

Program Description

Successful completion of this major will assure competence in mathematics through differential and integral calculus, providing an adequate background for employment in many technological and scientific areas as well as providing a firm foundation for students planning advanced study.

Associate in Arts Degree

An Associate in Arts Degree can be obtained upon completion of 60 units, including the 18 -19 unit major listed below with a grade of "C" (2.0) or better in each course, general education requirements, and electives.

Required Courses

| | Units |
|--|-------|
| MATH 20—Analytic Geometry and Calculus | 4 |
| MATH 21—Analytic Geometry and Calculus | 4 |
| MATH 22—Analytic Geometry and Calculus | 4 |
| MATH 23—Differential Equations (3 units) | |
| OR | |
| MATH 11—Elementary Statistics (4 units) | |
| OR | |
| MATH 12—Mathematical Ideas (3 units) | |
| OR | |
| MATH 15—Finite Mathematics (3 units) | 3-4 |
| MATH 40—Intro. to Linear Algebra | 3 |
| | 18-19 |
| Recommended Elective: | |
| MATH 60 | |

NOTE: Specific graphing calculators are required in some math courses.

MATH 2 3 Units

Algebra for Calculus (College Algebra) (F/S-Day & Night)

Prerequisite: A grade of "C" or better in MATH 104. SCC minimum English standard. Designed to develop the skills and introduce the concepts necessary for further study in mathematics, and facilitate the application of those skills and concepts to other fields. Included is a review of elementary set algebra; the algebra of functions; the real and complex numbers as a field; algebraic, exponential, and logarithmic functions; equations and inequalities of these functions; solution of linear systems, matrix algebra, and introduction to sequences and series. (CAN MATH 10) *Three hours lecture, one hour lab.*

MATH 4 5 Units

Pre-Calculus Mathematics (F/S-Day)

Prerequisites: A grade of "C" or better in MATH 103 and 104. NOTE: Not open to students who have completed MATH 51 or MATH 2 with a grade of "C" or better. Course Advisory: SCC minimum English standard.

A comprehensive study of the mathematics that is prerequisite to the calculus sequence. Topics included are the elementary functions and their graphs, methods of solving equations and systems of equations, applied problems that are relevant to calculus, analytic geometry and mathematical induction. (CAN MATH 16). *Five hours lecture, one hour lab.*

MATH 11 4 Units

Elementary Statistics (F/S-Day & Night)

Prerequisite: A grade of "C" or better in MATH 104. Course Advisory: Eligibility for ENGL 1. An introduction to elementary probability and statistics including the basic rules of probability, probability distributions, descriptive statistics, hypothesis testing, estimation, correlation and regression analysis. (CAN STAT 2). *Four hours lecture, one hour lab.*

Mathematics

MATH 12

3 Units

Mathematical Ideas

Prerequisite: A grade of "C" or better in MATH 104.
Course Advisory: SCC minimum English standard. An introduction to the diversity of mathematics through the examination of ideas from logic, sets, the numeration systems, and other topics from contemporary mathematics. The emphasis is on problem solving. (CAN MATH 2). *Three hours lecture.*

MATH 15

3 Units

Finite Mathematics (On demand)

Prerequisites: A grade of "C" or better in MATH 104.
Course Advisory: SCC minimum English standard. An introduction of finite mathematical methods including topics from set theory, matrix algebra, combinatorial analysis, and probability with application to statistics, linear programming, Markov chains, and game theory. Includes the application of these methods to business, biology, computer science, and the social sciences. (CAN MATH 12). *Three hours lecture, one hour lab.*

MATH 20

4 Units

Analytic Geometry and Calculus I (F-Day & Night; S-Day)

Prerequisites: Grades of "C" or better in MATH 2 and 51, or MATH 4. Not open to students who have successfully completed MATH 28 with a grade of "C" or better. *Course Advisory:* SCC minimum English standard. MATH 20, the first of the three-semester sequence in Analytic Geometry and Calculus for students majoring in mathematics, engineering, and most physical sciences, is the study of the differential and integral calculus of functions of one variable. Topics covered are limits, continuity, differentiation of algebraic and transcendental functions, applications of the derivative, definite and indefinite integrals, fundamental theorem of calculus, and applications of the definite integral. (CAN MATH 18) (MATH 20 & 21 = CAN MATH SEQ B) (MATH 20, 21, & 22 = CAN MATH SEQ C). *Five hours lecture, one hour lab.*

MATH 21

4 Units

Analytic Geometry and Calculus II (F-Day; S-Day & Night)

Prerequisite: A grade of "C" or better in MATH 20. *Course Advisory:* SCC minimum English standard. Math 21, the second of the three-semester sequence in Analytic Geometry and Calculus for students majoring in mathematics, engineering, and most physical sciences, continues the study of the differential and integral calculus of functions of one variable. Topics included are introduction to differential equations, computing area and volume, applications and techniques of integration, polar coordinates, infinite series, improper integrals, and L'Hopital's Rule. (CAN MATH 20) (MATH 20 & 21 = CAN MATH SEQ B) (MATH 20, 21, & 22 = CAN MATH SEQ C). *Five hours lecture, one hour lab.*

MATH 22

4 Units

Analytic Geometry and Calculus III (F/S-Day)

Prerequisite: A grade of "C" or better in MATH 21. *Course Advisory:* SCC minimum English standard. Math 22, the third of the three-semester sequence in Analytic Geometry and Calculus for students majoring in mathematics, engineering, and most physical sciences, is a study of three-dimensional analytic geometry, vectors and vector-valued functions, functions of several variables, the calculus of these functions, and vector analysis including Green's and Stokes' theorems. (CAN MATH 22) (MATH 20, 21, & 22 = CAN MATH SEQ C). *Four hours lecture, one hour lab.*

MATH 23

3 Units

Differential Equations (F/S-Day)

Prerequisite: A grade of "C" or better in MATH 21. *Course Advisory:* SCC minimum English standard. This course covers ordinary differential equations emphasizing linear differential equations and systems with applications to engineering, physics, and chemistry. Included are La Place transforms and power series methods of solution. (CAN MATH 24). *Four hours lecture.*

MATH 30

3 Units

Analytic Geometry and Calculus (F/S-Day & Night)

Prerequisite: A grade of "C" or better in MATH 104. *NOTE:* Not open to students who have completed MATH 20 or 28 with a grade of "C" or better. *Course Advisory:* SCC minimum English standard. MATH 30 and 31 is a two-semester sequence in analytic geometry and calculus for students majoring in business, biological, and social sciences. This is **not** the calculus course for students majoring in mathematics, engineering or the physical sciences. MATH 30 covers differential and integral calculus of a single variable. Topics include limits, continuity, derivatives of algebraic and transcendental functions and their applications, integrals and their applications, and plane analytic geometry. (CAN MATH 30) (MATH 30 & 31 = CAN MATH SEQ D). *Three hours lecture, one hour lab.*

MATH 31

3 Units

Analytic Geometry and Calculus (F/S-Day & Night)

Prerequisite: MATH 30 with a grade of "C" or better. *Course Advisory:* SCC minimum English standard. A continuation of the calculus of functions of one variable (MATH 30). Topics included are the fundamental theorem of calculus, techniques of integration, numerical methods of integration, functions of several variables, elementary differential equations, and infinite series. (CAN MATH 32) (MATH 30 & 31 = CAN MATH SEQ D) *Three hours lecture, one hour lab.*

MATH 40**3 Units****Introduction to Linear Algebra** (F/S-Day)

Prerequisite: A grade of “C” or better in MATH 20 or 30.

NOTE: A relatively high degree of mathematical maturity is required for this course. *Course Advisory:* SCC minimum English standard. An introduction to linear algebra, with a focus on finite dimensional real vector spaces. Topics include systems of linear equations and matrices, linear transformations, general vector spaces, eigenvectors and eigenvalues and associated eigenspaces, inner products and orthogonality. (CAN MATH 26). *Three hours lecture, one hour lab.*

MATH 51**3 Units****Trigonometry** (F/S-Day & Night)

Prerequisites: A grade of “C” or better in MATH 103 and 104. *Course Advisory:* SCC minimum English standard.

Presents the essentials of plane trigonometry to prepare students for subsequent studies in physics, calculus or related technical programs. Topics include definitions of the trigonometric functions and inverse trigonometric functions, solutions of triangles and applied problems, graphs, trigonometric identities and equations, and the trigonometric form of complex numbers. (CAN MATH 8). *Three hours lecture, one hour lab.*

MATH 52**1 Unit****Calculus Prep Boot Camp** (On demand)

Prerequisites: A grade of “C” or better in MATH 2 AND MATH 51, OR MATH 4. *Course Advisory:* Eligibility for ENGL 1.

An introduction to some of the ideas of calculus using a “hands on”, intuitive approach. The emphasis is on learning strategies, collaborative learning, and developing math study skills. This is a credit/no credit only course. *Two hours activity.*

MATH 60**.5 Unit****Introduction to the Use of Technology in Mathematics** (On demand)

An introduction to the functions of a scientific graphing calculator or a mathematical computer software package and their uses as tools in mathematical problem solving. The topics covered will be useful in current and subsequent math courses. Students may be required to have a specific model calculator as indicated by the instructor. The course is designed for students who are or will be enrolled in a math course that uses technology to solve problems from the course content outline. This is a credit/no credit only course. *One hour lecture per week (8 week course).*

MATH 102**5 Units****Elementary Algebra** (F/S-Day & Night)

Prerequisite: MATH 320 with a grade of “C” or better.

NOTE: Not open to students who have passed MATH 107. *Course Advisory:* SCC minimum English standard.

Introductory examination of the structure of the number system. Covers such topics as an introduction to set operations, the field axioms of the real numbers, and the properties of the whole number exponents. Emphasizes operations with fundamental expressions; solutions of first degree equations, inequalities and linear systems. Introduces absolute value, radical and quadratic equations, applied problems involving first and second degree equations in one variable, point-slope and slope-intercept equations of lines and their graphs, and the concepts of relations and functions. *Five hours lecture, one hour lab.*

MATH 103**3 Units****Plane Geometry** (F/S-Day & Night)

Prerequisite: A grade of “C” or better in MATH 102 or MATH 108. *Course Advisory:* SCC minimum English standard.

The study of Euclidean (plane) geometry through conjecture, proof, and problem solving. Topics include the mathematical relationships of angles, parallels, triangles, quadrilaterals, circles, and solids. Additionally, coordinate geometry transformations are covered. *Three hours lecture, one hour lab.*

MATH 104**5 Units****Intermediate Algebra** (F/S-Day & Night)

Prerequisite: A grade of “C” or better in MATH 102 or MATH 108. *Course Advisory:* SCC minimum English standard.

An extension of the fundamental algebraic concepts developed in elementary algebra. Additional topics include arithmetic operations on functions; composition of functions; basic graphing techniques; absolute value, exponential, logarithmic, quadratic, linear, and polynomial functions; equations of the second degree and their graphs; complex numbers; and systems of linear equations in two and three variables. *Five hours lecture, one hour lab.*

MATH 107**2.5 Units****Elementary Algebra, Part I** (F/S-Day & Night)

Prerequisite: MATH 320 with a grade of “C” or better.

Course Advisory: SCC minimum English standard.

Introductory examination of the structure of the number system. Covers such topics as an introduction to the concept of set operations, the field axioms of the real numbers, order of operations, properties of whole number exponents, variables, variable expressions, operations with monomials, definition of a polynomial, addition and subtraction of polynomials, linear equations, graphing linear equations, linear inequalities, and systems of linear equations, solutions of first degree equations and inequalities in one variable, and applications. A student must take MATH 108 to complete Elementary Algebra. Students who pass MATH 107 are not eligible for MATH 102. *Two and one-half hours lecture, one hour lab.*

Mathematics

MATH 108

2.5 Units

Elementary Algebra, Part II (F/S-Day & Night)

Prerequisite: A grade of "C" or better in MATH 107. *Course Advisory:* SCC minimum English standard. Covers such topics as multiplication and division of polynomials, factoring, solving quadratic equations by factoring, operations with rational expressions, simplifying rational expressions, solutions of equations containing rational expressions, roots, radicals and the quadratic formula, and introduction to functions. *Two and one-half hours lecture, one hour lab.*

MATH 112

3 Units

Algebraic Reasoning

Prerequisite: MATH 102 or MATH 108 with a grade of "C" or better. *Course Advisory:* SCC minimum English standard. Students will develop their ability to solve problems with algebraic reasoning. Topics including financial math, voting methods, apportionment, and probability have been chosen for their "real-world" applicability and usefulness. Additional topics may be picked by the instructor from various fields of mathematics such as geometry, linear programming, statistics, graph theory, set theory and number theory. *Three hours lecture, one hour lab.*

MATH 114

3 Units

Math for Health Occupations

Prerequisite: Math 102 or Math 108 with a grade of C or better. *Course Advisory:* SCC minimum English standard. This course is designed for A.S./A.A health occupation students to prepare them for math topics encountered in their chemistry, biology, and health occupation courses. Topics include metric system, dimensional analysis, counting techniques, linear models, exponential models, common logarithms, and simple logic. *Three hours lecture, one hour lab.*

MATH 304

1-3 Units

Arithmetic (Self-Paced) (F/S-Day & Night)

Prerequisite: None. *NOTE:* Students who have completed MATH 310 are not eligible to enroll in MATH 304. *May not be taken concurrently with MATH 310.* *Course Advisory:* SCC minimum English standard. An individualized course in basic mathematical computations designed to improve arithmetic skills and prepare the student for a pre-algebra level math course. The first unit is whole numbers and fractions. The second unit is decimals and percents. The third unit is simple geometry, basic statistics, and measurements. This is an open entry/open exit, credit/no credit only course. May be repeated to a maximum of 3 units, including initial enrollment. *Three hours lecture.*

MATH 310

3 Units

Arithmetic (Lecture)

Prerequisite: None. *NOTE:* Not open for credit to students who have completed 1 unit or more of MATH 304. *May not be taken concurrently with MATH 304.* *Course Advisory:* SCC minimum English standard. A course in basic mathematical computations designed to improve arithmetic skills and prepare the student for a pre-algebra level math course. Major topics include whole numbers, fractions, decimals, percents, simple geometry, measurement, and basic statistics. *Three hours lecture.*

MATH 320

3 Units

Pre-algebra

Prerequisite: Three units of credit in MATH 304, or a grade of "C" or better in MATH 310, or three units of credit in BUS 181 with a grade of "C" or better. *Course Advisory:* SCC minimum English standard. A course in pre-algebra designed to prepare the student for transition into a beginning algebra course. Major topics include operations on integers and rational numbers, the order of operations, introduction to variables, simplifying and evaluating expressions, solving basic linear equations, basic geometry, graphing, and application problems. *Three hours lecture, one hour lab.*

SPECIAL TOPICS

These courses, numbered 48, 98, 148 or 198 depending upon their transferability, are courses of contemporary interest centered on changing knowledge and important issues in the field. Announcements of Special Topics courses appear in the Schedule of Classes.