MATHEMATICS

Each year, the list of careers demanding familiarity with basic mathematical skills grows. Animation, urban planning, geography, environmental science, architecture, business management, nursing, dentistry, forestry management, psychology and photography represent only a small sample from this list. Many careers require more sophisticated mathematical skills, such as physics, engineering, and computer science.

The Mathematics Department at Santa Barbara City College offers a broad curriculum to meet the needs of students with a wide variety of goals. The department offers the following sequences and courses to help our students achieve their career goals:

1. A standard college-level sequence in single and multivariable calculus, linear algebra, and differential equations for students who plan to transfer to four-year colleges or universities in STEM fields.
2. Transfer-level courses in statistics, mathematics for liberal arts majors, and college algebra.
3. A two-course sequence in calculus for Business, Biological Sciences and Social Science majors.
4. A complete precalculus program, including elementary algebra, intermediate algebra, college algebra and trigonometry to review old or gain new mathematical skills.

Planning a Program of Study

The required first-year Calculus, and indeed all of our math courses, are offered each semester (except possibly in summer). The Physics courses are offered sequentially, beginning each spring with PHYS 121 Mechanics Of Solids And Fluids. Care should be taken, however, that one semester of calculus is completed before attempting the Physics sequence. It is recommended that students take courses in order. A programming language course should be taken as soon as possible because of its usefulness as a computational tool.

The mathematics major at Santa Barbara City College meets the accepted normal curriculum. However, transfer students are advised to review, in depth, the current catalogs of institutions to which they plan to transfer for additional course requirement information.

Because mathematics is such a precisely structured discipline, students who have not acquired adequate skills and understanding at one course level will find it most difficult to succeed in the next higher course. For this reason, an important part of the Mathematics Program at Santa Barbara City College is appropriate placement of students into classes to increase their chances of success in mastering course content.

Placement into a math class can occur one of three ways:

1. If students are beginning their college career and have not taken college level math classes at another accredited college or university, then they need to visit the assessment center. For assessment information and hours, call the Assessment Center at (805) 730-4149 or sbcc.edu/assessmentcenter (http://www.sbcc.edu/assessmentcenter/).
2. If students are transferring from another college or if have already taken college-level math classes, then they need to submit evidence of previous math courses to the Transcript Evaluation Office. For course evaluation information, go to sbcc.edu/teo (http://sbcc.edu/teo/).
3. If students are continuing at SBCC, they should follow the appropriate sequence posted in the Schedule of Classes. There are several branches of the sequence, and **each student should consult with a math instructor or counselor** to make sure he/she has chosen the correct path for his/her educational goals.

Students are urged to take placement examinations and enroll in math classes as soon as possible, preferably taking math their first semester. It is not wise to postpone taking required math courses. Doing so might significantly delay transfer.

Preparation for Transfer

Course requirements for transfer vary depending upon the college or university a student wishes to attend. Therefore, it is **most important for a student to consult with his/her counselor and departmental adviser before planning an academic program for transfer**. Information sheets for majors, outlining transfer requirements, are available in the Counseling Center and the Transfer Center.

Programs of Study

Associate Degree for Transfer

- Mathematics, Associate in Science for Transfer (AS-T) (https://catalog.sbcc.edu/academic-departments/mathematics/mathematics-ast/)

Associate Degree

- Data Science, Associate of Science (AS) (https://catalog.sbcc.edu/academic-departments/computer-science/data-science-as/)
- Mathematics, Associate of Science (AS) (https://catalog.sbcc.edu/academic-departments/mathematics/mathematics-aa/)

Certificates of Achievement

- Data Science, Certificate of Achievement (C) (https://catalog.sbcc.edu/academic-departments/computer-science/data-science-certificate-achievement/)

Credit Courses - Math Mathematics (MATH)

also see Statistics

MATH 074 Pre-algebra Refresher (1 Unit)
Hours: 18 (18 lecture)
Pre-algebra refresher for students who desire higher placement; students who've completed Math 004 but need review; or those who have attempted Math 95 and need pre-algebra review. Successful completion of this course may serve as a petition to challenge Math 4. Course does not replace a failing grade in Math 4.

MATH 077 Support for Intermediate Algebra (2 Units)
Prerequisites: Placement by SBCC assessment through multiple measures.
Corequisites: MATH 107.
Hours: 36 (36 lecture)
Concurrent A review of core prerequisite skills, competencies and concepts for intermediate algebra. Intended for students who are concurrently enrolled in Math 107 Intermediate Algebra. Review topics include skills developed in pre-algebra and elementary algebra, operations on integers and fractions, simplifying and manipulating algebraic expressions, solving simple linear equations, applying basic geometric formulas, translation from English to algebra, and using the vocabulary/language of arithmetic and pre-algebra.
Transfer Information: Extrnl - Not Degree Applicable

MATH 087 Intermediate Algebra Refresher (1 Unit)
Hours: 18 (18 lecture)
Intermediate algebra refresher for students who desire higher placement; students who have completed Math 107 but need review; or those who have attempted Math 120 and need review. Successful completion of this course may serve as a petition to challenge Math 107. Course does not replace a failing grade in Math 107.

MATH 095 Elementary Algebra (5 Units)
Prerequisites: MATH 004 or MATH 041 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Hours: 90 (90 lecture)
Beginning algebra, similar to a standard first-year high school algebra course. Includes a review of signed numbers and their properties, equations and inequalities in one variable, graphing linear equations, systems in two variables, integer exponents, rational and polynomial expressions, quadratic equations, the quadratic formula and graphing parabolas.

MATH 107 Intermediate Algebra (5 Units)
Prerequisites: MATH 095 or MATH 007C or or equivalent based on SBCC's Assessment Center placement via multiple measures.
Hours: 90 (90 lecture)
Second course in algebra, including algebraic manipulation of polynomials, rational expressions, exponents, radicals, linear equations, ratio and proportion, inequalities, word problems, quadratic equations, systems of linear and quadratic equations. An introduction to functions and nonlinear equations. Exponential and logarithmic functions and their applications.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1

MATH 108 Mathematical Concepts for Elementary School Teachers-Number Systems (4 Units)
Prerequisites: MATH 107 or equivalent, based on SBCC's Assessment Center placement via multiple measures.
Hours: 72 (72 lecture)
Recommended for prospective and in-service elementary school teachers. Mathematical investigations and problem solving involving sets, number sense, integers, and rational and real numbers.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: CSUGE Area B4, SBCCGE Area 2, CSU Transferable, UC Transferable
C-ID: Math 120.

MATH 110C Support for Statistics and Liberal Arts Math (2 Units)
Prerequisites: MATH 107 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Corequisites: STAT C1000 or MATH 114 or MATH 108.
Hours: 36 (36 lecture)
Concurrent A comprehensive supplemental course designed to support students who are concurrently enrolled in any one of the following transfer-level math courses at SBCC, Math 108: Mathematics for Elementary Teachers, Math 114: Mathematics for Liberal Arts Majors, or STAT C1000: Introduction to Statistics. Topics and learning activities for elementary/intermediate algebra skills development and strengthening incorporated throughout, with an emphasis on refining skills necessary for success in college level mathematics, including translating word phrases into algebraic expressions, evaluation of expressions, solving and graphing linear equations, calculator skills, as well as problem-solving, study skills, and growth mindset in mathematics.
SBCC General Education: SBCCGE Area E1

MATH 114 Mathematics for Liberal Arts Majors (4 Units)
Prerequisites: MATH 107 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Hours: 72 (72 lecture)
A course to broaden students' understanding of methods, history, and applications of mathematics. Explore a wide variety of concepts such as mathematical logic, proof, and deductive reasoning, numeration systems, modular arithmetic, coordinate geometry and graphing, elementary probability and statistics, linear programming, and financial math. This course is intended for students majoring in Liberal Arts disciplines seeking to satisfy SBCC's GE Area 2. Students enrolled in Math 114 are eligible to concurrently enroll in Math 110C: Support for Statistics and Liberal Arts Math. Students in Math 114 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 4 hours of controlled assessments in the form of in-person proctored exams/project presentations, and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable

MATH 117A Elementary Statistics A (2 Units)
Prerequisites: MATH 107 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Hours: 36 (36 lecture)
MATH 117A is the first part of a two course sequence of a general education mathematics course in statistics. Taken together, MATH 117A and MATH 117B are collectively equivalent to MATH 117, Elementary Statistics. Topics in this course include introduction to design of experiments, descriptive statistics, types of data, introductory probability and sampling distributions. Emphasis is placed on the application of statistical concepts to real world data, development of statistical literacy and reasoning, and the interpretation of results.
SBCC General Education: SBCCGE Area E1
Transfer Information: CSU Transferable, UC Transferable
UC Transfer Limit: MATH 117, MATH 117A and MATH 117B, PSY 150 and SOC 125 combined: maximum credit, 1 course or series.
C-ID: MATH 110.

MATH 117B Elementary Statistics B (2 Units)
Prerequisites: MATH 117A.
Hours: 36 (36 lecture)
MATH 117B is the second part of a two course sequence of a general education mathematics course in statistics. Taken together, MATH 117A and MATH 117B are collectively equivalent to MATH 117, Elementary Statistics. Topics include sampling distributions, Central Limit Theorem, statistical inference, confidence interval estimation, tests of hypotheses, correlation and linear regression, Chi-square, one-way ANOVA, and multiple comparisons procedure. Emphasis is placed on the application of statistical concepts to real world data, development of statistical literacy and reasoning, and the interpretation of results.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, CSU Transferable, UC Transferable
C-ID: MATH 110.

MATH 118 Data Science for All (4 Units)
Same as: CS 118
Prerequisites: MATH 107 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Hours: 108 (54 lecture, 54 lab)
Introduction to data science using real-world data sets from a variety of disciplines while also presenting inherent uncertainties and issues associated with exploring data. Exposes students to foundational statistical concepts and inferential thinking by learning computation methods in a commonly used programming language such as Python.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable

MATH 130 Calculus for Biological Sciences, Social Sciences and Business I (5 Units)
Prerequisites: College algebra or equivalent or SBCC's Assessment Center placement via multiple measures.
Corequisites: MATH 130C based on SBCC's Assessment Center placement via multiple measures.
Hours: 90 (90 lecture)
Concurrent A first course in Calculus, the study of change-how to measure, model, and predict changes in quantities we observe in our universe. An investigation of functions, relations, and mathematical models arising in business, biological sciences, and social sciences, through the concepts of limit, differentiation, and integration. Applications of the derivative such as linear approximation, related rates, and optimization. Applications of integration such as area, and total change. Understanding the connection between differential calculus/rate of change and integral calculus/accumulation through the Fundamental Theorem of Calculus. This course is intended for Business and/or Biology majors who have successfully completed precalculus in high school, or SBCC's Math 137:College Algebra, or the equivalent. Students enrolling in Math 130 are eligible to concurrently enroll in Math 130C: Support for Calculus for the Biological Sciences, Social Sciences, and Business I; students with limited experience with college algebra/ precalculus are especially encouraged, or may be required to do so. Students in Math 130 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 5 hours of controlled assessments in the form of in-person proctored exams/project presentations and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
UC Transfer Limit: MATH 130 and MATH 150 combined: maximum credit, one course.
C-ID: MATH 140.

MATH 130C Support for Calculus for Biological Sciences, Social Sciences and Business I (2 Units)
Corequisites: MATH 130.
Hours: 36 (36 lecture)
Concurrent A comprehensive supplemental course designed to support students who are concurrently enrolled in Math 130: Calculus for Biological Sciences, Social Sciences, and Business I at SBCC. Topics and learning activities for college algebra skills development and strengthening incorporated throughout, with an emphasis on refining skills necessary for success in Math 130, including algebraic manipulation, knowledge of functions and graphing, geometry, and applications, as well as problem-solving, study skills, and growth mindset in mathematics.
Transfer Information: CSU Transferable

MATH 131 Calculus For Biological Sciences, Social Sciences And Business II (3 Units)
Prerequisites: MATH 130.
Course Advisories: ENG 098 or ENG 103.
Hours: 54 (54 lecture)
A second course in Calculus, the study of accumulation-techniques of integration in single and multi variables with applications to economics, business, life and social sciences. Other extensions of Calculus to higher dimensions with the study of functions of several variables, applications of partial differentiation and maxima/minima problems. Applications of differential equations and probability density functions. Optional topics such as infinite series, Taylor's Theorem and the calculus of trigonometric functions may be covered as time allows. This course is intended for Business and/or Biology majors who have successfully completed SBCC's Math 130: Calculus for the Biological Sciences, Social Sciences, and Business I. Students in Math 131 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 3 hours of controlled assessments in the form of in-person proctored exams/project presentations and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
UC Transfer Limit: MATH 131 and 160 combined: maximum credit, one course.

MATH 137 College Algebra (5 Units)
Prerequisites: MATH 107 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Hours: 90 (90 lecture)
A course to challenge students to expand their mind and see the world in new and abstract ways, through the lens of mathematics. An extensive treatment of functions and graphing, including translations, symmetries, reflections, and inverses. Analysis and applications of polynomial, rational, absolute value, exponential, and logarithmic functions. Solve systems of equations and inequalities, and explore conics, sequences, and series. This course is intended for students seeking to satisfy SBCC's GE Area 2 and/or may be considering fields of study or careers that require further mathematics coursework. Students enrolled in Math 137 are eligible to concurrently enroll in Math 137C: Support for College Algebra. Students in Math 137 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 5 hours of controlled assessments in the form of in-person proctored exams/project presentations, and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
UC Transfer Limit: MATH 137 and MATH 138 combined: maximum credit, 5 semester/7.5 quarter units. No credit for MATH 137 or H 138 if taken after MATH 130 or MATH 150.

MATH 137C Support for College Algebra (2 Units)
Prerequisites: MATH 107 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Corequisites: MATH 137.
Hours: 36 (36 lecture)
Concurrent A comprehensive supplemental course designed to support students who are concurrently enrolled in Math 137: College Algebra at SBCC. Topics and learning activities for elementary and intermediate algebra skills development and strengthening incorporated throughout, with an emphasis on refining skills necessary for success in College Algebra including algebraic manipulation, simplifying linear, quadratic, polynomial, radical, and rational expressions, function graphing and applications, as well as problem-solving, study skills, and growth mindset in mathematics.
SBCC General Education: SBCCGE Area E1

MATH 138 Precalculus - College Algebra and Trigonometry (4 Units)
Prerequisites: MATH 137 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Hours: 72 (72 lecture)
A course to advance students' skills in algebra, explore concepts of trigonometry, and further their experiences in applying mathematics as a way of viewing the world. Analysis, graphing, and applications of trigonometric functions, trigonometric identities, conditional equations, and applications to triangles, vectors, complex numbers, parametric equations, and polar coordinates. Additional topics include matrix algebra, an introduction to logic and mathematical proofs, and the Binomial Theorem. This course is intended for students that have successfully completed Math 137: College Algebra at SBCC OR the equivalent, and may be considering fields of study or careers that require further mathematics coursework. Students enrolled in Math 138 are eligible to concurrently enroll in Math 138C: Support or Trigonometry. Students in Math 138 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 4 hours of controlled assessments in the form of in-person proctored exams/project presentations, and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
UC Transfer Limit: MATH 137 and MATH 138 combined: maximum credit, 5 semester/7.5 quarter units; No credit for MATH 137 or MATH 138 if taken after MATH 130 or MATH 150.

MATH 138C Support for Precalculus (2 Units)
Prerequisites: Placement by SBCC assessment through multiple measures or MATH 120.
Corequisites: MATH 138.
Hours: 36 (36 lecture)
Concurrent A review of core prerequisite skills, competencies and advanced concepts for precalculus. Intended for students who are concurrently enrolled in Math 138 Precalculus II at Santa Barbara City College. Review topics include skills developed in college algebra, with an emphasis on refining skills in algebraic manipulation, functions and geometry.
Transfer Information: CSU Transferable

MATH 149 Precalculus for Future STEM Majors (4 Units)
Prerequisites: Placement as determined by the SBCC's multiple measures assessment process or completion of a course taught at or above the level of intermediate algebra.
Hours: 72 (72 lecture)
Preparatory course for SBCC's STEM Mathematics Pathway which begins with Calculus. Topics include the study of polynomial, absolute value, radical, rational, exponential, and logarithmic functions, analytic geometry, solutions and applications of equations, inequalities and systems. The study of trigonometric functions, their inverses and graphs, trigonometric identities, proofs, solving trigonometric equations, and solving triangles using right triangle trigonometry, the Law of Cosines, and the Law of Sines. An introduction to polar coordinates and conics also included. Students enrolled in Math 149 are eligible to concurrently enroll in Math 149C: Support for Precalculus for Future STEM Majors. Students in Math 149 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 4 hours of controlled assessments in the form of in-person proctored exams/project presentations, and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
UC Transfer Limit: All College Algebra and Pre-Calculus courses limited to a single course with a maximum of 5 semester / 7.5 quarter units.

MATH 149C Support for Precalculus for Future STEM Majors (2 Units)
Corequisites: MATH 149.
Hours: 36 (36 lecture)
Concurrent A comprehensive supplemental course designed to support students who are concurrently enrolled in SBCC's Math 149: Precalculus for Future STEM Majors. Topics and learning activities for precalculus skills development and strengthening are incorporated throughout, with an emphasis on refining skills necessary for success in precalculus, calculus, and beyond, including algebraic manipulation, knowledge of functions and graphing, trigonometry, geometry, and applications, as well as problem-solving, study skills, and growth mindset in mathematics.
Transfer Information: CSU Transferable

MATH 150 Calculus with Analytic Geometry I (5 Units)
Prerequisites: MATH 138 or MATH 149 or equivalent based on SBCC's Assessment Center placement via multiple measures.
Hours: 90 (90 lecture)
A first course in Calculus, the study of change-how to measure, model, and predict changes in quantities we observe in our universe. An investigation of functions, relations, and mathematical models from a variety of STEM disciplines, through the concepts of limit, differentiation, and integration. Applications of the derivative such as linear approximation, related rates, and optimization. Applications of integration such as area, net, and total change. Understanding the connection between differential calculus/rate of change and integral calculus/accumulation through the Fundamental Theorem of Calculus. This course is intended for STEM majors that have successfully completed the equivalent of one year of precalculus in high school, OR SBCC's Math 137: College Algebra and 138: College Algebra & Trigonometry precalculus sequence, OR Math 149: Precalculus for STEM Majors. Students enrolled in Math 150 are eligible to concurrently enroll in Math 150C: Support for Calculus w/ Analytic Geometry I. Students in Math 150 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 5 hours of controlled assessments in the form of in-person proctored exams/project presentations and a cumulative, in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
UC Transfer Limit: MATH 130 and 150 combined: maximum credit, one course.
C-ID: MATH 210.

MATH 150C Support Course for Calculus with Analytic Geometry I (2 Units)
Corequisites: MATH 150.
Hours: 36 (36 lecture)
Concurrent A comprehensive supplemental course designed to support students who are concurrently enrolled in Math 150: Calculus with Analytic Geometry I at SBCC. Topics and learning activities for precalculus skills development and strengthening incorporated throughout, with an emphasis on refining skills necessary for success in Calculus I including algebraic manipulation, knowledge of functions and graphing, trigonometry, geometry, and applications, as well as problem-solving, study skills, and growth mindset in mathematics.
Transfer Information: CSU Transferable

MATH 160 Calculus with Analytic Geometry II (5 Units)
Prerequisites: MATH 150.
Hours: 90 (90 lecture)
A second course in Calculus, the study of accumulation-how to measure, model, and approximate quantities we observe in our universe. An investigation of techniques of integration and applications of the definite integral such as area, volume, arclength, surface area, and center of mass. Explore convergence of infinite series and applications of power series. Apply calculus to alternative descriptions of curves in the plane via polar functions and parametric equations. An introduction to differential equations and an introduction to vectors is also included. This course is intended for STEM majors who have successfully completed SBCC's Math 150: Calculus with Analytic Geometry I, OR the equivalent, OR scored 3 or higher on the AP Calculus AB exam. Students enrolled in Math 160 are eligible to concurrently enroll in Math 160C: Support for Calculus w/ Analytic Geometry II. Students in Math 160 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 5 hours of controlled assessments in the form of in-person proctored exams/project presentations and a cumulative, in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: CSUGE Area B4, IGETC Area 2A, CSU Transferable, UC Transferable
UC Transfer Limit: MATH 131 and 160 combined: maximum credit, one course.
C-ID: MATH 220.

MATH 160C Support for Calculus with Analytic Geometry II (2 Units)
Corequisites: MATH 160.
Hours: 36 (36 lecture)
Concurrent A comprehensive supplemental course designed to support students who are concurrently enrolled in Math 160: Calculus with Analytic Geometry II at SBCC. Topics and learning activities for precalculus and calculus skills development and strengthening incorporated throughout, with an emphasis on refining skills necessary for success in Calculus II including algebraic manipulation, knowledge of function and relation graphing, trigonometry, geometry, and applications, sequences and series, polar coordinates, limits, differentiation, as well as problem-solving, study skills, and growth mindset in mathematics.
Transfer Information: CSU Transferable

MATH 180 Transition to Advanced Mathematics (4 Units)
Prerequisites: MATH 160.
Hours: 72 (72 lecture)
Designed to introduce students to the rigors of advanced mathematics courses, with an emphasis on reading and writing proofs. Topics include set theory and logic, relations, functions, induction, countable and uncountable sets, the Heine-Borel Theorem and the Bolzano-Weierstrass Theorem. Some elementary group theory and/or topology is covered.
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable

MATH 188 Trigonometry Refresher (1 Unit)
Hours: 18 (18 lecture)
A modular supplemental short course intended for refining the trigonometry skills of students concurrently enrolled in SBCC's Math 150: Calculus w/ Analytic Geometry I or Math 160: Calculus w/ Analytic Geometry II. Students utilize adaptive computer software targeting specific areas to refresh and strengthen proficiency, as well as benefit from the support of weekly contact with their instructor. Students will review trigonometric identities and manipulating trigonometric expressions, graphing and analyzing the features of trigonometric functions and their inverses, solving trigonometric equations, and applying trigonometry to triangles, spring/mass systems, and other applications as appropriate for Calculus.

MATH 200 Multivariable Calculus (4 Units)
Prerequisites: MATH 160.
Hours: 72 (72 lecture)
A third course in Calculus-extensions to higher dimensions. The study of functions of several variables; multiple integrals and applications to area, volume, and center of mass; partial differentiation and applications such as mathematical optimization; the calculus of vector functions as they apply to motion, including speed, arclength, and curvature of paths; the study of vector fields which model forces and flow. The Fundamental Theorems of Vector Calculus including the Fundamental Theorem of Conservative Vector Fields, Green's Theorem, Stokes' Theorem, Divergence Theorem, and their applications to computing work and flux. This course is intended for STEM majors who have successfully completed Math 160: Calculus with Analytic Geometry II, OR equivalent, OR score a 3 or higher on the AP Calculus BC exam. Students in Math 200 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 4 hours of controlled assessments in the form of in-person proctored exams/project presentations, and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
C-ID: MATH 230.

MATH 210 Linear Algebra (4 Units)
Prerequisites: Math 160.
Hours: 72 (72 lecture)
An introductory course in Linear Algebra with studies of finite dimensional vector spaces, linear independence, basis, change of bases, systems of linear equations, linear transformations, techniques and applications involving matrices, LU factorization, similarity, eigenvalues and eigenvectors, quadratic forms, symmetric and orthogonal matrices, canonical forms, and an introduction to infinite dimensional vector spaces. This course is intended for STEM majors who have successfully completed Math 160: Calculus with Analytic Geometry II, OR equivalent, OR have a score of 3 or higher on the AP Calculus BC exam. Students in Math 210 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 4 hours of controlled assessments in the form of in-person proctored exams/project presentations, and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
C-ID: MATH 250.

MATH 220 Differential Equations (4 Units)
Prerequisites: Math 200 and Math 210.
Hours: 72 (72 lecture)
An introductory course on the theory and applications of ordinary and partial differential equations with studies of constant coefficient equations, various series techniques, introduction to Laplace Transforms, qualitative and quantitative solutions to linear and nonlinear systems of differential equations, and separable partial differential equations. This course is intended for STEM majors who have successfully completed both Math 200: Multivariable Calculus and Math 210: Linear Algebra. Students in Math 220 will demonstrate their learning of course outcomes through multiple methods of assessment, including at least 4 hours of controlled assessments in the form of in-person proctored exams/project presentations, and a cumulative in-person proctored final exam.
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
C-ID: MATH 240.

MATH 295 Internship In Mathematics (2-4 Units)
Prerequisites: MATH 107 or MATH 111 with a "C" or better or qualifying score on SBCC placement exam
Limitations on Enrollment: Completion of two courses in the Mathematics Department at SBCC prior to enrolling in an internship course.
Skills Advisories: Eligibility for ENG 110 or ENG 110H or ENG 110GB
Hours: 273 (273 lab)
F, S - CSU Five to 10 hours weekly on-the-job experience. Structured internship program in which students gain experience in community organizations related to the discipline.
Transfer Information: CSU Transferable

Credit Course - Statistics

Statistics (STAT)

STAT C1000 Introduction to Statistics (4 Units)
Prerequisites: Placement as determined by SBCC's multiple measures assessment process or completion of a course taught at or above the level of intermediate algebra.
Hours: 72 (72 lecture)
This course is an introduction to statistical thinking and processes, including methods and concepts for discovery and decision-making using data. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance, chi-squared, and t-tests; and application of technology for statistical analysis including the interpretation of the relevance of the statistical findings. Students apply methods and processes to applications using data from a broad range of disciplines. (STAT C1000 formerly MATH 117 prior to Fall 2025.)
SBCC General Education: SBCCGE Area D2, SBCCGE Area E1
Transfer Information: Cal-GETC Area 2, CSUGE Area B4, IGETC Area 2A, SBCCGE Area 2, CSU Transferable, UC Transferable
UC Transfer Limit: MATH 117, MATH 117A and MATH 117B, PSY 150 and SOC 125 combined: maximum credit, 1 course or series.
C-ID: MATH 110.