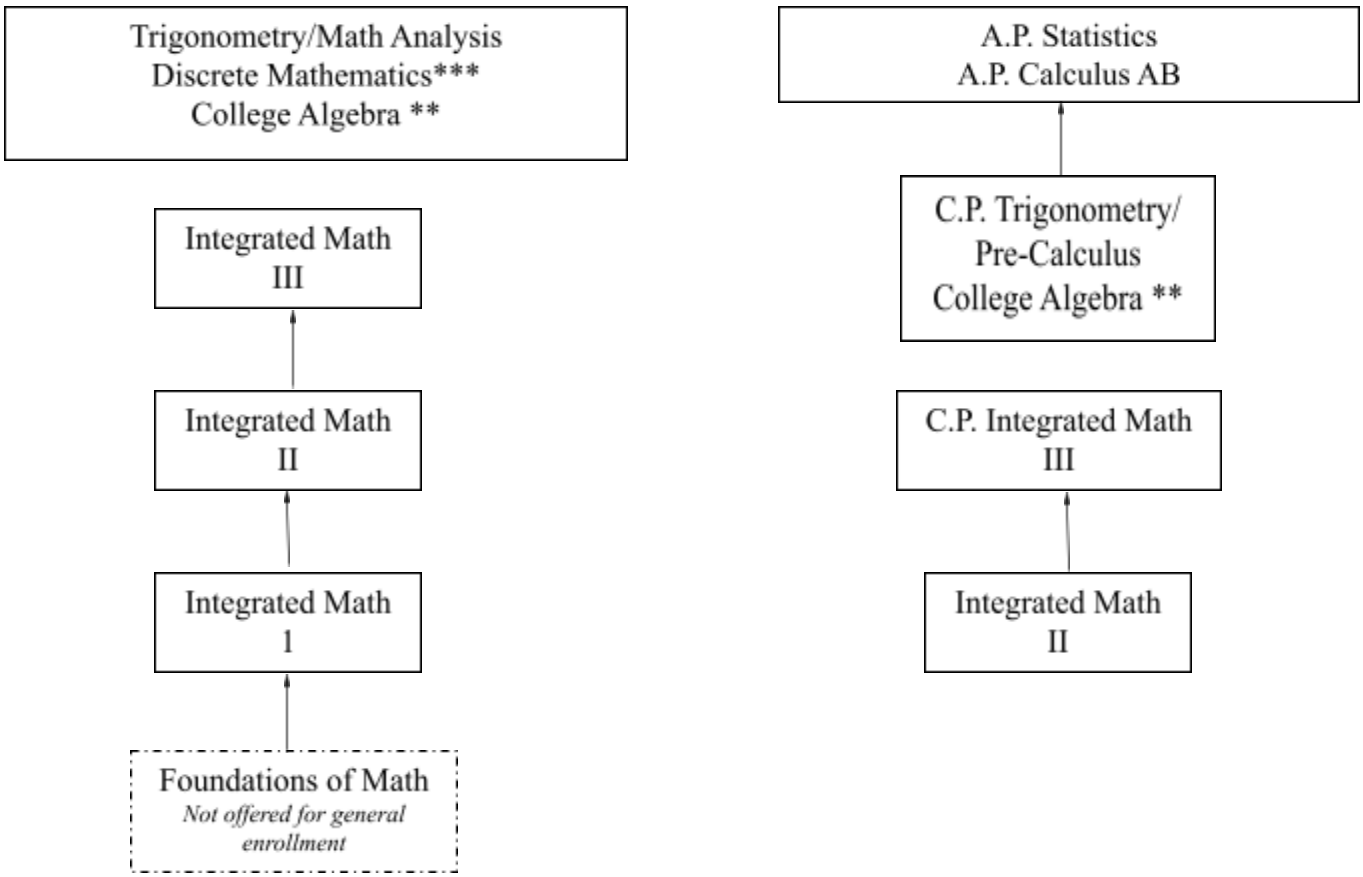
Mathematics



By teacher recommendation only
C.P. College Preparatory (Honors)

Mathematics Content Standards

1. **Number Sense, Properties, and Operations:** Number sense provides students with a firm foundation in mathematics. Students build a deep understanding of quantity, ways of representing numbers, relationships among numbers, and number systems. Students learn that numbers are governed by properties and understanding these properties leads to fluency with operations.
2. **Patterns, Functions, and Algebraic Structures:** Pattern sense gives students a lens with which to understand trends and commonalities. Students recognize and represent mathematical relationships and analyze change. Students learn that the structures of algebra allow complex ideas to be expressed succinctly.
3. **Data Analysis, Statistics, and Probability:** Data and probability sense provides students with tools to understand information and uncertainty. Students ask questions and gather and use data to answer them. Students use a variety of data analysis and statistics strategies to analyze, develop and evaluate inferences based on data. Probability provides the foundation for collecting, describing, and interpreting data.
4. **Shape, Dimension, and Geometric Relationships:** Geometric sense allows students to comprehend space and shape. Students analyze the characteristics and relationships of shapes and structures; engage in logical reasoning, and use tools and techniques to determine measurement. Students learn that geometry and measurement are useful in representing and solving problems in the real world as well as in mathematics.

A.P. Calculus AB

10th, 11th and 12th Grade
1.0 Credit
(Level II Grade Weight)

Following the College Board's suggested curriculum designed to parallel college-level calculus courses, AP Calculus AB provides students with an intuitive understanding of the concepts of calculus and experience with its methods and applications. These courses introduce calculus and include the following topics: elementary functions; properties of functions and their graphs; limits and continuity; differential calculus (including definition of the derivative, derivative formulas, theorems about derivatives, geometric applications, optimization problems, and rate-of-change problems); and integral calculus (including anti derivatives and the definite integral). The purpose of the course is to prepare students to take the A.P. Calculus exam in the spring of the year. Student must submit an application to take this course. **Prerequisite: C.P. Trigonometry/Pre-Calculus required with "C" or higher and instructor approval.**

Counseling Notes:

Students must purchase a Ti-84 Graphing calculator.

Course fee of $96.00 for the A.P. Examination.

All students taking A.P. Calculus AB will be required to take the Advanced Placement Examination in order to receive the weighted credit for this course.

An AP open house night will be hosted in the spring for all students who are registering for AP courses. Teachers will cover class expectations for parents/guardians and students during this time. The parent/guardian and student are required to sign a digital AP contract to enroll in this course. This course requires a teacher recommendation from the current teacher of the same content (if applicable). The teacher's name who is recommending you for the course is required on the AP contract.

A.P. Statistics

10th, 11th and 12th Grade
1.0 Credit
(Level II Grade Weight)

Following the College Board's suggested curriculum designed to parallel college-level statistics courses, AP Statistics courses introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploring data, sampling and experimentation, anticipating patterns, and statistical inference. **Prerequisite: Must be a senior with completion of CP Integrated Math 3 or a junior with completion of CP Trigonometry/Pre-Calculus or Trigonometry/Math Analysis with a C or better.**

Counseling Notes:

Students must purchase a Ti-84 Graphing calculator.

Course fee of $96.00 for the A.P. Examination.

All students taking A.P. Statistics will be required to take the Advanced Placement Examination in order to receive the weighted credit for this course.

An AP open house night will be hosted in the spring for all students who are registering for AP courses. Teachers will cover class expectations for parents/guardians and students during this time. The parent/guardian and student are required to sign a digital AP contract to enroll in this course. This course requires a teacher recommendation from the current teacher of the same content (if applicable). The teacher's name who is recommending you for the course is required on the AP contract.

 **Integrated I**

9th and 10th Grade

1.0 Credit

In Integrated Math 1, students will study linear and exponential equations and functions. Students will use linear regression and perform data analysis. They will also learn about geometry topics such as simple proofs, and congruence.

 **Integrated II**

9th, 10th and 11th Grade

1.0 Credit

In Integrated Math 2, students will study quadratic, absolute value, and other functions. Students will also explore polynomial equations and factoring, and probability and its applications. Coverage of geometry topics extends to polygon relationships, proofs, similarity, trigonometry, and transformations.

 **Integrated III**

10th, 11th and 12th Grade

1.0 Credit

In Integrated Math 3, students will expand their understanding of area and volume with geometric modeling, which students will apply throughout the course as they learn new types of functions. Students will study polynomial, radical, logarithmic, rational, and trigonometric functions. They will also learn how visual displays and statistics relate to different types of data and probability distributions.

 **C.P. (Honors) Integrated III**

9th, 10th, 11th and 12th Grade

1.0 Credit

In Integrated Math 3, students will expand their understanding of area and volume with geometric modeling, which students will apply throughout the course as they learn new types of functions. Students will study polynomial, radical, logarithmic, rational, and trigonometric functions. They will also learn how visual displays and statistics relate to different types of data and probability distributions. In this course there will be ongoing use of extension problems as components for acceleration of Integrated Math 3. Students will also complete a prerequisite Math Analysis/Trig curriculum to prepare for the next course.

Prerequisite: Completion of Integrated Math II with a "B" or better. Requests for exceptions to prerequisites will be judged on a case by case basis.

 **C.P. (Honors) Trigonometry/Pre-Calculus**

9th, 10th, 11th and 12th Grade

1.0 Credit

Pre-Calculus courses combine the study of Trigonometry, Elementary Functions, Analytic Geometry, and Math Analysis topics as preparation for calculus. Topics typically include the study of complex numbers; polynomial, logarithmic, exponential, rational, right trigonometric, and circular functions, and their relations, inverses and graphs; trigonometric identities and equations; solutions of right

and oblique triangles; vectors; the polar coordinate system; conic sections; mathematical induction; matrix algebra; sequences and series; and limits and continuity.

Prerequisite: Integrated Math 3 with "A" or higher OR C.P. Integrated Math 3 with "C" or higher and instructor approval. Requests for exceptions to prerequisites will be judged on a case-by-case basis.

** Students **cannot** receive credit for both Trigonometry/Math Analysis and C.P. Trigonometry/Pre-Calculus.

Discrete Mathematics

11th and 12th Grade
1.0 Credit

This class will cover topics that will reinforce previous learning while preparing students for success in a beginning college mathematics course. Students will be able to use and apply mathematical concepts and skills involving but not limited to: probability, statistics, informatics, discrete mathematics, and algebra. ***This course is available by teacher recommendation only.***

Trigonometry/Math Analysis

11th and 12th Grade
1.0 Credit

Covering topics of both Trigonometry and Math Analysis, these courses prepare students for eventual work in calculus. Topics typically include the study of right trigonometric and circular functions, inverses, and graphs; trigonometric identities and equations; solutions of right and oblique triangles; complex numbers; numerical tables; polynomial, logarithmic, exponential, and rational functions and their graphs; vectors; set theory; mathematical induction; matrix algebra; sequences and series; and limits and continuity.
Students **cannot receive credit for both Trigonometry/Math Analysis and C.P. Trigonometry/Pre-Calculus.
Prerequisite: Completion of Integrated Math 3 or C.P. Integrated Math 3.

Algebraic Literacy and MAT 121 College Algebra

12th Grade
1.0 HS credit
4 college credits (Front Range Community College)

Focuses on a variety of functions and the exploration of their graphs. Topics include: equations and inequalities, operations on functions, exponential and logarithmic functions, linear and non-linear systems, and an introduction to conic sections. The last five units of study will span the Spring semester. These units correspond with the Front Range Community College MAT 121 College Algebra. All students must register for the Front Range concurrent enrollment credit in the Spring semester. Successful students will be awarded 4 CE math credits for MAT 121. MAT 121 is a statewide Guaranteed Transfer (GT) class. This class will transfer to other public colleges and universities in Colorado. It is not guaranteed to transfer to out-of-state schools.

Prerequisite: Integrated Math 3 or CP Integrated Math 3. Recommended "B" or better in Integrated Math 3 or "C" or better in CP Integrated Math 3.

Students cannot receive credit for both Trigonometry/Math Analysis or C.P. Trigonometry/Pre-Calculus and Algebraic Literacy/MAT 121.

Teacher recommendation is required for enrollment.

Must enroll in both Algebraic Literacy (110030) and MAT 121 College Algebra (114000)

There are no fees to take this course.

Voyager Math I ***Does NOT meet CDHE- Math requirement***

9th, 10th, 11th, and 12th Grade

1.0 Credit

Voyager Math 1 is a year-long mathematics course for students who require specialized instruction at a modified grade level aligned with mathematics standards. Lessons incorporate conceptual understanding, procedural skills, fluency, and application. Must be approved by the SSS Department and the student must have an active IEP.

Foundations of Math I

9th, 10th, 11th, and 12th Grade

1.0 Credit

Foundations 1 is a year-long mathematics course for students who require specialized instruction at a modified grade level aligned with mathematics standards. Topics include properties of rational numbers (i.e., number theory), ratio, proportion, estimation, exponents and radicals, the rectangular coordinate system, sets and logic, formulas, and solving first-degree equations and inequalities. Must be approved by the SSS Department and the student must have an active IEP.

Foundations of Math II

9th, 10th, 11th, and 12th Grade

1.0 Credit

Foundations II is a year-long Pre-Math I course that increases students' foundational math skills and prepare them for Math I by covering a variety of topics, such as properties of rational numbers (i.e., number theory), ratio, proportion, estimation, exponents and radicals, the rectangular coordinate system, sets and logic, formulas, and solving first-degree equations and inequalities. Must be approved by the SSS department and the student must have an active IEP.