

# MATHEMATICS

## TRANSFER

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A complete two-year curriculum in mathematics is available for students who plan to obtain a bachelor's degree with a major or minor in mathematics, or related field of study or computer science. An Associate in Science degree is earned by those who complete BSC requirements.

Mathematical work is divided into two broad categories—theoretical and applied. Theoretical mathematicians advance mathematical science by developing new principles and new relationships between existing principles of math. In applied mathematics, new theories, techniques and approaches are developed to solve problems in business, government, engineering, and natural and social sciences.

Many mathematicians work in colleges and universities as teachers and in research and development. Industry employs many others in the areas of communications, chemical research, aircraft, computers and data processing.

Holders of bachelor's degrees may be qualified to enter related occupations such as statistician, actuary, computer programmer, systems analyst or economist.

Those planning a career in mathematics must have good reasoning ability, persistence and the ability to apply basic principles to new problems. They should also be good communicators since they often discuss problems with non-mathematicians.

High school students should study as much math as possible if they anticipate majoring in mathematics.

Students should refer to the catalog of the school where they plan to complete their bachelor's degree requirements and modify the following suggested curriculum if necessary.

**Career Possibilities:** Actuary, Statistician, Systems Analyst, Computer Programmer, Mathematics Teacher, Market Research Analyst, Tax Administrator, and research positions in any industry.

### SUGGESTED CURRICULUM FOR ASSOCIATE IN SCIENCE:

#### FRESHMAN

#### CREDITS

College Composition I-II (ENGL 110-120).....	6
Calculus I-II (MATH 165-166).....	8
Beginning Visual BASIC (CSCI 122) .....	3
Art and Humanities Electives .....	6
*Electives .....	3
Enrichment.....	2
Fundamentals of Public Speaking (COMM 110) .....	3
Total credits.....	31

#### SOPHOMORE

#### CREDITS

Calculus III (MATH 265).....	4
Introduction to Differential Equations (MATH 266).....	3
Probability & Statistics (MATH 220) .....	3
Social Science Electives .....	6
University Physics I-II (PHYS 251-252).....	8
University Physics I-II Lab (PHYS 251L-252L).....	2
Applied Linear Algebra (MATH 227).....	3
Total credits.....	29

\*Suggested Electives: Discrete Mathematics (MATH 208), Sociology 110, Psychology 111, Economics 105, Chemistry 121-122, 121L-122L, Computer Science I and II (CSCI 160-161).

## MATHEMATICS (MATH)

### ASC 092

### Beginning Algebra

F&S

3 credits

Fundamental skills in mathematics beginning with basic arithmetic and concluding with elementary algebra. Topics designed for those students with little or no mathematics background who wish to prepare for future study in mathematics. Will not satisfy the mathematics/science/ technology requirements at BSC and will not be accepted for credit at transfer institutions.

### MATH 102

### Intermediate Algebra

F&S SM

3 credits

Prerequisite: ASC 092, or qualifying ACT or COMPASS score. Review of basic algebra concepts including signed numbers, linear equations and inequalities, operations with algebraic fractions, exponents, radicals, systems of equations and inequalities, and the quadratic formula. May not be accepted for credit at transfer institutions. If students use this course to meet BSC general education requirements for the Associate in Arts degree, they must also take an additional 3 or more credit math/science/technology course to meet GERTA requirements.

<b>MATH 102L</b>	<b>Lab-Intermediate Algebra</b>	<b>F&amp;S</b>	<b>1 credit</b>
Concurrent registration in slower-paced MATH 102 is required.			
<b>MATH 103</b>	<b>College Algebra</b>	<b>F&amp;S SM</b>	<b>4 credits</b>
Prerequisite: Math 102, or qualifying ACT or COMPASS score. Solutions of linear and quadratic equations and inequalities, graphing functions and relations, polynomial and rational functions, systems of equations and inequalities, exponential and logarithmic functions.			
<b>MATH 104</b>	<b>Finite Mathematics</b>	<b>F&amp;S</b>	<b>3 credits</b>
Prerequisite: Math 102 or equivalent. Topics include functions, matrices, modeling, linear systems, linear programming, the simplex method, probability and statistics, and mathematics of finance are explored.			
<b>MATH 105</b>	<b>Trigonometry</b>	<b>F&amp;S</b>	<b>2 credits</b>
Prerequisites: Math 103. Functions of the general angle, graphs of the trigonometric functions, inverse functions, identities, trigonometric equations, and applications.			
<b>MATH 107</b>	<b>Pre-Calculus</b>	<b>F&amp;S</b>	<b>5 credits</b>
Prerequisite: Math 102, or qualifying ACT or COMPASS score. Selected topics from algebra and trigonometry with special emphasis on how they apply to the study of calculus. Topics covered include solutions of equations and inequalities, exponential, logarithmic, trigonometric and circular functions and their graphs.			
<b>MATH 146</b>	<b>Applied Calculus I</b>	<b>F&amp;S</b>	<b>3 credits</b>
Prerequisite: Math 103. Limits, continuity, differentiation, integration and differential equations are included with many examples drawn from business, economics, management, life and social sciences.			
<b>MATH 165</b>	<b>Calculus I</b>	<b>F&amp;S SM</b>	<b>4 credits</b>
Prerequisites: Math 107, or qualifying ACT or COMPASS score. Review of analytic geometry, limits and continuity, derivatives of functions of one variable with applications, L'Hopital's rule, antidifferentiation, the Fundamental Theorem of Calculus, numerical integration, trigonometric, exponential and logarithmic functions.			
<b>MATH 166</b>	<b>Calculus II</b>	<b>F&amp;S SM</b>	<b>4 credits</b>
Prerequisites: Math 165. Applications of the definite integral, areas, volumes of solids of revolution, surface areas, centroids, techniques of integration, parametric equations, polar equations, improper integrals, and tests of convergence.			
<b>MATH 208</b>	<b>Discrete Mathematics</b>	<b>Spring</b>	<b>3 credits</b>
Prerequisite: Math 165. Study of sets, relations, functions, graph theory, Boolean algebra, combinatorics, logic and induction with particular emphasis on their application to computer science.			
<b>MATH 210</b>	<b>Elementary Statistics</b>	<b>F&amp;S SM</b>	<b>3 credits</b>
Prerequisite: Math 102 or equivalent. An introduction to statistical methods of gathering, presenting and analyzing data. Topics include probability and probability distributions, confidence intervals, hypothesis testing, and linear regression and correlation.			
<b>MATH 220</b>	<b>Probability and Statistics</b>	<b>Spring</b>	<b>3 credits</b>
Prerequisite: MATH 166 or concurrent enrollment in MATH 166. Study of basic probability theory including probability functions for both discrete and continuous data. Sampling distributions, point and interval estimations, hypothesis testing and regression and correlation theory are also explored with emphasis placed on applications of each method.			
<b>MATH 227</b>	<b>Applied Linear Algebra</b>	<b>Fall</b>	<b>3 credits</b>
Prerequisite: MATH 166 or concurrent enrollment in MATH 166. Vectors and matrices, systems of linear equations and inequalities, mappings, determinants, linear programming and the simplex method.			
<b>MATH 265</b>	<b>Calculus III</b>	<b>F&amp;S</b>	<b>4 credits</b>
Prerequisites: Math 166. Vectors and the geometry of space, functions of several variables with applications, lines and planes in space, gradient vectors and directional derivatives, multiple integration with applications, divergence and curl, line and surface integrals.			
<b>MATH 266</b>	<b>Introduction to Differential Equations</b>	<b>Spring</b>	<b>3 credits</b>
Prerequisite: MATH 265 or department approval. Study of first and second order differential equations, linear differential equations, Laplace transforms, systems of equations, approximate solutions by numerical methods, eigenvalues and eigenvectors. Special emphasis is given to applications in a variety of fields.			
<b>MATH 277</b>	<b>Mathematics for Elementary Teachers I</b>	<b>F&amp;S</b>	<b>4 credits</b>
Prerequisite: Math 103 or consent of instructor. Sets, divisibility, primes, number systems, number bases other than ten, number theory and problem solving. This class is designed specifically for elementary education majors. Three hours of class and one two-hour lab per week.			
<b>MATH 294</b>	<b>Independent Study</b>		<b>1-3 credits</b>
Independent or directed study of special topics in mathematics. Department chairperson approval is required.			
<b>MATH 299</b>	<b>Special Topics in Mathematics</b>	<b>BD</b>	<b>1-3 credits</b>
Repeatable up to six semester hours. An examination of special topics in mathematics.			
<b>MATH 195-295</b>	<b>Service Learning</b>		<b>1-3 credits</b>
Maximum of six semester hours. Service learning may be accomplished by one of three methods: Joining a club that has a public service component, doing volunteer work at a non-profit organization, or taking a course that links public service with its curriculum.			

**MATH 197-297 Cooperative Education/Internship****F&S SM****1-3 credit hours each**

Repeatable up to a maximum of six hours. Work hours are arranged by employer, adviser and student. Progress is checked by oral and written reports from the employer. Periodic student-adviser conferences are required to discuss progress or problems. Students are required to submit an accounting of their experiences to their instructor. All co-op experiences are based on a satisfactory/unsatisfactory basis. Department chair approval is required.