MATHEMATICS

Mathematics is the study of quantity (Arithmetic), structure (Algebra), space (Geometry/Trigonometry), and change (Calculus). The department offers transfer level math courses for both liberal arts and B-STEM Majors. MATH 005 Modern Mathematics, MATH 010 Structure and Concepts 1, MATH 021 Introduction to Statistics, and MATH 044 College Algebra are the appropriate entry-level transfer courses for liberal arts majors. B-STEM (Business, Science, Technology, or Math) students will begin their course of study at either MATH 035 Precalculus A, MATH 070 Precalculus, or MATH 065 Calculus 1 depending on their high school preparations.

The most common career opportunities with a baccalaureate degree in mathematics include technical and financial industries, academics and research, computer and statistical fields (many career options require an advanced degree).

Transfer requirements in Mathematics are available in the Counseling Department. In all cases, students should consult with a counselor for specific transfer requirements.

To learn more about the mathematics sequence of classes, consult the Mathematics Sequence Map (https://catalog.cos.edu/placement-procedures/#mathplacementtext).

Contact Information

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Associate Degree

- Associate in Science in Mathematics for Transfer (AS-T) (https://catalog.cos.edu/areas-study/mathematics/associate-science-mathematics-transfer-as-t/)

For a complete list of courses and descriptions visit: COURSES (https://catalog.cos.edu/course-descriptions/)

MATH 005 Modern Mathematics **4unit(s)**
Hours: 4 Lecture/Discussion
Equivalent Course: MATH 105
An introduction to functional mathematical problem solving: statistics, probability, and finance. Other topics will vary.
Prerequisites: MATH 230 or equivalent college course with a minimum grade of C or eligibility as determined by COS placement procedures.

MATH 010 Structure and Concepts 1 **4unit(s)**
Hours: 4 Lecture/Discussion
This is a four-unit course focusing on the development of quantitative reasoning skills through in-depth, integrated explorations of topics in mathematics, including real number systems and subsystems. Emphasis is on comprehension and analysis of mathematical concepts and applications of logical reasoning. This course is intended for liberal studies students, though it can be used to meet general education requirements. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in Math 010 may access the supplemental learning assistance by enrolling in Math 400, an open entry/open exit non-credit course. (C-ID MATH120)
Prerequisites: MATH 230 or equivalent college course with a minimum grade of C or eligibility as determined by COS Placement Procedures (https://catalog.cos.edu/placement-procedures/).

MATH 011 Structures and Concepts 2 **4unit(s)**
Hours: 4 Lecture/Discussion
This course continues topics from MATH 010 and includes statistics, probability, geometry, measurement, transformations, congruence, and coordinate geometry. The emphasis of this course is in mathematical topics relevant to future elementary school teachers. This course is intended for liberal studies students, though it can be used to meet general education requirements. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 011 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course.
Prerequisites: MATH 010 or equivalent college course with a minimum grade of C.

MATH 021 Introduction to Statistics **4unit(s)**
Hours: 4 Lecture/Discussion
This is an introductory course in probability and statistics covering both descriptive and inferential statistics. Statistical software will be used throughout this course. Topics include measures of center and spread, probability, probability distributions, confidence intervals, hypothesis testing, regression, and correlation analysis. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 21 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/ open exit non-credit course. (C-ID: MATH110)
Prerequisites: MATH 230 or equivalent college course with a minimum grade of C or eligibility as determined by COS Placement Procedures (https://catalog.cos.edu/placement-procedures/).

MATH 035 Precalculus A **4unit(s)**
Hours: 4 Lecture/Discussion
College level course in algebra for majors in science, technology, engineering, and mathematics: polynomial, rational, radical, exponential, absolute value, and logarithmic functions; systems of equations; theory of polynomial equations; analytic geometry.
Prerequisites: MATH 044 or equivalent college course with a minimum grade of C or eligibility as determined by COS Placement Procedures (https://catalog.cos.edu/placement-procedures/).

MATH 044 College Algebra **4unit(s)**
Hours: 4 Lecture/Discussion
Equivalent Course: MATH 144
College level course in algebra: polynomial, rational, radical, exponential, absolute value, and logarithmic functions; systems of equations; theory of polynomial equations; analytic geometry.
Prerequisites: MATH 230 or equivalent college course with a minimum grade of C or eligibility based on COS Placement Procedures.

MATH 054 Precalculus B **4unit(s)**
Hours: 4 Lecture/Discussion
Equivalent Course: MATH 154
The study of trigonometric functions, their inverses and their graphs, identities and proofs related to trigonometric expressions, trigonometric equations, solving right triangles, solving triangles using the Law of Cosines and the Law of Sines, polar coordinates, and introduction to vectors. Students enrolled in MATH 054 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. (C-ID MATH851)
Prerequisites: MATH 035 or equivalent college course with a minimum grade of C or eligibility as determined by COS Placement Procedures (https://catalog.cos.edu/placement-procedures/).

MATH 065 Calculus 1 **4unit(s)**
Hours: 4 Lecture/Discussion
This course is the first course of a three semester calculus sequence. Topics include limits, continuity, techniques and applications of differentiation and integration of algebraic and transcendental functions, and the Fundamental Theorem of Calculus. The course is intended primarily for mathematics, physical science, and engineering majors. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 065 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. (MATH 065 + MATH 066 + MATH 067 course sequence is equivalent to the former MATH 075 + MATH 076 + MATH 077 course sequence). (C-ID MATH210)
Prerequisites: MATH 070 or [MATH 035 and MATH 054] or equivalent college course with a minimum grade of C or eligibility as determined by COS Placement Procedures (https://catalog.cos.edu/placement-procedures/).

MATH 066 Calculus 2 **4unit(s)**
Hours: 4 Lecture/Discussion
This is the second course of a three-semester calculus sequence. Topics include techniques of integration, improper integrals, applications of integration, infinite sequences and series, analytic geometry, polar and parametric equations, and many applications. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 66 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. (MATH 65 + 66 + 67 course sequence is equivalent to the former MATH 75 + 76 + 77 course sequence). (C-ID MATH220)
Prerequisites: MATH 065 or MATH 075 or equivalent college course with a minimum grade of C.

MATH 067 Calculus 3 **4unit(s)**
Hours: 4 Lecture/Discussion
This course is the third semester of the introductory calculus sequence. Topics covered include differentiation and integration of vector-valued functions, partial differentiation, directional derivatives, Lagrange Multipliers, multiple integration, centroids and centers of gravity, and Green's, Stoke's, and Divergence Theorem. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 067 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. (MATH 65 + 66 + 67 course sequence is equivalent to the former MATH 75 + 76 + 77 course sequence). (C-ID MATH230)
Prerequisites: MATH 066 or MATH 076 or equivalent college course with a minimum grade of C.

MATH 070 Precalculus **5unit(s)**
Hours: 5 Lecture/Discussion
This course is intended for students planning to take calculus and proceeds at an intense pace. Topics include: functions and graphs, applications of functions, exponential and logarithmic functions, trigonometric functions and analytic trigonometry, right triangle trigonometry, analytic geometry, and roots of polynomial equations. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 070 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. (C-ID MATH155)
Prerequisites: MATH 054 or equivalent college course with a minimum grade of C.

MATH 080 Linear Algebra **4unit(s)**
Hours: 4 Lecture/Discussion
This course develops the techniques and theory needed to solve and classify systems of linear equations. Solution techniques include row operations, Gaussian elimination, and matrix algebra. The course investigates the properties of vectors in two and three dimensions, leading to the notion of an abstract vector space. Vector space and matrix theory are presented including topics such as inner products, norms, orthogonality, eigenvalues, eigenspaces, and linear transformations. Selected applications of linear algebra are included. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 080 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. (C-ID MATH250)
Prerequisites: MATH 066 or MATH 076 or equivalent college course with a minimum grade of C.

MATH 081 Differential Equations **5unit(s)**
Hours: 5 Lecture/Discussion
An introduction of solving ordinary and partial differential equations including matrix solutions of linear systems, Laplace transforms, series solutions, separation of variables in partial differential equations, boundary value problems, and Fourier series. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 081 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. (C-ID MATH240)
Advisory on Recommended Preparation: MATH 080 or equivalent college course with a minimum grade of C.
Prerequisites: MATH 067 or equivalent college course with a minimum grade of C.

MATH 207 Career Ed and Technical Math **4unit(s)**
Hours: 4 Lecture/Discussion
A mathematics course designed to develop the computational skills needed in many Career and Technical programs. Topics include geometry, measurement, number sense, estimation, basic statistics, trigonometric functions, algebraic thinking, and problem-solving. This course is designed for students who are earning an associate's degree and who are not planning to transfer to a four-year institution.

MATH 230 Intermediate Algebra **4unit(s)**
Hours: 4 Lecture/Discussion
This is a four-hour-a-week intensive one-semester course in intermediate algebra covering: radical expressions and equations, quadratic equations, functions, logarithmic and exponential functions, and conic sections. This course satisfies the math requirement for an Associate's degree. Supplemental learning assistance is available for students to strengthen skills and to reinforce student mastery of concepts. Students enrolled in MATH 230 may access the supplemental learning assistance by enrolling in MATH 400, an open entry/open exit non-credit course. Approved for Distance Learning format.
Prerequisites: MATH 200 or equivalent college course with a minimum grade of C or eligibility as determined by COS Placement Procedures (https://catalog.cos.edu/placement-procedures/).

MATH 310 Support for Structures and Concepts 1 **1unit(s)**
Hours: 1 Lecture/Discussion
Co-requisite support for MATH 010 Structures and Concepts 1. This 1-unit course is intended to provide co-requisite support for students requiring remediation in mathematics while they are concurrently enrolled in MATH 010. Emphasis will be placed on prerequisite skills needed for success in this course as well as study skills and just in time review and remediation.
Corequisites: MATH 010 must be taken concurrently.

MATH 321 Support for Introduction to Statistics **2unit(s)**
Hours: 2 Lecture/Discussion
Co-requisite support for MATH 021 Introduction to Statistics. This 2-unit course is intended to provide co-requisite support for students requiring remediation in mathematics while they are concurrently enrolled in MATH 021. Emphasis will be placed on prerequisite skills needed for statistics as well as study skills, appropriate use of technology, and just in time review and remediation.
Corequisites: MATH 021 must be taken concurrently.

MATH 330 Support for Intermediate Algebra **2unit(s)**
Hours: 2 Lecture/Discussion
Co-requisite support for MATH 230 Intermediate Algebra. This 2-unit course is intended to provide co-requisite support for students requiring remediation in mathematics while they are concurrently enrolled in MATH 230. Emphasis will be placed on prerequisite skills needed for Intermediate Algebra as well as study skills, appropriate use of technology, and just in time review and remediation.
Corequisites: MATH 230 must be taken concurrently.

MATH 335 Support for Precalculus A **2unit(s)**
Hours: 2 Lecture/Discussion
Co-requisite support for MATH 035 Precalculus A. This 2-unit course is intended to provide co-requisite support for students requiring remediation in mathematics while they are concurrently enrolled in MATH 035. Emphasis will be placed on prerequisite skills needed for Precalculus A as well as study skills, appropriate use of technology, and just in time review and remediation.
Corequisites: MATH 035 must be taken concurrently.

MATH 344 Support for College Algebra **2unit(s)**
Hours: 2 Lecture/Discussion
Co-requisite support for MATH 144 College Algebra. This 2-unit course is intended to provide co-requisite support for students requiring remediation in mathematics while they are concurrently enrolled in MATH 144. Emphasis will be placed on prerequisite skills needed for College Algebra as well as study skills, appropriate use of technology, and just in time review and remediation.
Corequisites: MATH 144 must be taken concurrently.

MATH 400 Math Supplemental Learning Assistance **0unit(s)**
Hours: 3.1 Lab
Math Supplemental Learning Assistance is intended to strengthen students' mathematical skills and reinforce their mastery of concepts. This open entry/open exit class is linked with MATH 10, 11, 21, 54, 70, 65, 66, 67, 80, 81, 200, 230, and 360.

Mathematics

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