

# High School Mathematics Pathways 2022-2023

Agua Fria High School District

Traditional Pathway			
9 <sup>th</sup> grade	10 <sup>th</sup> grade	11 <sup>th</sup> grade	12 <sup>th</sup> grade
Algebra I Algebra Extensions (taken concurrently with Alg I)*	Geometry	Algebra II	Algebra III Financial Literacy Coding II**

Honors Pathway			
9 <sup>th</sup> grade	10 <sup>th</sup> grade	11 <sup>th</sup> grade	12 <sup>th</sup> grade
Honors Algebra I	Honors Geometry	Honors Algebra II	Honors Pre-Calculus AP Statistics Coding II**

\***Algebra Extensions:** Students needing additional support in Algebra I will be concurrently enrolled in Algebra Extensions during their 9<sup>th</sup> grade year. The course does not count as a required math credit toward graduation. Successful completion will provide students with elective credit.

\*\***Coding II:** Counts as EITHER a math or CTE credit, depending on student needs (Prerequisite: Coding I)

**In order to reach college level AP courses (i.e., AP Calculus), students must follow one of our accelerated pathways:**

Accelerated Pathway #1 – Double Block Option #1			
9 <sup>th</sup> grade	10 <sup>th</sup> grade	11 <sup>th</sup> grade	12 <sup>th</sup> grade
Honors Algebra I	Honors Geometry	Accelerated Algebra II/Pre-Calculus (Double Block)	AP Calculus AB AP Statistics

Accelerated Pathway #2 – Double Block Option #2			
9 <sup>th</sup> grade	10 <sup>th</sup> grade	11 <sup>th</sup> grade	12 <sup>th</sup> grade
Honors Algebra I AND Honors Geometry (taken concurrently)	Accelerated Algebra II/Pre-Calculus (Double Block)	AP Calculus AB	AP Calculus BC/Calculus III AP Statistics

Accelerated Pathway #3 – Fast Track Algebra I				
8 <sup>th</sup> grade	9 <sup>th</sup> grade	10 <sup>th</sup> grade	11 <sup>th</sup> grade	12 <sup>th</sup> grade
Algebra I (Fast Track)	Honors Geometry	Accelerated Algebra II/Pre-Calculus (Double Block)	AP Calculus AB	AP Calculus BC/Calculus III AP Statistics

Accelerated Pathway #4 – Summer Geometry					
8 <sup>th</sup> grade	Summer	9 <sup>th</sup> grade	10 <sup>th</sup> grade	11 <sup>th</sup> grade	12 <sup>th</sup> grade
Algebra I (Fast Track)	Honors Geometry (Online)	Accelerated Algebra II/ Pre-Calc (Double Block)	AP Calculus AB	AP Calculus BC/Calc III	AP Statistics

If you have any questions, please contact Joe Werner (AFUHSD Math Content Specialist) at [jwerner@aguafria.org](mailto:jwerner@aguafria.org)

## AFUHSD Course Descriptions 2022-2023

GRADUATION REQUIREMENT: THE DISTRICT'S REQUIREMENT IN MATH IS FOUR CREDITS. ARIZONA BOARD OF REGENTS REQUIRES FOUR (4) MATH CREDITS, ONE OF WHICH IS AT A LEVEL HIGHER THAN ALGEBRA II. An asterisk \* indicates that there is an online version of this course available. Online course numbers/descriptions are in the ONLINE section of this course description book. PLEASE SEE YOUR COUNSELOR FOR POST-SECONDARY COURSE PLANNING.

### **MAT4000 ALGEBRA EXTENSION A/B**

Algebra Extension utilizes a research based math intervention curriculum designed to provide targeted support for students to cross the bridge from arithmetic to algebra. This course will both support and extend the work students do in Algebra I through the development of mathematical habits of the mind. Algebra Extension is aligned with the tiers of the Response to Intervention model. Placement into this course will be based upon District mathematics assessments. **Students will receive 1.0 elective credit upon completion of this two semester course (0.5 credit each semester). Students will be co-enrolled in Algebra I.**

### **MAT4010 ALGEBRA IA/ALGEBRA IB\***

This standards-based Algebra I course extends the mathematics that students learned in the middle grades. The course is designed to deepen and extend understanding of linear and exponential relationships by contrasting them with each other and by applying linear models to data that exhibit a linear trend. Students will engage in methods for analyzing, solving, and using quadratic functions. This course was designed to address the requirements of both the Arizona College and Career Ready Practice and Content Standards. **Students will receive 1.0 credit Mathematics upon completion of this two semester course (0.5 credit each semester).**

### **MAT4020 HONORS ALGEBRA IA/HONORS ALGEBRA IB**

This standards-based Algebra I course extends the mathematics that students learned in the middle grades. The course is designed to deepen and extend understanding of linear and exponential relationships by contrasting them with each other and by applying linear models to data that exhibit a linear trend. Students will engage in methods for analyzing, solving, and using quadratic functions. This Honors course will aim to develop pre-AP skills by requiring students to present their knowledge in original and innovative ways. This course was designed to address the requirements of both the Arizona College and Career Ready Practice and Content Standards. **Students will receive 1.0 in Honors Mathematics upon completion of this two semester course (0.5 credit each semester).**

### **MAT4030 GEOMETRY A/B\***

This standards-based Geometry course formalizes and extends students' geometric experiences from the middle grades. Students will: establish criteria for congruence of triangles based on rigid motions; establish criteria for similarity of triangles based on dilations and proportional reasoning; informally develop explanations of circumference, area and volume formulas; apply the Pythagorean Theorem to the coordinate plane; prove basic geometric theorems; and extend work with probability. This course was designed to address the requirements of both the Arizona College and Career Ready Practice and Content Standards. **Students will receive 1.0 credit in Mathematics upon completion of this two semester course (0.5 credit each semester).** Prerequisite or corequisite: Algebra I A/B or Honors Algebra IA/B

### **MAT4040 HONORS GEOMETRY A/B**

This standards-based Geometry course formalizes and extends students' geometric experiences from the middle grades. Students will: establish criteria for congruence of triangles based on rigid motions; establish criteria for similarity of triangles based on dilations and proportional reasoning; informally develop explanations of circumference, area and volume formulas; apply the Pythagorean Theorem to the coordinate plane; prove basic geometric theorems; and extend work with probability. Additional Honors work will have students apply trigonometry to general triangles, explain volume formulas and understand and apply

theorems about circles. This course was designed to address the requirements of both the Arizona College and Career Ready Practice and Content Standards. **Students will receive 1.0 credit in Honors Mathematics upon completion of this two semester course.** Prerequisite or corequisite: Algebra IA/B or Honors Algebra IA/B

**MAT4050 ALGEBRA II A/ALGEBRA II B\***

This standards-based Algebra II course builds on the students' work with linear, quadratic, and exponential functions and extends their repertoire of functions to include polynomial, rational and radical functions. Students work closely with the expressions that define the functions, and continue to expand and hone their abilities to model situations and to solve numbers and solving exponential equations using the properties of logarithms. This course was designed to address the requirements of both the Arizona College and Career Ready Practice and Content Standards. **Students will receive 1.0 credit in Mathematics upon completion of this two semester course (0.5 credit each semester).** Prerequisite: Algebra IA/IB or Hon Alg I A/B or Geo A/B (Geometry can also be corequisite)

**MAT4060 HONORS ALGEBRA II A/HONORS ALGEBRA II B**

This standards-based Algebra II course builds on the students' work with linear, quadratic, and exponential functions and extends their repertoire of functions to include polynomial, rational and radical functions. Students work closely with the expression that define the functions and continue to expand and hone their abilities to model situations and to solve numbers and solving exponential equations using the properties of logarithms. Additional Honors work will have students use complex numbers in polynomial identities and equations, rewrite rational expressions, extend the domain of trigonometric functions using the unit circle and prove and apply trigonometric identities. This course was designed to address the requirements of both the Arizona College and Career Ready Practice and Content Standards. **Students will receive 1.0 credit in Honors Mathematics upon completion of this two semester course (0.5 credit each semester).** Prerequisite: Algebra IA/IB or Hon. Alg. IA/B or Geo. A/B (Geometry can also be a corequisite)

**MAT 4230 ALGEBRA III A/B\***

This course is designed to prepare students for a collegiate level Algebra course. The purpose of this course is to reinforce mathematical symbols, operations, functions and graphing concepts necessary to be successful in higher math courses. This includes (1) a study of functions and graphs (2) properties of polynomials, rational, exponential, and logarithmic functions, and (3) a study of trigonometry functions and applications. Prerequisite: Geometry, Algebra II

**MAT4070 ACCELERATED ALGEBRA II A/B****MAT4110 ACCELERATED PRE-CALCULUS A/B**

These two courses are taken all year long in a double blocked format. Students will take Accelerated Algebra II all year during half of the double-blocked period and Accelerated Pre-Calculus all year during the other half of the double-blocked period. Upon receiving passing grades, students will receive 0.5 credits for each course at the end of the first semester, and 0.5 credits for each course at the end of the second semester for a total of 1.0 credits for each course by the end of the school year.

For specific topics, please refer to the Algebra II and Honors Pre-Calculus course descriptions. **Students should expect additional work outside of class.** This course was designed to address the requirements of both the Arizona College and Career Ready Practice and Content Standards. Prerequisite: Geometry of Honors Geometry

**MAT4100 HONORS PRE-CALCULUS\* A/B**

Honors Pre-Calculus is designed to prepare college-bound students for a first course in Calculus. Topics covered are intermediate and advanced algebra, circular and trigonometric functions, vectors, analytic geometry, and limits. This course is designed to address the requirements of both the Arizona College and Career Ready Practice and Content plus Standards. **Students will receive 1.0 credit in Honors Mathematics upon completion of this two semester course (0.5 credit each semester).**

**MAT4120 AP CALCULUS A/B**

This course uses the College Board Syllabus for AB Calculus and is designed to parallel the first semester of a college calculus course. Topics emphasized include limits, derivatives and integrals and the Fundamental Theorem of Calculus. Students completing this course are expected to take the AP Calculus AB exam. **Students will receive 1 credit in Advanced Placement Mathematics upon completion of this year long course (0.5 credit each semester).**

**MAT4130 AP CALCULUS BC (ONE SEMESTER)**

AP Calculus BC is equivalent to a second semester class at the university level. This course will provide students who have completed AP Calculus AB the option to continue the AP sequence of coursework. Topics emphasized include series of numbers, power series and various methods to determine convergence or divergence of a series. Students completing this course are expected to take the AP Calculus BC exam. **Students will receive 0.5 credit in Advanced Placement Mathematics upon completion of this one semester course. Prerequisite: AP Calculus AB**

**MAT4140 AP CALCULUS AB/BC**

This course uses the College Board Syllabus for both AB Calculus and BC Calculus. This course is designed to parallel the first two semesters of college calculus courses. For specific topics covered, refer to the course descriptions for both AP Calculus AB and BC. Students completing this course are expected to take the appropriate AP exam. **Students will receive 1 credit in Advanced Placement Mathematics upon completion of this year long course (0.5 credit each semester).** Prerequisite: Honors or Accelerated Pre-Calculus

**MAT4150 HONORS CALCULUS III (ONE SEMESTER)**

This course offers students the opportunity to apply material learned in AP Calculus AB and BC to problems in three-dimensional space. Most concepts involved in AP Calculus AB and BC involve functions in one variable. Calculus III allows the student to consider problems taken off a two-dimensional plane and placed into our three dimensional world. This class completes the Calculus strand, paralleling work done in the third semester of a college calculus course, for students who are interested in the mathematical and science fields at the university level. **Students will receive 0.5 credit in Honors Mathematics upon completion of this one semester course.** Prerequisite: Calculus BC

**MAT4160 AP STATISTICS A/B**

Students are introduced to the major concepts and tools for collecting, analyzing and drawing conclusions from data. The AP Statistics syllabus will be followed. Students who complete this course are expected to take the appropriate AP exam. Students will receive 1.0 credit in Advanced Placement Mathematics upon completion of this two semester course. The major course objectives are Exploring Data: Describing patterns and departures from patterns; Sampling and Experimentation: Planning and Conducting a Study, Anticipating Patterns: Exploring random phenomena using probability and simulation; and Statistical Inference: estimating population parameters and testing hypotheses. Prerequisite: Algebra II

**MAT4170 IB MATH APPLICATIONS 1**

Millennium High School offers IB Mathematics: Applications and Interpretation SL/HL. IB Math Applications 1 is the first year of this two-year course that is appropriate for students who are interested in developing their mathematics for describing our world and solving practical problems. Students will also be interested in harnessing the power of technology alongside exploring mathematical models. This subject is aimed at students who will go on to study subjects such as social sciences, natural sciences, statistics, business, some economics, psychology, and design for example. This course is part of the IB Diploma and Course Programs. Prerequisite: Honors Algebra II. Fee required.

**MAT4320 IB MATH APPLICATIONS 2**

IB Math Applications 2 is the second year of IB Math Applications 1. Students who enroll in IB Math Applications 2 are expected to complete either the IB Mathematics: Applications and Interpretations SL or HL exam in consultation with the teacher. This course is part of the IB Diploma and Course Programs. Prerequisite: IB Math Applications 1, IB Math Analysis 1, or AP Calculus A/B. Fee required.

**MAT4240 IB MATH ANALYSIS 1**

Millennium High School offers IB Mathematics: Analysis and Approaches SL/HL. IB Math Analysis 1 is the first year of this two-year course and is appropriate for students who enjoy developing their mathematics to become fluent in the construction of mathematical arguments and develop strong skills in mathematical thinking. Students will also be fascinated by exploring real and abstract applications of these ideas, with and without the use of technology. This subject is aimed at students who will go on to study subjects with substantial mathematics content such as mathematics itself, engineering, physical sciences, or economics for example. This course is part of the IB Diploma and Course Programs. Prerequisite: Honors Algebra II. Fee required.

**MAT4330 IB MATH ANALYSIS 2**

IB Math Analysis 2 is the second year of IB Math Analysis 1. Students who enroll in IB Math Analysis 2 are expected to complete either the IB Mathematics: Analysis & Approaches SL or HL exam in consultation with the teacher. This course is part of the IB Diploma and Course Programs. Prerequisite: IB Math Analysis 1, AP Calculus A/B, IB Math Applications 2. Fee required.

**MAT4200 FINANCIAL LITERACY\* A/B**

Students need to be informed about their financial responsibilities today and to prepare for the real choices ahead. In this course they will learn about career decisions, money management, financial security, credit management, resource management, risk management, and consumer rights and responsibilities. Students will learn budgeting, taxation, insurance, real estate, retirement planning, and the effective and efficient use of credit. The implementation of the ideas, concepts, and skills contained in this course will enable students to implement those decision-making skills they must apply and use to become wise and knowledgeable consumers, savers, investors, users of credit, money managers, citizens, and members of a global workforce and society. This course will satisfy the AFUHSD graduation requirements for graduation. Prerequisite: Algebra II