

# Rockville HS - Mathematics Department

**Requirements:** Four credits in Mathematics are required for graduation. One credit of each in Algebra and Geometry are a requirement for graduation. Enrollment in a mathematics class all four years of high school is required for acceptance to a University System of Maryland.

Course Title	GR	Course Description
Algebra 1 A/B	9-12	Algebra 1 is designed to analyze and model real-world phenomena. Exploration of linear, exponential, and quadratic functions forms the foundation of the course. Key characteristics and representations of functions--graphic, numeric, symbolic, and verbal--are analyzed and compared. Students develop fluency in solving equations and inequalities. One- and two-variable data sets are interpreted using mathematical models.
Geometry A/B <b>Prerequisite Algebra 1</b>	9-12	Geometry formalizes deductive reasoning and mathematical argument. Theorems are used to prove relationships and solve problems about triangles, quadrilaterals, other polygons, and circles. Measurement of two- and three-dimensional objects includes circumference, area, and volume. The rectangular coordinate system is used to verify relationships.
Geometry A/B (Hon) <b>Prerequisite Algebra 1</b>	9-12	Geometry formalizes deductive reasoning and mathematical argument. Theorems are used to prove relationships and solve problems about triangles, quadrilaterals, other polygons, and circles. Measurement of two- and three-dimensional objects includes circumference, area, and volume. The rectangular coordinate system is used to verify relationships.
Algebra 2 A/B <b>Prerequisite Algebra 1 &amp; Geometry</b>	9-12	Algebra 2 is the study of the complex number system and functions. Real-world problems are discussed, represented, and solved using advanced algebraic techniques incorporating technology. The properties and algebra of functions, including polynomial, exponential, logarithmic, piece-wise, radical, and rational, are analyzed and applied, as well as conics, matrices, systems of equations, sequences, and series.
Algebra 2 A/B (Hons) <b>Prerequisite Algebra 1 &amp; Geometry</b>	9-12	Algebra 2 is the study of the complex number system and functions. Real-world problems are discussed, represented, and solved using advanced algebraic techniques incorporating technology. The properties and algebra of functions, including polynomial, exponential, logarithmic, piece-wise, radical, and rational, are analyzed and applied, as well as conics, matrices, systems of equations, sequences, and series.
Intro to Statistics A/B <b>Prerequisite Algebra 2</b>	11-12	Introduction to Statistics A/B is a two-semester course that provides preparation to maximize the potential for success in an AP Statistics or college statistics course. Topics include data analysis, probability, simulations, inferential statistics, normal and binomial distribution, techniques of sampling, confidence intervals, and hypothesis testing. Students use exploratory methods to identify patterns and make decisions. Emphasis is placed on applications and the use of statistics to solve real-life problems.
Quantitative Literacy A/B <b>Prerequisite Algebra 2</b>	12	Quantitative Literacy is designed to enhance students' abilities in mathematical decision making and financial literacy. Emphasis is on the mathematical aspects of savings and investments, loans and credit, budgeting, chance, decision making, and starting a business. (Seniors only)
Precalculus A/B <b>Prerequisite Algebra 2</b>	9-12	Precalculus completes the formal study of the elementary functions begun in Algebra 1 and Algebra 2. Students focus on the use of technology, modeling, and problem solving. Functions studied include polynomial, exponential, logarithmic, rational, radical, piece-wise, and trigonometric and circular functions and their inverses. Parametric equations, vectors, and infinite sequences and series are also studied.
Precalculus A/B (Hon) <b>Prerequisite</b>	9-12	Precalculus completes the formal study of the elementary functions begun in Algebra 1 and Algebra 2. Students focus on the use of technology, modeling, and problem solving. Functions studied include polynomial, exponential, logarithmic, rational, radical, piece-wise, and trigonometric and circular functions and their inverses. Parametric equations, vectors, and infinite sequences and series are also studied.

<b><i>Algebra 2 (Hon)</i></b>		
AP Statistics A/B  <b>Prerequisite <i>Algebra 2 or Intro to Statistics</i></b>	11-12	Advanced Placement Statistics students engage in the exploratory analysis of data, using graphical and numerical techniques. Data sets are collected using statistical design methods. Students produce appropriate models using probability, simulation, and statistical inference. Models are used to draw conclusions from data and analyzed by inferential methods to determine whether the data support or discredit the model. This course is equivalent to a non-calculus-based introductory college statistics course.
Calculus with App A/B  <b>Prerequisite <i>Precalculus</i></b>	10-12	Calculus with Applications topics include limits, continuity, and derivatives of functions, the definite integral, and their real-world applications. Students find and apply derivatives numerically, graphically, and symbolically. Previously studied functions will be analyzed using calculus concepts. The relationship between the derivative and the definite integral is developed. Students will model real-world situations involving rates of change using difference or differential equations.
AP Calculus AB A/B  <b>Prerequisite <i>Precal (Hon)</i></b>	10-12	Calculus AB topics are those traditionally offered in the first year of calculus in college, and are designed for students who wish to obtain a semester of advanced placement in college. The topics studied include limits, continuity, derivatives and integrals of algebraic and transcendental functions and their applications, and elementary differential equations.
AP Calculus BC A/B  <b>Prerequisite <i>AP Calculus A/B</i></b>	11-12	Calculus BC includes all of the topics in Calculus AB, as well as convergence tests for series, Taylor or Maclaurin series, vector, polar, and parametric functions. Students in BC Calculus may receive two semesters of Advanced Placement in mathematics.
IB Approaches, Statistics and Calculus (Year 1 - SL)  <b>Prerequisite <i>Alg 2 (Hon)</i></b>	11	This course explores numeric, algebraic, geometric, and trigonometric functions through the lens of practical applications of math in a data-rich and technology driven world. Application and problem solving skills are developed through the exploration of these functions as well as statistics, probability, and differential calculus.
IB Analysis, Statistics and Calculus (Year 1 - HL)  <b>Prerequisite <i>Algebra 2</i></b>	11	This course utilizes numeric, algebraic, geometric, and trigonometric functions, as well as statistics, probability, and calculus to develop mathematical thinking skills. Students explore real and abstract theories/applications to strengthen mathematical modelling and problem solving skills.
IB Approaches, Statistics and Calculus (Year 2 - SL)  <b>Prerequisite <i>Year 1 - SL</i></b>	12	HL students study the same topics outlined in the IB Mathematics Applications SL Course description with significant time dedicated to the teaching to advanced techniques in statistics, probability, and both differential & integral calculus.
IB Analysis, Statistics and Calculus (Year 2 - HL)  <b>Prerequisite <i>Year 1 - HL</i></b>	12	This course is further develops the mathematical and problem solving skills developed in IB Math Analysis SL. Further attention is paid to advanced trigonometric topics, statistical analysis, as well as integrable calculus.

Hon – Honors

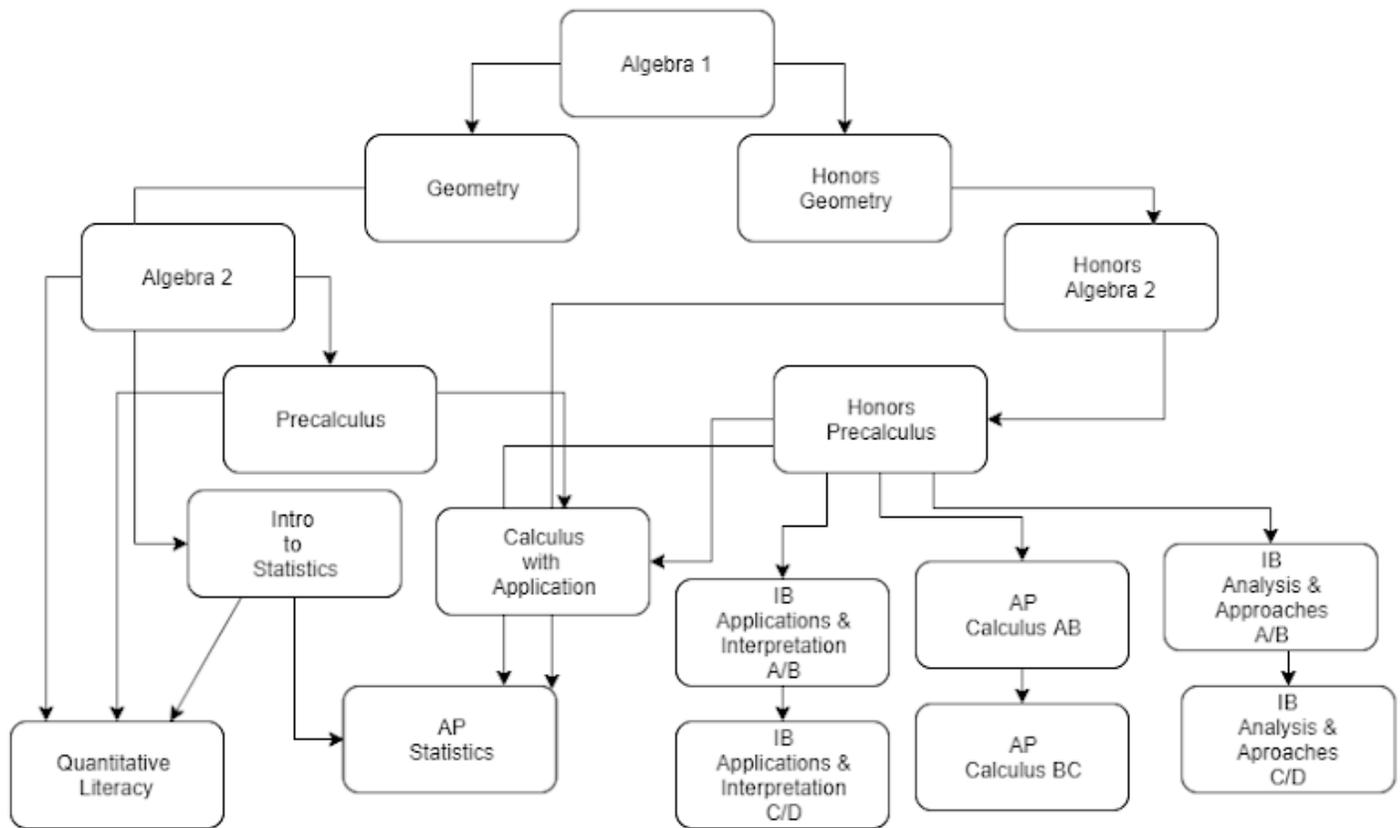
AP – Advanced Placement

IB – International Baccalaureate

***For any other options and questions please see Mr. Marcus Wiggins, Resource Teacher, for guidance and information.***

# Mathematics Sequence Options\*

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