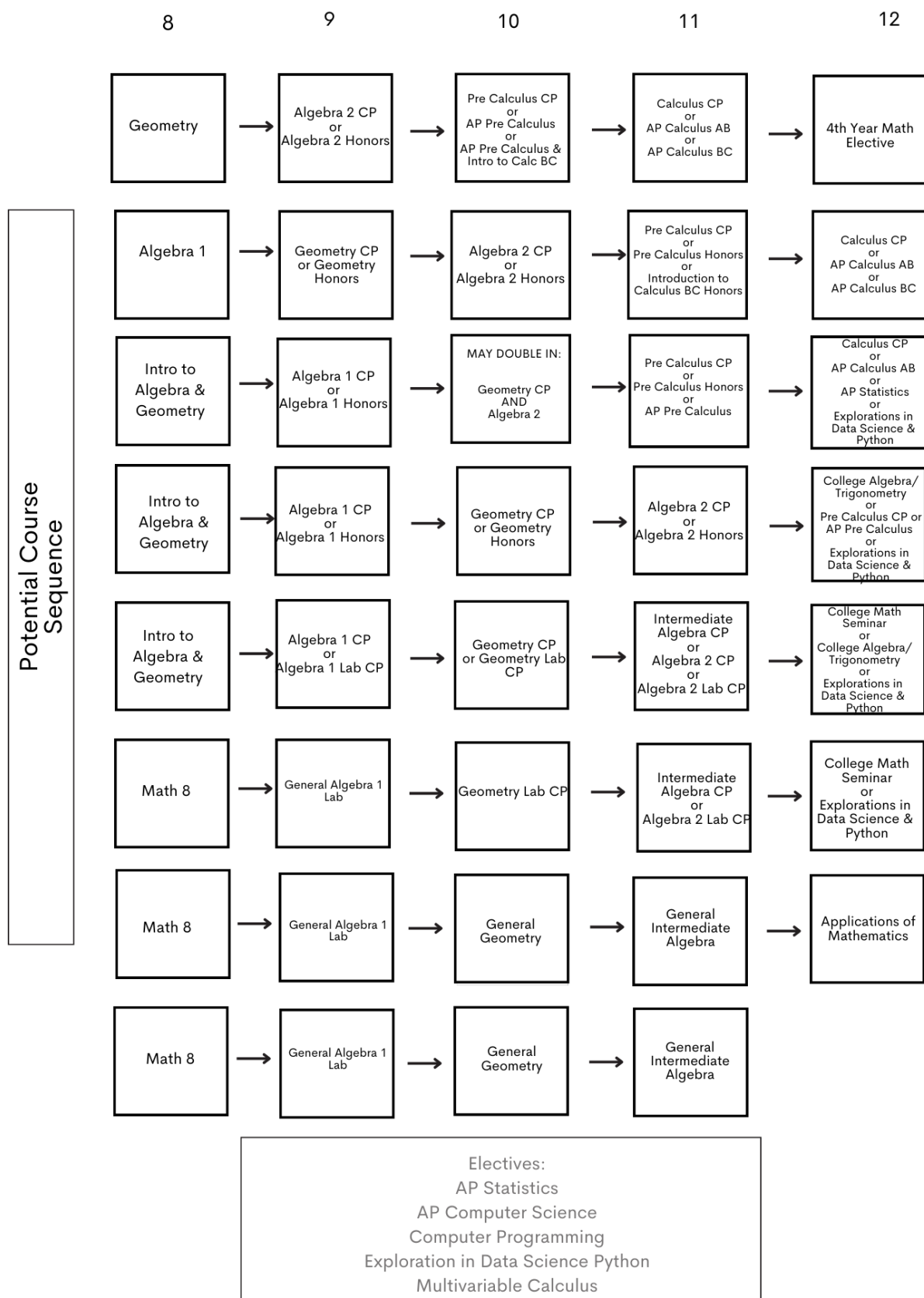


Course Sequence for Math



Mathematics

GENERAL ALGEBRA 1 LAB (319) Prerequisite: This course is assigned at the recommendation of the Child Study Team and is a Resource Center Level course.	10 Credits Full Year Grades 9-12
This course is designed for students in resource center math who are approaching readiness for algebraic thinking. Topics include: solving linear equations and inequalities, systems of equations and inequalities, fundamental operations with monomial and polynomial expressions, factoring, solving quadratic equations, graphing different types of functions, radical expressions, and practical word problems. The foundation for this study is the structure of the real number system. This course will be taught in a double period which will include a lab component. Upon completion of this class, the anticipated next course in a student's math sequence would be General Geometry. At the recommendation of the Child Study Team, students who demonstrate algebraic readiness will receive additional enrichment opportunities and, upon successful completion of this accelerated work, may be eligible for Geometry Lab CP or Geometry CP.	

ALGEBRA 1 LAB CP (316) Prerequisite: None.	10 Credits Full Year Grades 9-10
This college prep course is designed for students who wish to meet the Algebra 1 requirement for college entrance, however, may require additional support in both mathematics content and test-taking strategies. Topics include: solving linear equations and inequalities, systems of equations and inequalities, fundamental operations with monomial and polynomial expressions, factoring, solving quadratic equations, graphing different types of functions, radical expressions, and practical word problems. The foundation for this study is the structure of the real number system. This course will be taught in a double period which will include a lab component.	

ALGEBRA 1 CP (312) Prerequisite: None.	5 Credits Full Year Grades 9-12
This college preparatory course includes a study of the language of algebra, solving linear equations and inequalities, systems of equations and inequalities, quadratic equations, fundamental operations with monomials, polynomial and radicals, factoring, graphing different types of functions, and practical word problems. The foundation for this study is the structure of the real number system.	

ALGEBRA 1 HONORS (313) Prerequisite: None.	5 Credits Full Year Grade 9
Completion of a summer assignment is required for this course. Algebra 1 Honors is a course designed for the well-motivated student who is capable of moving at an above average pace in mathematics. Students in this class often are in transition from a standard math program to an accelerated program. A minimum grade of B+ or higher in 8th grade math and/or teacher recommendation are good predictors for success in this course. The student's performance in this ninth grade course will be one of the factors in determining placement in tenth grade. Topics, concepts, and skills will be presented in greater depth than in Algebra 1 CP.	

GENERAL GEOMETRY (378) Prerequisite: This course is assigned at the recommendation of the Child Study Team and is a Resource Center Level course.	5 Credits Full Year Grade 10-12
This course is designed for students in resource center math who are approaching readiness for geometric and spatial thinking. This course provides students with a modified Geometry curriculum in which emphasis is placed on developing students' spatial and reasoning skills. Students will learn about geometric notation, definitions, postulates, and theorems. Rather than proving theorems, students will focus on applying geometric concepts related to points, lines, planes, polygons, circles, and three-dimensional shapes. Review of algebraic skills will be infused in lessons throughout the year to ensure students' retention of concepts learned in General Algebra.	

GEOMETRY LAB CP (321) Prerequisite: Successful completion of Algebra 1 or General Algebra 1 Lab and recommendation from the Child Study Team.	10 Credits Full Year Grades 9-12
This college prep course includes the study of plane and solid figures, critical deductive and inductive reasoning and the axiomatic method of proof. Numeric and algebraic applications are linked to the geometric concepts. This course will be taught in a double period which includes a lab component.	

GEOMETRY CP (322) Prerequisite: Successful completion of Algebra 1 or General Algebra 1 Lab and recommendation from the Child Study Team.	5 Credits Full Year Grades 9-12
This college prep course includes the study of plane and solid figures, critical deductive and inductive reasoning and the axiomatic method of proof. Numeric and algebraic applications are linked to the geometric concepts.	

GEOMETRY HONORS (310) Prerequisite: Successful completion of Algebra 1.	5 Credits Full Year Grade 9 -12
Completion of a summer assignment is required for this course. Topics studied in this challenging course include the study of plane and solid figures, critical deductive and inductive reasoning, and the axiomatic method of proof. Students are expected to function at an abstract analytical level and be capable of independent thought. It is assumed students in this course are moving in the accelerated track for their mathematics studies. Students should possess strong spatial aptitude and algebra skills. A minimum grade of B+ or higher in 8th grade Algebra 1 or Algebra 1 Honors and/or teacher recommendation are good predictors for success in this course.	

GENERAL INTERMEDIATE ALGEBRA (379) Prerequisite: This course is assigned at the recommendation of the Child Study Team and is a Resource Center Level course.	5 Credits Full Year Grades 11-12
This course is designed for students in resource center math who require instruction to further develop Algebra and Geometry skills. General Intermediate Algebra expands upon the concepts learned in General Algebra and General Geometry to promote a deeper understanding of more complex algebraic topics. Topics include solving linear equations and inequalities, systems of equations and inequalities, operations with polynomial expressions, simplifying radicals and solving quadratic equations. The course also reviews the concepts needed for students to be successful on college placement exams.	

INTERMEDIATE ALGEBRA (329) Prerequisite: Successful completion of Geometry.	5 Credits Full Year Grades 10-12
Intermediate Algebra expands upon the concepts learned in Algebra I and Geometry to promote a deeper understanding of more complex algebraic topics. Topics include solving linear and quadratic equations and inequalities, quadratic functions, polynomial functions, rational functions, radical functions, rational exponents, the complex number system, and applications.	

ALGEBRA 2 LAB CP (318) Prerequisite: Successful completion of Geometry.	10 Credits Full Year Grades 11-12
After a brief review of prerequisite skills learned in Algebra 1, instruction in this course focuses on the study of nonlinear functions: polynomial, exponential, logarithmic, radical, and rational. The course also extends the study of algebra from real numbers to the complex number system. Emphasis is placed on understanding the behavior and characteristics of functions numerically, analytically, and graphically. Applications are made through word problems and will integrate algebra skills and geometric concepts. This course will be taught in a double period which includes a lab component.	

ALGEBRA 2 CP (332) Prerequisite: Successful completion of Geometry.	5 Credits Full Year Grades 9-12
After a brief review of prerequisite skills learned in Algebra 1, instruction in this course focuses on the study of nonlinear functions: polynomial, exponential, logarithmic, and radical. The course also extends the study of algebra from real numbers to the complex number system. Emphasis is placed on understanding the behavior and characteristics of functions numerically, analytically, and graphically. Applications are made through word problems and will integrate algebra skills and geometric concepts.	

ALGEBRA 2 HONORS (320) Prerequisite: Successful completion of Geometry.	5 Credits Full Year Grades 9-12
Completion of a summer assignment is required for this course. This course will provide a rigorous and comprehensive background for students of high mathematical ability. A grade in the “A” range in Algebra 1 and/or teacher recommendation are good predictors for success in this course. The curriculum includes the study of linear and nonlinear functions (polynomial, exponential, logarithmic, and rational). The course also extends the study of algebra from real numbers to the complex number system. Students must demonstrate their grasp of essential concepts through their interactions with each other. Challenge problems, projects, calculator labs and group work extend and expand text material and provide the opportunity for students to communicate mathematical understanding.	

APPLICATIONS OF MATHEMATICS (374) Prerequisite: This course is assigned at the recommendation of the Child Study Team and is a Resource Center Level course.	5 Credits Full Year Grade 12
This course is designed for seniors in the resource center math program. Individualized reinforcement of topics on State-mandated assessments, real-life uses of problem solving, and computational skills are stressed in this course. The course also reviews the concepts needed for students to be successful on college placement exams.	

PRECALCULUS CP (342) Prerequisite: Successful completion of Algebra 2.	5 Credits Full Year Grades 10 - 12
This course provides necessary mathematics knowledge for students interested in continuing mathematical studies in college. The curriculum extends the study of linear and nonlinear functions. Other topics include trigonometry, sequences and series and conic sections. Real life applications are integrated throughout the year.	

COLLEGE ALGEBRA AND TRIGONOMETRY (345) Prerequisite: Successful completion of Algebra 2 CP or Intermediate Algebra CP.	5 Credits Full Year Grades 11-12
This course is for students not taking Pre-Calculus, but who are interested in obtaining additional knowledge of mathematics. College Algebra and Trigonometry expands on the topics of functions and their graphs introduced in Algebra 2. The course investigates trigonometric functions and their applications.	

COLLEGE MATH SEMINAR (348) Prerequisite: Successful completion of Algebra 2 CP or Intermediate Algebra.	5 Credits Full Year Grade 12
This is a survey course intended for seniors who wish to obtain additional mathematics knowledge. The course provides an introduction of discrete math topics encountered in Liberal Arts college curriculum, such as probability, informal statistics, graph theory, election theory, logic, fair division, and cryptology.	

PRECALCULUS HONORS (331) Prerequisite: Successful completion of Algebra 2.	5 Credits Full Year Grades 10-12
Completion of a summer assignment is required for this course. This is a rigorous course which includes instruction in trigonometry, analytic geometry, matrices, linear and nonlinear functions, sequences, series, and an introduction to limits. Students must demonstrate their grasp of essential concepts through their interaction with each other. Challenge problems, calculator labs, video presentations, and group work extend and expand text material and provide opportunities for students to communicate mathematical understanding. A minimum grade of B or higher in Algebra 2 Honors is a good predictor for success in this course. This course is a suggested prerequisite for the AB level of Advanced Placement Calculus.	

AP PRECALCULUS (354) Prerequisite: Successful completion of Algebra 2.	5 Credits Full Year Grades 10-12
Completion of a summer assignment is required for this course. AP Precalculus will focus on the study of functions and how they can model various phenomena. This course will provide students with the skills needed to complete more advanced coursework in mathematics, including Calculus CP and AP Calculus AB. Students will study functions using the four-pronged approach followed in AP Calculus through multiple representations (graphical, numerical, verbal, and analytical). This will ensure a deeper understanding of concepts that will help students to engage with both familiar and novel contexts. Topics reviewed and explored in this course include polynomial and rational functions, exponential and logarithmic functions, trigonometric and polar functions, functions involving parameters, vectors, conics, and matrices. Students must demonstrate their grasp of essential concepts through their interaction with each other. Challenge problems, calculator labs, video presentations, and group work extend and expand text material and provide opportunities for students to communicate mathematical understanding. A minimum grade of B+ or higher in Algebra 2 Honors can be a good predictor for success in this course. This course is a suggested prerequisite for the AB level of Advanced Placement Calculus. It is expected that all students take the AP Precalculus exam in May.	

CALCULUS CP (347) Prerequisite: Successful completion of Pre-Calculus.	5 Credits Full Year Grades 11 - 12
Completion of a summer assignment is required for this course. This course is designed for students who have completed the traditional four-year college prep sequence in mathematics before their senior year in high school. The course incorporates topics from Pre-Calculus and enables the student to hone his/her algebra skills and techniques and to extend his/her knowledge of analytic geometry. The course also focuses on helping students to develop an understanding of the derivative and its applications and introduces students to some of the techniques and applications of integration. Students will work with real-life applications and data to model the use of calculus to solve problems in areas such as business, economics, management, and/or the social and life sciences.	

AP CALCULUS AB (351) Prerequisite: Successful completion of Pre-Calculus.	5 Credits Full Year Grades 10-12
Completion of a summer assignment is required for this course. This course is recommended to students with a strong four-year background in college prep mathematics. The curriculum includes theory of limits, continuity, mean value theorem, properties and applications of differentiation and integration. This Advanced Placement course is taught at a college level. Students must possess a strong interest in mathematics and be willing to devote extra time to this course. A minimum grade of B or higher in AP Precalculus or a B+ or higher in Precalculus CP and teacher recommendation can be good predictors for success in this course. It is expected that all students take the AP Calculus AB exam in May.	

AP PRECALCULUS WITH INTRODUCTION TO CALCULUS BC (355) Prerequisite: Successful completion of Algebra 2 Honors.	5 Credits Full Year Grades 10-11
Completion of a summer assignment is required for this course. AP Precalculus will focus on the study of functions and how they can model various phenomena. This course will provide students with the skills needed to complete more advanced coursework in mathematics. Students will study functions using the four-pronged approach followed in AP Calculus through multiple representations (graphical, numerical, verbal, and analytical). This will ensure a deeper understanding of concepts that will help students to engage with both familiar and novel contexts. Topics reviewed and explored in this course include polynomial and rational functions, exponential and logarithmic functions, trigonometric and polar functions, functions involving parameters, vectors, conics, and matrices. Students must demonstrate their grasp of essential concepts through their interaction with each other. Challenge problems, calculator labs, video presentations, and group work extend and expand text material and provide opportunities for students to communicate mathematical understanding. A minimum grade of B+ or higher in Algebra 2 Honors can be a good predictor for success in this course. This course is a prerequisite for the BC level of Advanced Placement Calculus. Therefore, it will include an additional in-depth unit on limits, continuity, and the derivative. It is expected that all students take the AP Precalculus exam in May.	

AP CALCULUS BC (350) Prerequisite: Successful completion of AP Precalculus with Introduction to Calculus BC. Students who successfully complete AP Precalculus and are looking to enroll in AP Calculus BC may do so with Supervisor approval.	5 Credits Full Year Grades 10-12
Completion of a summer assignment is required for this course. In addition to the material taught in AP Calculus AB, this course includes units on differential equations, integration techniques, polar area, vectors, parametric equations, and infinite series. A minimum grade of B or higher in AP Precalculus with Introduction to Calculus BC is a good predictor for success in this course. It is expected that all students take the AP Calculus BC exam in May.	

MULTIVARIABLE CALCULUS (349) Prerequisite: Successful completion of AP Calculus BC.	5 Credits Full Year Grades 11-12
Multivariable calculus is the study of differential, integral, and vector calculus for functions of more than one variable. Multivariable Calculus is used in the physical sciences, economics, engineering, and computer graphics. Upon completion of this full year course, students will be able to extend differentiation and integration to vector-valued functions, apply vector tools to study curvature, study the motion of a particle along a path, extend the concepts and techniques of differential calculus to functions of several variables, compute partial derivatives, evaluate double and triple integrals,	

explore vector fields, explore integration over curves, paths, and surfaces, and solve applied problems. Multivariable Calculus is a rigorous course that builds on the skills and concepts students learned in AP Calculus BC. It is equivalent to a third semester of college level calculus. Therefore, this course will receive AP weighting when grades are calculated.

COMPUTER PROGRAMMING (315)

Prerequisite: Algebra 1.

5 Credits

Full Year

Grades 9-12

The Computer Programming course is a survey course designed to provide highly motivated students with enhanced problem solving skills through the study of structured programming. It is recommended that students have knowledge of basic computer operations. The course will concentrate on various methods of problem solving and the conversion of algorithmic methods of problem solving into computer programs. Python will be the predominant programming language used to develop computer programs. Students will explore programming methodologies using case studies, projects, models, individual application and cooperative learning techniques.

EXPLORATIONS IN DATA SCIENCE AND PYTHON (364)

Prerequisite: Successful completion of Algebra 1.

5 Credits

Full Year

Grades 9-12

This course synthesizes statistics, mathematics, and computer science, thereby providing students with the critical thinking skills needed for them to be problem solvers in the workplace and in their daily lives. Students will learn the content through project-based units. Topics include variability, data ethics, univariate, bivariate, and multivariate data, measures of center and spread, sampling, visual representations of data, probability, data collection and analysis, modeling with data, and machine learning. Students will be able to make and evaluate data -based arguments and understand the power of data in society. Students will use Python, Google Sheets, and the graphing calculator to help with statistical analysis.

AP STATISTICS (352)

Prerequisite: Successful completion of Algebra 2.

5 Credits

Full Year

Grades 10-12

Completion of a summer assignment is required for this course.

This course is designed to meet the growing need for knowledge of the statistical procedures necessary to analyze data from all disciplines. Students are introduced to the major concepts and tools for collecting, analyzing, and inferring from data. The four broad conceptual themes include: exploratory data, planning a study, anticipating patterns and statistical inference. This course is designed for students who intend to study business, economics, social sciences and many other disciplines where data analysis is required. It may be taken concurrently with Pre-Calculus or Calculus. A minimum grade of "A-" in college prep (CP) level classes or "B" in honors level classes is a good predictor for success in this course.

It is expected that all students take the AP Statistics exam in May.

AP COMPUTER SCIENCE A (353) Prerequisite: Algebra 2 or Computer Programming or Electrical/Computer Science for Engineering.	5 Credits Full Year Grades 10-12
The curriculum reviews, develops and expands topics studied in prior programming courses. This course enables the student to develop skills in writing logically-structured, well-documented programs using object-oriented programming in the JAVA programming language. APCS is recommended for students who have a strong interest in computer science and engineering and are willing to spend the extra time beyond the classroom this course requires. A minimum grade of "B" or higher in Computer Programming or Algebra 2 is a good predictor for success in this course. It is expected that all students take the AP Computer Science A exam in May.	

AP SEMINAR (234) Prerequisite: AP Seminar application and teacher recommendation required. Due to limited availability, enrollment in this course is based on acceptance into the program.	5 Credits Full Year Grades 10-11
Completion of a summer assignment may be required for this course. Please check with the instructor for further details. Students must apply and be selected for this two-year AP Capstone program. Students will develop their analytical skills by exploring appropriate themes and topics selected by the teachers and the students. Students will learn to synthesize information from multiple sources, develop their own perspectives in research-based essays, and design oral and visual representations. Students will be expected to complete an individual paper, presentation, and end-of-course exam as well as a team research project. These benchmark assignments will be submitted to the College Board and contribute to the final AP score. The second course needed to complete the AP Capstone program is <i>AP Research</i>.	

AP RESEARCH (235) Prerequisite: Successful completion of AP Seminar.	5 Credits Full Year Grade 11-12
Completion of a summer assignment may be required for this course. Please check with the instructor for further details. This full-year elective course will be the second class needed to complete the two-year AP Capstone program. This course will allow students to deeply explore an academic topic, problem, or issue of their own choice and interest. Through this investigation, students will cultivate the skills and discipline necessary to conduct independent research. Students will learn to design an effective and ethical plan of investigation, which utilizes various academic research methods. The students will demonstrate their understanding by constructing a 5,000-word academic thesis paper as well as present and perform an oral defense of their research methodology.	

MATH ENRICHMENT 12 (303) Prerequisite: Placement by the Math Department.	2.5 Credits Semester Grade 12
Math Enrichment 12 is a mandated course for those students who have not met the mathematics testing requirements for graduation set by the New Jersey Department of Education. The course reviews the concepts needed for students to be successful on the New Jersey Department of Education mandated assessments required for graduation.	