

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 graduation as well which may result in students earning more than four credits of math.

Course Title	GR	Course Description
Related Math A/B MAT2001 A/B Corequisite <i>Algebra 1</i>	9-12	Related Mathematics is taken in conjunction with Algebra 1A/B to support our emergent multilingual students. It reinforces the essential pre-algebra and algebra concepts and procedures necessary to function in authentic problem-solving situations. Students focus on concepts and applications related to success in Algebra 1 and use technology in the problem-solving process.
Algebra 1 A/B MAT2000 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 MAT2003 A/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) MAT2004 A/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. In Honors Geometry, students also cover the laws of sines and cosines, features of parabolas including the focus and directrix, and characteristics of conic sections.
Algebra 2 A/B MAT2011 A/B Prerequisite <i>Algebra 1 & Geometry</i>	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, sinusoidal, and rational, are analyzed and applied. One and two variable statistics are also investigated including the 5 number summary, statistical representations, and normal distributions.
Algebra 2 A/B (Hon) MAT2012 A/B Prerequisite <i>Algebra 1 & Geometry</i>	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, sinusoidal, and rational, are analyzed and applied. One and two variable statistics are also investigated including the 5 number summary, statistical representations, and normal distributions.
Statistics and Mathematical Modeling (SaMM) A/B MAT2044 A/B Prerequisite <i>Algebra 2</i>	12	Statistics and Mathematical Modeling (SaMM) is an introductory course in statistics, probability, reasoning, and functions intended for students in a wide variety of areas of study. Semester A topics include logic, matrices, apportionment, fair decision-making, regression, and statistical data analysis (including interpretation of data displays, comparisons of distributions, and using normal distributions). Semester B topics include a comprehensive look at probability (including basic, conditional, binomial distributions, and discrete distributions) and functions (focusing on linear, quadratics, exponential and trigonometric). In both semesters, students have the opportunity to analyze data sets using technology.

<p>Honors Statistics A/B MAT2046 A/B</p> <p>Prerequisite <i>Algebra 2</i></p>	<p>11-12</p>	<p>Honors Statistics A/B, previously named “Introduction to Statistics” 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.</p>
<p>AP Statistics A/B MAT2068 A/B</p> <p>Prerequisite <i>Precalculus or Honors Statistics</i></p>	<p>12</p>	<p>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. (Seniors only - or successful completion of Honors Statistics as a prerequisite)</p>
<p>Precalculus A/B MAT2031 A/B</p> <p>Prerequisite <i>Algebra 2</i></p>	<p>9-12</p>	<p>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. This is a non-calculator course.</p>
<p>Precalculus A/B (Hon) MAT2048 A/B</p> <p>Prerequisite <i>Algebra 2 (Hon)</i></p>	<p>9-12</p>	<p>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. This is a non-calculator course. In Honors Precalculus students also cover vector-valued functions, polar curves, complex numbers in polar form, limits of graphs for end behavior, holes, and asymptotes, and partial fraction decompositions.</p>
<p>AP Precalculus A/B MAT2033 A/B</p> <p>Prerequisite <i>Algebra 2 (Hon) or Precalculus (Hon)</i></p>	<p>9-12</p>	<p>AP Precalculus is a college-level course centering on functions modeling dynamic phenomena. Throughout this course, students learn that functions and their compositions, inverses, and transformations are understood through graphical, numerical, analytical, and verbal representations, which reveal different attributes of the functions and are useful for solving problems in mathematical and applied contexts.</p> <p>This course is appropriate for rising-sophomores coming from Honors Algebra 2 who are planning to take AP Calculus AB or IB Math HL (IB Analysis Statistics/Calculus HL 1A/B) their junior year OR for rising-seniors coming from Precalculus (or Honors Precalculus) who would like the challenge of a college-level AP course, but do not feel ready for AP Calc AB.</p>
<p>Financial Mathematics A/B MAT2032 A/B</p> <p>Prerequisite <i>Algebra 2</i></p>	<p>12</p>	<p>Financial Mathematics, previously known as “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. Aligned with Financial Literacy and Next Gen Personal Finance Standards. There is a service project included in the completion of this course. (Seniors only)</p>
<p>Calculus with App A/B MAT2049 A/B</p> <p>Prerequisite <i>Precalculus</i></p>	<p>11-12</p>	<p>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. (Seniors only)</p>

<p>AP Calculus AB A/B MAT2040 A/B</p> <p>Prerequisite <i>Precal (Hon)</i></p>	10-12	<p>Advanced Placement 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 math credit for college. The topics studied include limits, continuity, derivatives and integrals of algebraic and transcendental functions and their applications, and elementary differential equations.</p>
<p>AP Calculus BC A/B MAT2041 A/B</p> <p>Prerequisite <i>AP Calculus AB</i></p>	11-12	<p>Advanced Placement 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 depending on which college they choose to attend and their final scores.</p>
<p>IB Application Statistics/Calculus SL 1A/B MAT2081 A/B</p> <p>Prerequisite <i>Algebra 2 & Geometry</i></p>	11	<p>International Baccalaureate Math App/Stat/Calc SL 1 is the first year of a two-year course that 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.</p> <p>Students may earn college math credit from successful completion of this course and the IB exam depending on scores and college choice.</p>
<p>IB Analysis Statistics/Calculus HL 1A/B MAT2063 A/B</p> <p>Prerequisite <i>Algebra 2 & Geometry</i></p>	11	<p>International Baccalaureate Math Analysis/Stat/Calc HL 1 is the first year of a two-year course that 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 modeling and problem solving skills.</p> <p>Students may earn college math credit from successful completion of this course and the IB exam depending on scores and college choice.</p>
<p>IB App/Stat/Calc SL 2 A/B MAT2082 A/B</p> <p>Prerequisite <i>Year 1 - SL</i></p>	12	<p>Year 2 students study the same topics outlined in the IB Mathematics Applications SL Year 1 course description with significant time dedicated to the teaching of advanced techniques in statistics, probability, and both differential & integral calculus.</p>
<p>IB Analy/Stat/Calc HL 2 A/B MAT2064 A/B</p> <p>Prerequisite <i>Year 1 - HL</i></p>	12	<p>This course further develops the mathematical and problem solving skills developed in IB Math Analysis HL Year 1. Further attention is paid to advanced trigonometric topics, statistical analysis, as well as integrable calculus.</p>

Hon – Honors, AP – Advanced Placement, IB – International Baccalaureate

For any other options and questions please see Ms. Carolyn Lane, Resource Teacher, for guidance and information.

Mathematics Sequence Options

