see counselor for limitations

MATH 47   3 units
Calculus for Business
54 hours lecture
Prerequisite: MATH 45 or MATH 50.
Grading: letter grade or pass/no pass.
This course is a study of differentiation of functions of one and several variables, optimization methods, integration of functions of one variable, and exponential and logarithmic functions. The course is appropriate for students who wish to pursue a career in business and economics.
Transferable to both UC and CSU; see counselor for limitations

MATH 50   5 units
Precalculus Math
90 hours lecture
Prerequisite: MATH 40.
Grading: letter grade.
This Course serves as a preparation for calculus. The topics covered include a review of algebra, polynomial, rational, exponential, logarithmic and trigonometric functions, applications of trigonometry including complex numbers and vectors, systems of equations and inequalities including matrices, sequences and series, and topics from analytic geometry.
Transferable to both UC and CSU; see counselor for limitations

MATH 55   4 units
Discrete Mathematics
72 hours lecture
Prerequisite: MATH 50 or a high school precalculus with a grade of B or better as reflected by the second semester grade.
Recommended Preparation: Knowledge of Java, C++, or Python.
Grading: letter grade.
This is a one semester course in discrete math, intended for computer science related disciplines. The topics covered include logic, truth tables, set theory, techniques of proofs, recursive definitions, combinatorics, probability, and statistics.
Transferable to both UC and CSU; see counselor for limitations

MATH 60 (C-ID MATH 210)   5 units
First Calculus Course
90 hours lecture
Prerequisite: MATH 50 or one year high school precalculus with a grade of B or better as reflected by the second semester grade.
Grading: letter grade.
This course is the first in our three-semester calculus sequence. Topics covered include limits; differentiation rules for all basic functions including exponential, logarithmic, and inverse trigonometric functions; applications of differentiation including optimization problems, l'Hospital's Rule, and graphing; and definite/indefinite integrals including Riemann sums and the fundamental theorem of calculus.
Transferable to both UC and CSU; see counselor for limitations

MATH 60H (C-ID MATH 210)   5 units
Honors First Calculus Course
90 hours lecture
Prerequisite: MATH 50 or one year high school precalculus with a grade of B or better as reflected by the second semester grade and qualification for the Honors Program.
Grading: letter grade.
This course is the first in our three-semester calculus sequence. Topics covered include limits; differentiation rules for all basic functions including exponential, logarithmic, and inverse trigonometric functions; applications of differentiation including optimization problems, l'Hospital's Rule, and graphing; and definite/indefinite integrals including Riemann sums and the fundamental theorem of calculus.
Transferable to both UC and CSU; see counselor for limitations

MATH 70 (C-ID MATH 220)   5 units
Second Calculus Course
90 hours lecture
Prerequisite: MATH 60.
Grading: letter grade.
This course is the second in our three-semester calculus sequence. Topics covered include applications of integration including areas between curves, volumes, and work problems; techniques of integration; further applications of integration including arc length, surface area, and center of mass; differential equations; parametric equations and polar coordinates; and infinite sequences and series including power series, Taylor series, and Maclaurin series.
Transferable to both UC and CSU; see counselor for limitations

MATH 70H (C-ID MATH 220)   5 units
Honors Second Calculus Course
90 hours lecture
Prerequisite: MATH 60 and qualification for the Honors Program.
Grading: letter grade.
This course is the second in our three-semester calculus sequence. Topics covered include applications of integration including areas between curves, volumes, and work problems; techniques of integration; further applications of integration including arc length, surface area, and center of mass; differential equations; parametric equations and polar coordinates; and infinite sequences and series including power series, Taylor series, and Maclaurin series.
Transferable to both UC and CSU; see counselor for limitations

MATH 80 (C-ID MATH 230)   5 units
Third Calculus Course
90 hours lecture
Prerequisite: MATH 70.
Grading: letter grade.
This course is the third in our three-semester calculus sequence. Topics covered include vectors and the geometry of space; vector functions; partial derivatives including tangent planes and Lagrange multipliers; multiple integrals; and vector calculus including vector fields, curl and divergence, Green's theorem, Stokes' theorem, and the divergence theorem.
Transferable to both UC and CSU; see counselor for limitations

MATH 84 (C-ID MATH 240)   5 units
Intro Differential Eqns and Linear Alg
90 hours lecture
Prerequisite: MATH 80.
Grading: letter grade.
This course is an introduction to the solutions of ordinary differential equations and their relationship to linear algebra. Topics include systems of linear equations, matrix algebra, determinants, vector spaces, linear transformations and linear second order differential equations. Other topics include power series solutions, numerical methods, Laplace transforms, Eigenvalues, Eigenvectors and systems of linear differential equations and applications. This course also has activities in which students use computers to enhance their understanding of the topics covered in the course.
Transferable to both UC and CSU; see counselor for limitations

MATH 110   5 units
First Course in Algebra
90 hours lecture
Grading: letter grade or pass/no pass.
This is the first course in algebra. Topics in this course include solving linear equations and inequalities in one variable; graphing linear equations and inequalities in two variables; solving systems of linear equations; factoring; performing operations on polynomials, rational expressions, and radical expressions; and solving rational, radical, and quadratic equations. Application problems are solved throughout the course. Students are required to complete 5 hours of supplemental learning activities in any designated Success Center. A student may take either MATH 110 or Math 110A and Math 110B to fulfill the course requirement.

MATH 110A   3 units
First Course in Algebra-Part 1
54 hours lecture, 18 hours laboratory
Grading: letter grade or pass/no pass.
This is the first of a two-semester sequence of the first course in algebra. Topics include solving linear equations and inequalities in one variable, graphing linear equations and inequalities in two variables, solving systems of linear equations, and simplifying polynomial and exponential expressions. Application problems are solved throughout the course. Group activities are incorporated within the lab portion of the course. Students are required to complete 5 hours of supplemental learning activities in any designated Success Center. A student may receive credit for either MATH 110 or 110A and 110B.

MATH 110B   3 units
First Course in Algebra-Part 2
54 hours lecture, 18 hours laboratory
Prerequisite: MATH 110A.
Grading: letter grade or pass/no pass.
This is the second of a two-semester sequence of the first course in algebra. Topics include factoring, simplifying rational and radical expressions, solving rational and radical equations, and solving quadratic equations. Application problems are solved throughout the course. Group activities are incorporated within the lab portion of the course. Students are required to complete 5 hours of supplemental learning activities in any designated Success Center. A student may receive credit for either MATH 110 or Math 110A and 110B.

MATH 115   4 units
Applied Math
72 hours lecture
Grading: letter grade or pass/no pass.
This course is modified intermediate algebra course meant as an alternative pathway for students not intended to take trigonometry or college algebra. Intermediate algebra concepts will be studied, but lessons will be infused with more real world applications that will not only prepare students for statistics and liberal arts math but will appeal to certain trades students who would use this class to satisfy the math requirement for their AA degree. Topics would include linear equations, functions, applications and their graphs, polynomial equations and applications, exponential and logarithmic applications, as well as basic geometry, trigonometric applications, vectors, counting and probability, and basics statistics concepts. Students are required to complete 4 hours of supplemental learning activities in a designated Success Center.

MATH 120   4 units
Geometry
72 hours lecture
Grading: letter grade or pass/no pass.
This is a traditional Euclidean geometry course covering such topics as deductive reasoning, basic postulates and theorems, congruency, similarity, constructions, area, and volume.

MATH 130   5 units
Intermediate Algebra
90 hours lecture
Prerequisite: MATH 110 or MATH 110B or one year high school elementary algebra with a grade of B or better as reflected by the second semester grade.
Grading: letter grade or pass/no pass.
This course continues the study of algebra in preparation for transfer level courses. Topics include polynomial, rational polynomial, root, quadratic, exponential and logarithmic functions and equations; graphing; systems of equations and inequalities; factoring; and numerical expressions with roots and complex numbers. Students are required to complete 5 hours of supplemental learning activities in any designated Success Center.

MATH 130A   3 units
Intermediate Algebra, Part A
54 hours lecture
Prerequisite: MATH 110 or MATH 110B or one year high school elementary algebra with a grade of B or better as reflected by the second semester grade.
Grading: letter grade or pass/no pass.
This is the first of a two-semester sequence of intermediate algebra. This course continues the study of algebra in preparation for transfer level courses. Topics include solving linear equations and inequalities; graphing functions and inequalities; solving systems of equations and inequalities; factoring; and solving rational equations. Application problems are solved throughout the course. Students are required to complete 5 hours of supplemental learning activities in any designated Success Center. A student may receive credit for either Math 130 or 130A and 130B. This course may be scheduled using the "To Be Arranged" (TBA) scheduling format. Please see the section on "Curriculum Offerings" for a description of requirements for completing TBA.

MATH 130B   3 units
Intermediate Algebra, Part B
54 hours lecture
Prerequisite: MATH 130A.
Grading: letter grade or pass/no pass.
This is the second of a two-semester sequence of intermediate algebra. This course continues the study of algebra in preparation for transfer level courses. Topics include radicals and complex numbers; quadratic functions; exponential and logarithmic functions; and conic sections. Application problems are solved throughout the course. Students are required to complete 5 hours of supplemental learning activities in any designated Success Center. A student may receive credit for either Math 130 or 130A and 130B.

MATH 140   6 units
Beginning & Intermediate Algebra
108 hours lecture
Recommended Preparation: READ 882.
Grading: letter grade or pass/no pass.
This course combines the topics found in a beginning and intermediate algebra class and is meant as an accelerated 1-semester alternative to the normal Math 110/130 2-semester sequence. Topics typically duplicated in an intermediate algebra course shall be covered once, at greater length and in greater detail. Topics include solving linear and quadratic equations and inequalities; polynomial, exponential and logarithmic functions; graphing linear and quadratic functions; polynomial, rational, and radical arithmetic; solving rational, radical, exponential and logarithmic equations; graphing lines, parabolas, and other conic sections; and complex numbers. Application problems are solved throughout the course. Students are required to complete 5 hours of supplemental learning activities in any designated Success Center.

MATH 605   0 units
Ethnomathematics
18 hours lecture
Grading: non graded.
Ethnomathematics provides a method of quantitative reasoning and critical thinking skills in mathematics. Students will explore a spectrum of cultures and civilizations that contribute to the field of mathematics. The course will integrate identity, sense of belonging, and culturally relevant teaching with mathematical concepts. Ethnomathematics is encouraged to be taken as a non-transferable course to establish a sense-of-belonging for students in math courses.

MATH 650   0 units
Math Learning Center
18 hours laboratory
Grading: non graded.
This course is designed to facilitate students' learning of mathematics by offering one-to-one and small group tutoring. Students can also take advantage of multimedia instruction including videos and a variety of computer software programs. This course is recommended for all students concurrently enrolled in a LBCC mathematics course and is available in the open-access Math Success Center.

MATH 805   4 units
Modern Arithmetic
72 hours lecture
Grading: pass/no pass.
The topics covered in this course include operations on whole numbers, fractions, and decimals; ratios and proportions; and percent problems. Application problems are solved throughout the course. This course is not applicable for degree credit.

MATH 815   4 units
Preparation for Algebra
72 hours lecture
Grading: pass/no pass.
The topics covered in this course include the order of operations, operations with integers, the solution of linear equations, an introduction to graphing, operations with polynomials, and an introduction to the properties of exponential expressions. Applications of algebraic concepts are included throughout the course. This course is not applicable for degree credit. Students are required to complete 3 hours of supplemental learning activities in any designated Success Center.

MATH 825   1 units
Culinary Math
18 hours lecture
Grading: pass/no pass.
This course is designed for students in the Culinary Arts program to study the mathematical principles in the context of commercial food production. Topics include recipe conversion, scaling and yields, production baking formulas, weights and measures, product yield tests, and recipe and food cost analysis.

MATH 828X   1 units
Foundations for Elementary Math Teaching
18 hours lecture
Corequisite: MATH 28.
Grading: pass/no pass.
Math 828X utilizes a contextualized "just-in-time" approach to provide review of the core pre-requisite skills, competencies, and concepts required to be successful in the co-requisite MATH 28 Math for Elementary Teaching I course. Classroom activities are designed to build collegiate mathematics skills with an emphasis on foundations for teaching of mathematics in elementary school.

MATH 840X   2 units
Trigonometry Skills Support
36 hours lecture
Corequisite: MATH 40.
Grading: pass/no pass.
This course offers concurrent instructional support for MATH 40 students whose placement indicates they need additional practice in topics such as angles and trigonometric functions, graphs of trigonometric functions, trigonometric identities, foundations for solving trigonometric equations, foundations for applications of trigonometry and foundations for complex numbers and polar coordinates. The course supplements the skills and support necessary to complete MATH 40 concurrently during a single semester.

MATH 845X   2 units
Algebra Skills Support
36 hours lecture
Corequisite: MATH 45.
Grading: pass/no pass.
This course offers concurrent instructional support for MATH 45 students whose placement indicates they need additional practice in algebra topics such as equations, inequalities, problem solving, graphing, polynomials and polynomial functions. The course supplements the skills and support necessary to complete MATH 45 concurrently during a single semester.