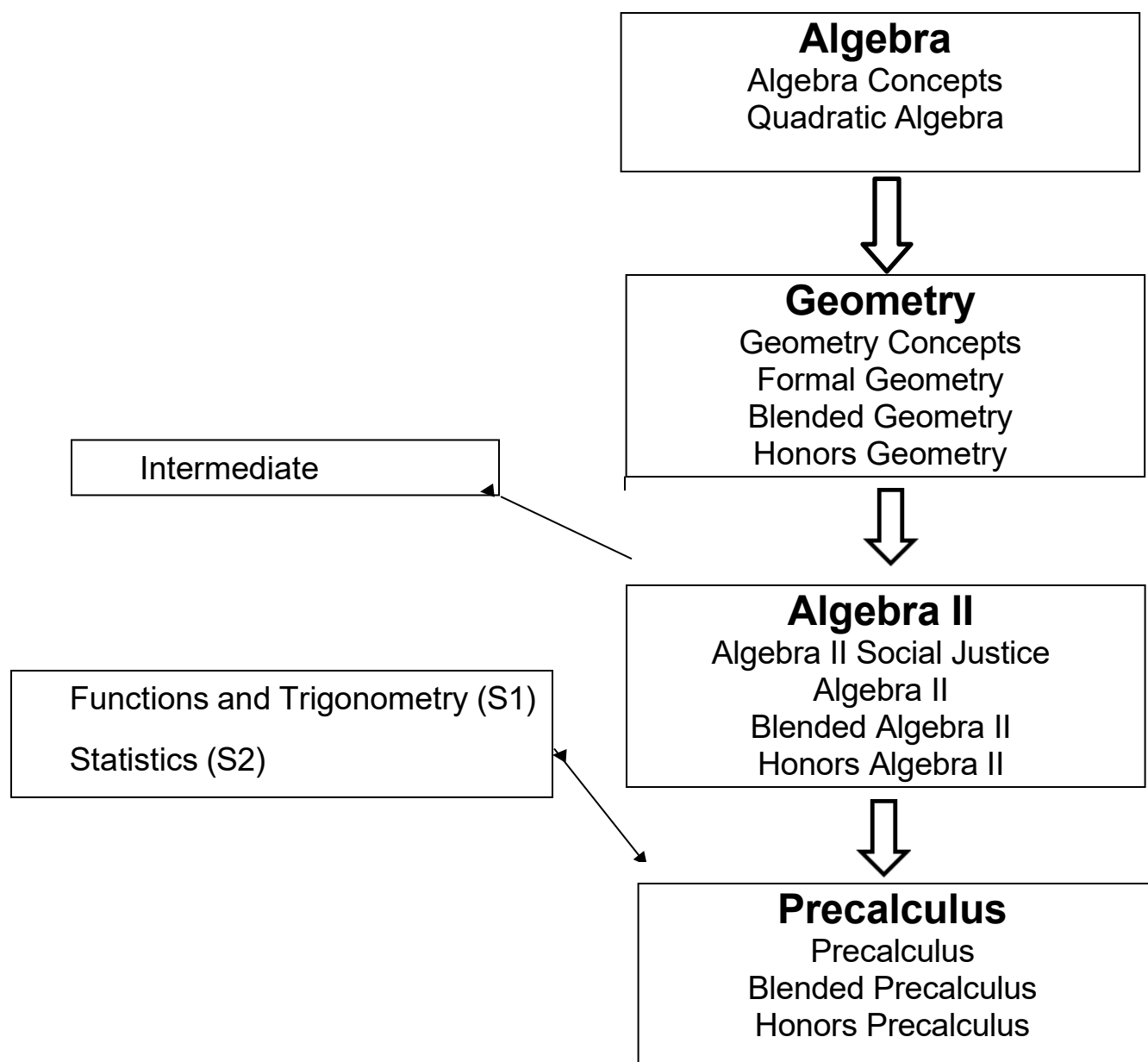# Mathematics

In grades 9-12, each student is required to complete three years of mathematics courses but are encouraged to take four years of mathematics courses. The beginning course is determined by placement test scores, teacher recommendation, and previous courses completed. Placement may be reevaluated based on academic progress. Below is a general guide to the course of study.

Algebra
Algebra Concepts
Quadratic Algebra

⬇

Geometry
Geometry Concepts
Formal Geometry
Blended Geometry
Honors Geometry

Intermediate

⬇

Algebra II
Algebra II Social Justice
Algebra II
Blended Algebra II
Honors Algebra II

Functions and Trigonometry (S1)

Statistics (S2)

⬇

Precalculus
Precalculus
Blended Precalculus
Honors Precalculus

Mathematics electives include Calculus and AP offerings.
Refer to specific page for more information:

Calculus: page 36
AP: page 38

Mathematics

Algebra Concepts (YR)
Two semesters, two credits.

Prerequisite: Middle school teacher recommendation, student's PreACT 8/9 test score.

This course is designed to give students the opportunity to take more time with algebraic concepts that may be difficult and to give students more individualized attention. A scientific calculator is required, TI-30 recommended.

Quadratic Algebra (YR)
Two semesters, two credits.

*Prerequisite: 8th grade Algebra that **DOES NOT** cover quadratics, polynomials, and rational functions*

This course is designed for those students who completed an Algebra course including linear and exponential functions. This course will complete the Algebra curriculum by covering quadratic, polynomial, rational, and radical functions. Additional topics may include probability, piecewise linear functions, absolute value functions, transformations of all functions, and basic trigonometry. A scientific calculator is required, TI-30 recommended.

Geometry Concepts (YR)
Two semesters, two credits.

Prerequisite: Algebra Concepts.

This course is designed to provide students more time with difficult geometric concepts and to give students more individualized attention. While the deductive character of Geometry is preserved, emphasis is shifted from formal proofs to practical application and strengthening algebraic skills. A scientific calculator is required, TI-30 recommended.

Formal Geometry (YR)
Two semesters, two credits.

Prerequisite: 8th grade Algebra that covers quadratics, polynomials, and rational functions, Quadratic Algebra, or successful completion of the summer supplemental Algebra course.

This course is designed to develop logic and reasoning skills as the student studies Euclidian Geometry, covering topics including congruence and similarity, properties of 2 and 3 dimensional figures, perimeter, area, and volume. Concentrated work with proof-writing follows a carefully sequenced development of the logic of geometry. A scientific calculator is required, TI-30 recommended.

Formal Geometry-Blended Online (YR)
Two semesters, two credits.

Prerequisite: 8th grade Algebra that covers quadratics, polynomials, and rational functions, Quadratic Algebra, or successful completion of the summer supplemental Algebra course.

This course follows the same curriculum as formal geometry but allows the student the opportunity to learn through a blended instructional experience. The class combines online resources with a classroom supported environment using a flexible assessment schedule. A scientific calculator is required, TI-30 recommended.

Mathematics

Intermediate Algebra (YR)
Two semesters, two credits.
Prerequisite: Geometry Concepts, Formal Geometry or Formal Geometry Blended Online.

This course offers an in-depth review of algebra with an introduction to many Algebra II topics including matrices, polynomials, logarithms, and exponential functions. The course is designed primarily to meet the needs of those students who need to strengthen their algebra skills before taking the Algebra II course. A TI-Nspire graphing calculator is required. *This course does not meet the core course requirements of the NCAA.*

Algebra II (YR)
Two semesters, two credits.
Prerequisite: Formal Geometry, Formal Geometry Blended Online or Intermediate Algebra with a grade of "C-" or higher for both semesters.

This course is designed to continue to strengthen algebra skills while introducing more advanced topics. This course emphasizes facility with algebraic expressions and forms, especially linear and quadratic forms, powers and roots, and functions based on these concepts. Students study absolute value, rational, logarithmic, trigonometric, polynomial, and other special functions both for their abstract properties and as tools for modeling real-world situations. A TI-Nspire graphing calculator is required.

Algebra II - Blended Online (YR)
Two semesters, two credits.
Prerequisite: Formal Geometry or Formal Geometry Blended Online with a grade of "B" or higher in both semesters.

This course follows the same curriculum as Algebra II but allows the student the opportunity to learn through a blended instructional experience. The class combines online resources with a classroom supported environment. This course is for students who are self-motivated and self-directed. The expectation is students will meet set test and quiz date deadlines. A TI-Nspire graphing calculator is required.

Algebra II - Social Justice (YR)
Two semesters, two credits.
Prerequisite: Formal Geometry, Formal Geometry Blended Online or Intermediate Algebra with a grade of "C" or higher for both semesters

This course covers traditional Algebra II material with a unique perspective using capstone assessment of each chapter
is an examination of topics or events from the world. Students will work mathematically to examine issues like minimum wage, the effects of COVID on the global population, the relationship between income and life expectancy, how design and forced perspective can be used to change the appearance of buildings and objects among other topics. Students will be expected to write responses and discuss questions applying their learnings to large questions using data and verifying its validity. They will leave each chapter of this course with a first-hand example to answer the question: "Where are we going to use this?". A TI-Nspire calculator is required.

Mathematics

Functions & Trigonometry (S1)   *One semester, one credit.*
Prerequisite: Successful completion of the full year of an Algebra II course.

This one-semester course offers a less rigorous alternative to precalculus and integrates graphic and algebraic concepts to study functions and real-world applications of functions. The course previews precalculus work in functions, logarithms, finance, and trigonometry. A TI-Nspire graphing calculator is required.

Statistics (S2)   *One semester, one credit.*
Prerequisite: Successful completion of the full year of an Algebra II course.

This one-semester course offers an in-depth introduction to the field of statistics. Students will learn how to organize, interpret, and display numerical data. Data will be analyzed using statistical tools such as the normal distribution, the binomial distribution, and measures of center and spread. Students will also be introduced to probability theory as it relates to statistics. A TI-Nspire graphing calculator is required.

Precalculus (YR)   *Two semesters, two credits.*
Prerequisite: Successful completion of a full year of an Algebra II course or Functions and Trigonometry and Statistics (FST) with a grade of "B" or higher.

This course is intended for students with a strong background in Algebra II, trigonometry, and geometry. Attention is focused on expanding the depth and breadth of concepts, both old and new, as well as on the refinement of manipulative skills. The course provides work in varied mathematical areas such as functions, logarithms, trigonometry, sequences, combinations, probability, and conics. An emphasis is placed on integration and application of concepts. A TI-Nspire graphing calculator is required.

Precalculus-Blended Online (YR)   *Two semesters, two credits.*
Prerequisite: An Algebra II course with a grade of "B" or higher in both semesters.

This course follows the same curriculum as Precalculus but allows the student the opportunity to learn through a blended instructional experience. The class combines online resources with a classroom supported environment. This course is for students who are self-motivated and self-directed. The expectation is students will meet set test and quiz date deadlines. A TI-Nspire graphing calculator is required.

Calculus (YR)   *Two semesters, two credits.*
Prerequisite: Precalculus or Blended Precalculus with a grade of "C+" or higher in both semesters or Honors Precalculus with a grade of "C" or higher in both semesters.

This course is intended to give students a thorough study of differentiation and integration among other topics covered in a first semester college calculus course. The course is designed to allow more time to explore difficult concepts and to give students, who will need to take calculus in college, a head start. It is not intended to prepare students for the AP Calculus test nor are students expected to take the AP Calculus test. A TI-Nspire graphing calculator is required.

Honors

Honors Geometry (YR)
Two semesters, two credits.

Prerequisite: Quadratic Algebra or 8th grade algebra covering quadratics, polynomials, and rational functions with a grade of "A" in both semesters.

Honors Geometry provides an in-depth and very challenging study of geometry at an accelerated pace including rigorous proof and logic-based problems. Strong algebra skills are essential. This course is designed to develop logic and reasoning skills as the student studies topics such as congruence and similarity, properties of 2 and 3 dimensional figures, perimeter, area, and volume. Concentrated work with proof-writing follows a carefully sequenced development of the logic of geometry. A scientific calculator is required, TI-30 recommended.

Honors Algebra II (YR)
Two semesters, two credits.

Prerequisite: Formal Geometry, Blended Geometry with a grade of "A" in both semesters or Honors Geometry with a grade of "B-"or higher in both semesters.

This course provides an in-depth and very challenging study of advanced algebra at an accelerated pace. Strong algebra skills are essential. This course is designed to continue to strengthen algebra skills while introducing more advanced topics. This course emphasizes facility with algebraic expressions and forms, especially linear and quadratic forms, powers and roots, and functions based on these concepts. Students study absolute value, rational, logarithmic, trigonometric, polynomial, and other special functions both for their abstract properties and as tools for modeling real-world situations. A TI-Nspire graphing calculator is required.

Honors Precalculus (YR)
Two semesters, two credits.

Prerequisite: Algebra II with a grade of "A" in both semesters or Honors Algebra II with a grade of "B-"or higher in both semesters.

This course provides an in-depth and very challenging study of Precalculus at an accelerated pace. Strong algebra skills are essential. This course is intended for students with a strong background in advanced algebra, trigonometry, and geometry. Attention is focused on expanding the depth and breadth of concepts, both old and new, as well as on the refinement of manipulative skills. The course provides work in varied mathematical areas such as functions, logarithms, trigonometry, sequences, combinations, probability, and conics. An emphasis is placed on integration and application of concepts. A TI-Nspire graphing calculator is required.

Mathematics

Advanced Placement

AP Calculus AB (YR)
Two semesters, two credits.

Prerequisite: Precalculus or Precalculus Blended Online with a grade of "A" in both semesters or Honors Precalculus with a grade of "B" or higher in both semesters

This is a rigorous course designed to reinforce and utilize the content of previous courses while acquiring the skills of differentiation and integration and an in-depth application of these concepts. This is material that would be included in a first semester calculus sequence at the college level. The course includes, but is not limited to, all topics in the current Advanced Placement Calculus AB curriculum. A TI-Nspire graphing calculator is required.

AP Calculus BC (YR)
Two semesters, two credits.

Prerequisite: AP Calculus AB with a grade of "B" or higher in completed AP Calculus AB.

This rigorous course covers the same differential and integral calculus topics that are included in the AP Calculus AB curriculum, plus many additional topics including polynomial approximations and series. This is material that would be included in a second semester calculus sequence at the college level. The course includes, but is not limited to, all topics in the current AP Calculus BC curriculum. A TI-Nspire graphing calculator is required.

AP Statistics (YR)
Two semesters, two credits.

Prerequisite: Completion of two semesters of one of the following courses with the required grade indicated
Algebra II with a grade of "A" in both semesters.
FST with a grade of "A-" or higher. Precalculus with a grade of "C+" or higher.

This is a rigorous writing intensive course designed to teach students how to organize, display, and interpret data. An emphasis will be placed on the four major themes of the AP Statistics curriculum: exploring data, sampling, and experimental design, anticipating patterns with probability and simulation, and statistical inference. A TI-Nspire graphing calculator is required.