

MATHEMATICS CURRICULUM

For additional course description information, please visit the Math department page at: <http://sabinohighschool.weebly.com/mathematics.html>

Sabino's Mathematics Department offers programs to meet the educational and career needs of all students. Students may take Geometry as Freshmen if they have completed High School Credit Algebra in middle school. The Arizona state universities (U of A, ASU, and NAU) require 4 math courses including Algebra, Geometry, Intermediate Algebra, and Pre-Calculus/Trigonometry for admission. The state of Arizona now has a 4-year math requirement including Algebra, Geometry, Intermediate Algebra and a fourth year course at at least the Intermediate Algebra level. As of the 2014-15 school year students are still required to pass the AIMS test for graduation. This test primarily covers Algebra and Geometry. Summer school is strongly encouraged for students who have struggled in these courses.

The new PARCC assessment will be introduced in the 2014-2015 school year as well and it will take the form of end-of-course assessments. The PARCC measures the Arizona College and Career Readiness Standards (ACCRS). It is fundamentally different from AIMS. While AIMS was administered to students starting in their Sophomore year, PARCC will be given to all students at the end of each of their math courses. Unlike AIMS which allows NO calculators, PARCC has the expectation that students will be comfortable using tools like calculators appropriately to help them understand mathematical situations. The questions in AIMS measure a basic level of understanding and mastery. PARCC sets this bar much higher.

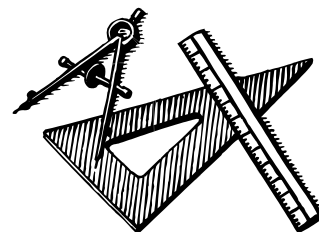
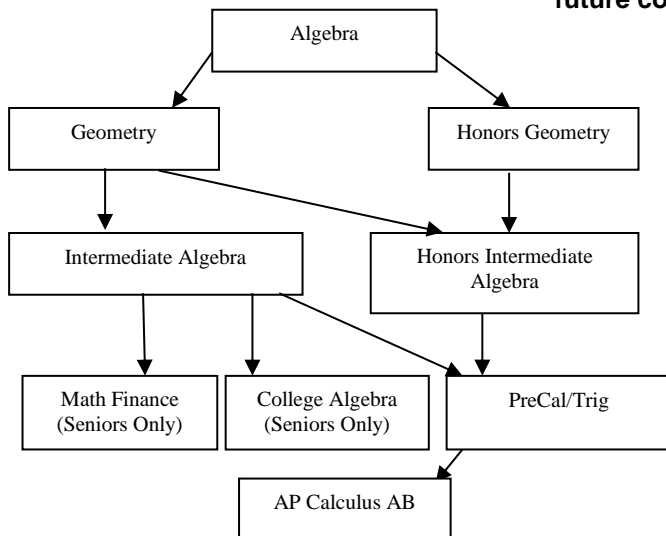
In addition to the ACCRS, PARCC has the expectation that students will be proficient in the 8 Mathematical Practices (MP)

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

Technology use in math classes: Students are expected to use appropriate tools strategically. This means they will have access to graphing calculators as early as Algebra 1 now, but will be discouraged from using the calculator as a crutch to do their thinking for them. These tools will be used for explorations and to enrich student understanding in class. As long as AIMS is required, student access to calculators on assessments will be limited in lower level classes. In Geometry, students will use Geogebra to both explore concepts as well as to demonstrate their mastery with topics. In upper level classes, graphing calculators are expected and will be used consistently. The Sabino Math Department uses **TI-83, TI-84 and TI-84 Plus** graphing calculators by Texas Instruments and suggests students use them. TI-89 calculators are **not** recommended because their advanced capabilities often make them not accepted by testing agencies.

Students who do not pass a math class are **required** to make up the failed math class (credit) outside of the regular school day. Summer school is **strongly** recommended to remain on track for graduation.

The following flowchart shows the sequence of math courses indicating which courses are prerequisites to future courses.



MATHEMATICS CURRICULUM

ALGEBRA

Graduation Requirements: Math

Open to Grades: 9

Course Codes: 13001 / 13002

Description: This class is an introduction to basic algebra. It includes translating written statements into algebraic expressions, linear equations, linear inequalities, graphing, integer exponents, and polynomials. Also includes factoring, literal equations, square roots, quadratic equations, systems of equations, and optional topics.

Homework: Daily, up to 1 hour.

Prerequisites: None

Length of Course: 2 Semesters

Note:

GEOMETRY

Graduation Requirements: Math

Open to Grades: 9 – 10

Course Codes: 13321 / 13322

Description: Geometry is designed for students who successfully completed a high school algebra course and are prepared to learn the concepts and content of what is taught in a "traditional" high school geometry course, such as Euclid's Elements. Students who earn a "D" or lower in Algebra are strongly encouraged to retake Algebra during the summer before taking this class, since much of the content explored is through an Algebraic lens. This course reaches beyond its traditional nature to include new ACCRS (Arizona College & Career Readiness Standards) topics like proofs of triangle congruence using transformations, explorations of inscribed and circumscribed circles, as well as a more robust trigonometry section including now six trigonometric functions, Law of Sines, and Law of Cosines.

Homework: Daily, up to 1 hour. Students will complete a project each semester in addition to regular class work.

Prerequisites: Algebra

Length of Course: 2 Semesters

Note:

HONORS GEOMETRY

Graduation Requirements: Math

Open to Grades: 9 – 10

Course Codes: 13371 / 13372

Description: Honors Geometry is taught at both an accelerated pace and covers more topics than the non-Honors Geometry course. While both cover the ACCRS, the content and approach to learning it is also more abstract and more formal than the non-Honors class. Problem solving and logical reasoning skills are emphasized in Honors Geometry through an extensive use of formal geometric proof and multi-step exercises. This course is designed for students who plan to take Pre-Calculus or Calculus in high school.

Homework: Daily, up to 1 hour. Students will complete a project each semester in addition to regular class work.

Prerequisites: Algebra & Teacher Rec.

Length of Course: 2 Semesters

Note:

INTERMEDIATE ALGEBRA

Graduation Requirements: Math

Open to Grades: 10 – 12

Course Codes: 13411 / 13412

Description: This course extends and applies the concepts of algebra and geometry, and prepares students for enrollment in Precalculus. This serves as one of the math requirements for entrance at the college/university level. The curriculum includes lines in the plane, systems of linear equations, inequalities, polynomial, rational expressions and equations, and radical expressions and equations. Students will use analytical, numerical, graphical, and verbal approaches to solving problems. Also included are quadratic equations, literal equations, exponential, and logarithmic functions, sequences and series and optional topics. Students who earn a "D" in class are encouraged to repeat the course during summer school.

Homework: Approximately 1 hour per day.

Prerequisites: Algebra; Geometry

Length of Course: 2 Semesters

Note:

HONORS INTERMEDIATE ALGEBRA

Graduation Requirements: Math

Open to Grades: 10 – 11

Course Codes: 13421 / 13422

Description: A fast paced third-year course that extends the concept of algebra and geometry, and prepares students for enrollment in Pre Calculus. This serves as one of the math requirements for entrance at the college/university level. The curriculum includes topics from Intermediate Algebra, but is at a higher level of rigor. Students will use analytical, numerical, graphical, and verbal approaches to solving problems. Topics include higher degree equations, functions, systems and graphs, and trigonometric functions.

Homework: 1 – 1 ½ hours per day.

Prerequisites: An "A" in Algebra and Geometry & Teacher Rec.

Length of Course: 2 Semesters

Note:

MATHEMATICS CURRICULUM

MATHEMATICAL FINANCE

Graduation Requirements: Math

Prerequisites: Algebra, Geometry, and Intermediate Algebra

Open to Grades: 12

Length of Course: 2 Semesters

Course Codes: 13108 / 13109

Note: Teacher approval required

Description: This course will enable students to implement the decision-making skills they must apply and use to become knowledgeable consumers, savers, investors, users of credit, money managers, citizens, and members of a 21st century global workforce and society. Students will incorporate concepts, skills, and critical thinking from mathematics, language arts, social studies, and applied technology. Using techniques such as problem solving, reasoning, simulation, and direct application of these concepts, students will be empowered to become informed citizens of the 21st century. Students will explore the real number system, linear equations and inequalities, quadratics, polynomials, exponential equations, logarithmic equations, data, spreadsheets, scatter plots, regressions, modeling, and much more and apply these to real-world financial situations.

Homework: 1 ½ hours per day and semester projects.

COLLEGE ALGEBRA

Graduation Requirements: Math

Prerequisites: Algebra, Geometry, and Intermediate Algebra

Open to Grades: 12

Length of Course: 2 Semesters

Course Codes: 13012 / 13013

Note:

Description: This course begins with a brief review of Intermediate Algebra concepts then progresses to a rigorous, in-depth study of college level algebra. Topics include solving linear, quadratic, rational, absolute value, polynomial, exponential and logarithmic equations. Also included, is the study of functions, their characteristics, and their graphs. Additional topics include systems of equations, systems of inequalities, matrices and determinants, sequences and series. Graphing calculators are used in this course.

Homework: 1 ½ hours per day and semester projects.

PRE-CALCULUS / TRIGONOMETRY

Graduation Requirements: Math or Elective

Prerequisites: Intermediate Algebra and Geometry

Open to Grades: 10 – 12

Length of Course: 2 Semesters

Course Codes: 13731 / 13635

Note:

Description: Pre-Calculus: This course is designed to rigorously strengthen and continue the study of algebra at an advanced level. It provides an in-depth study of advanced mathematics topics, which include trigonometry, equations and inequalities in one or more variable (both linear and quadratic), and an extended understanding of functions, with heavy emphasis in graphing. **Trigonometry:** This course provides an in-depth study of the basic trigonometric functions their interrelationships, and their applications, with emphasis on the productive use of the graphing calculator and other technology. Topics studies include the solving triangles, vectors, trigonometric identities, graphical methods, logarithms, inverse functions, and complex variables. This class is recommended for students with a strong understanding of Intermediate Algebra concepts.

Homework: Approximately 1 – 1 ½ hours per day.

AP CALCULUS A/B

Graduation Requirements: Math or Elective

Prerequisites: Pre-Calculus/Trigonometry

Open to Grades: 11 – 12

Length of Course: 2 Semesters

Course Codes: 13905 / 13914

Note: Students are expected to remain in the class the entire year and take the AP exam in May.

Description: This course uses the concepts of analytic geometry and provides a rigorous in-depth study of the first two semesters of differential and integral calculus. Topics included in the course are limits, continuity, differentiation, and the integration of algebraic and basic trigonometric functions. Throughout the course, understanding is stressed over memorization. Practical problems and applications are studies to help students appreciate the calculus as a problem-solving tool. **Students are expected to take the AP Calculus A/B Exam.**

Homework: 1 – 1 ½ hours per day.