Fourth Math Credit Options

Course ID	Course Name	Long Course Description	Min Grd	Max Grd
0327	AP Computer Science A	AP Computer Science A - Grades 9-12 - AP Computer Science A course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object oriented and imperative problem solving and design. These techniques represent proven approaches for developing solutions that can scale from small, simple problems to large, complex problems. This course is intended to prepare students for the optional Advanced Placement Exam in this subject and should follow the published College Board guidelines.	09	12
0336	AP Computer Science Principles	AP Computer Science Principles - Grades 9-12 - AP Computer Science Principles introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. With a unique focus on creative problem solving and real-world applications, this course prepares students for college and career. It is intended to prepare students for the optional Advanced Placement Exam in this subject and should follow the published College Board guidelines.	09	12
0345	AP PLTW Computer Science Principles (CSP)	PLTW Computer Science Principles - Grades 9-12 - Using Python as a primary tool and incorporating multiple platforms and languages for computation, this course aims to develop computational thinking, generate excitement about career paths that utilize computing, and introduce professional tools that foster creativity and collaboration. While this course can be a student's first in computer science, students without prior computing experience are encouraged to start with Computer Science Essentials. Projects and problems include app development, visualization of data, cybersecurity, and simulation. The course curriculum and professional development is endorsed by the College Board. This course serves as the beginning course for PLTW Computer Science (A Project Lead the Way course).	09	12
0346	AP PLTW Computer Science A	PLTW Computer Science A- Grades 9-12 - This course focuses on further developing computational thinking skills through the medium of Android App development for mobile platforms. The course utilizes industry-standard tools such as Android Studio, Java programming language, XML, and device emulators. Students collaborate to create original solutions to problems of their own choosing by designing and implementing user interfaces and Web-based databases. This course aligns with the AP CS A course. This course is sequenced after PLTW Computer Science Principles 0345 (A Project Lead the Way course).	09	12
2024	Applied Math	Applied Math - Grades 9 - 12 - This course aligns to the high school standards for Mathematics I or Algebra I and Geometry with an emphasis on application in a contextual environment. The fundamental purpose of this course is to extend the mathematics that students learned in Mathematics I or Algebra I and Geometry through applications. This course should allow the students to apply the concepts learned in Mathematics I or Algebra I and Geometry and should not be the first time students learn these concepts. The critical areas deepen and extend understanding of linear and exponential relationships through analyzing, solving, and using quadratic functions. The course expands and explores more complex geometric situations and geometric relationships. The Standards for Mathematical Practice are interwoven with the content standards throughout the course, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations.	09	12

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Course ID	Course Name	Long Course Description	Min Grd	Max Grd
2029	Probability and Statistics	Probability and Statistics - Grades 9 -12 - This course aligns to the Probability and Statistics standards and is designed for students who have attained Algebra 1 and Geometry objectives. This course aims to support students in applying statistical concepts and methods to solve real-world problems and examine real-life scenarios based on data analysis. Four critical areas addressed in the course include: (1) Interpret categorical and quantitative data; (2) Make inferences and justify conclusions; (3) Apply conditional probability and probability rules and interpret data using rules of probability; (4) Apply probability to make decisions and use probability to evaluate outcomes of decisions. Appropriate use of technology is important in statistical applications.	09	12
2039	Fractal Mathematics	Fractal Mathematics - Grades 9 - 12 - This course is higher than the level of Algebra II and is intended for students who have attained Algebra II objectives. This course develops computational thinking skills, builds on mathematics conceptual understanding of algebra, and utilizes mathematical tools to model fractal geometry in the environment. This course includes projects where students use computational thinking skills such as pattern matching, algorithms, abstraction, and decomposition and further develops knowledge and skills around algebra, geometry, functions, and writing and solving algebraic expressions and equations. Extensive use of technology tools and applications should be included in student learning opportunities.	09	12
2043	Trigonometry	Trigonometry - Grades 10 - 12 - This course is higher than the level of Algebra II and is designed for students who have attained Algebra II objectives. This course is intended to support students in preparation for pre-calculus and calculus learning through an in-depth study of trigonometric and circular functions, including modeling, graphing, and connecting to polar coordinates, complex numbers, and series. Topics include study of right and oblique triangles, trigonometric functions (including graphs, transformations, and modeling), solving trigonometric equations, trigonometric identities, circular functions, vectors, the complex plane, polar coordinates, conic sections, and applications of trigonometric functions and other listed concepts.	10	12
2044	Algebra II/Trigonometry	Algebra II/Trigonometry - Grades 10 - 12 - This course is above the level of Algebra 1 and is designed for students who have attained Algebra I and Geometry objectives. This course covers Algebra II concepts and looks more deeply at specifically trigonometric functions and relationships. The four critical areas for Algebra II are: (1) polynomial, rational, and radical relationships; (2) trigonometric functions; (3) modeling with functions and (4) inferences and conclusions from data. Topics for Trigonometry in this course include study of right and oblique triangles, trigonometric functions (including graphs, transformations, and modeling), solving trigonometric equations, trigonometric identities, circular functions, and applications of trigonometric and circular functions. If time allows, study of vectors, the complex plane, polar coordinates, and conic sections may be possible.	10	12
2045	Elementary Functions	Elementary Functions - Grades 10 - 12 - This course is higher than the level of Algebra II and is designed for students who have attained pre-calculus objectives. This course is intended to support preparation for a calculus course and offers a deeper study of elementary functions -polynomial, rational, algebraic, exponential, logarithmic, circular, and trigonometric functions - their graphs, and their applications. Topics include examination of functions verbally, graphically, numerically, and symbolically, as well as properties of functions, such as domain and range, rates of change, concavity, asymptotes, and piece-wise functions.	10	12

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Course ID	Course Name	Long Course Description	Min Grd	Max Grd
2047	Math Analysis	Math Analysis - Grades 10 - 12 - This course is higher than the level of Algebra II and is designed for students who have attained Algebra II objectives. This is a pre-calculus course that offers an in-depth, conceptual analysis of algebraic, polynomial, rational, logarithmic, exponential, and trigonometric functions, including solving and graphing all types of functions. Topics include patterns in behavior of graphs, study of domains and ranges, roots of functions that are Real or Complex, turns in graphs and the first derivative, graphing using transformations (with and without a graphing calculator), study of limits, introduction to integration, study of matrices, algebraic proofs and conceptual explanations, and application, problem solving.	10	12
2048	Trigonometry/Analytic Geometry	Trigonometry/Analytic Geometry - Grades 9 - 12 - This course is higher than the level of Algebra II and is designed for students who have attained Algebra II objectives. This is a pre-calculus course covering topics in both Trigonometry and Analytic Geometry in preparation for a calculus course. Topics for Trigonometry include: study of right and oblique triangles, trigonometric functions (including graphs, transformations, and modeling), solving trigonometric equations, trigonometric identities, circular functions, vectors, the complex plane, polar coordinates, conic sections, and applications of trigonometric functions and other listed concepts. Topics for Analytic Geometry include: vectors, lines in two dimensions, circles, conics, transformation of coordinates, polar coordinates, parametric equations, and the solid analytic geometry of vectors, lines, planes, cylinders, spherical and cylindrical coordinates.	09	12
2049	Trigonometry/Math Analysis	Trigonometry/Math Analysis - Grades 9 - 12 - This course is higher than the level of Algebra II, designed for students who have attained Algebra II objectives, and covering topics in both Trigonometry and Math Analysis in preparation for a calculus course. Topics for Trigonometry include: study of right and oblique triangles, trigonometric functions (including graphs, transformations, and modeling), solving trigonometric equations, trigonometric identities, circular functions, vectors, the complex plane, polar coordinates, conic sections, and applications of trigonometric functions and other listed concepts. Topics for Math Analysis include: patterns in behavior of graphs, study of domains and ranges, roots of functions that are Real or Complex, turns in graphs and the first derivative, graphing using transformations (with and without a graphing calculator), study of limits, introduction to integration, study of matrices, algebraic proofs and conceptual explanations, and application problem solving.	09	12
2050	Analytic Geometry/Math Analysis	Analytic Geometry/Math Analysis - Grades 9 - 12 - This course is higher than the level of Algebra II and is designed for students who have attained Algebra II objectives. This is a pre-calculus course covering topics in both Analytic Geometry and Math Analysis in preparation for a calculus course. Topics for Analytic Geometry include: vectors, lines in two dimensions, circles, conics, transformation of coordinates, polar coordinates, parametric equations, and the solid analytic geometry of vectors, lines, planes, cylinders, spherical and cylindrical coordinates. Topics for Math Analysis include: patterns in behavior of graphs, study of domains and ranges, roots of functions that are Real or Complex, turns in graphs and the first derivative, graphing using transformations (with and without a graphing calculator), study of limits, introduction to integration, study of matrices, algebraic proofs and conceptual explanations, and application problem solving.	09	12

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Course ID	Course Name	Long Course Description	Min Grd	Max Grd
2053	Pre-Calculus	Pre-calculus - Grades 10 - 12 - This course is higher than the level of Algebra II and is designed for students who have attained Algebra II objectives, in preparation for a calculus course. Pre-calculus incorporates algebraic, graphical, numerical, and verbal analyses through the study of complex numbers; expanded understanding of polynomial and rational, logarithmic and exponential, and trigonometric functions; trigonometric identities and equations; vectors; the polar coordinate system; conic sections; and an introduction to limits; Application-based problem solving using appropriate technology tools is an integral part of the course.	10	12
2054	Discrete Mathematics	Discrete Mathematics - Grades 9 - 12 - This course is higher than the level of Algebra II and is designed for students who have attained Algebra II objectives, Discrete Mathematics courses focus on conceptual categories Number and Quantity; Statistics and Probability; and Modeling, as well as briefly covering some concepts in Algebra and Functions. Discrete Mathematics is a problem-based learning course that is heavily based in modeling with mathematics, especially with topics like elections and weight voting, graph theory, game theory, and apportionment. This course expands on the topics of matrics; combinatorial reasoning; counting techniques; algorithms; sequences and series; and applications of each.	09	12
2055	Calculus	Calculus - Grades 11 - 12 - This course is higher than the level of Algebra II and is intended for students who have attained pre-calculus objectives, including trigonometry. Calculus deepens student understanding of functions and introduces the process of differentiation and integration. Concepts explored include limits and continuity; derivatives; definite integrals; exponential and logarithmic functions, trigonometric functions, the fundamental theorem of calculus; and techniques of integration, anti-derivatives, differentiation, integration, the definite and indefinite integral, and applications of calculus.	11	12
2056	Multivariate Calculus	Multivariate Calculus - Grades 11 - 12 - This course is higher than the level of Algebra II and is intended for students who have attained objectives in Calculus. Topics include vectors in Euclidean space; vector analysis; analytic geometry of three dimensions; curves in space; partial derivatives; optimization techniques; multiple integrals; vector fields, Green's theorem, divergence theorem; Stokes' theorem; differential forms.	11	12
2057	Differential Calculus	Differential Equations - Grades 11 - 12 - This course is higher than the level of Algebra II and is intended for students who have attained objectives in Calculus. Course includes the study of elementary differential equations including first and higher order differential equations, partial differential equations, linear equations, systems of linear equations, transformations, series solutions, numerical methods, boundary value problems, and existence theorems.	11	12
2058	AP Calculus AB	AP Calculus AB - Grades 11 - 12 - This course is higher than the level of Algebra II and aligns to College Board's AP Calculus AB content. This course is intended for students who have attained the objectives of pre-calculus. Topics for AP Calculus AB include limits and continuity; differentiation; integration and accumulation of change; differential equations; application of integration. This course is intended to prepare students for the optional Advanced Placement Exam in this subject and should follow the published College Board guidelines.	11	12

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Course ID	Course Name	Long Course Description	Min Grd	Max Grd
2059	AP Calculus BC	AP Calculus BC - Grades 11 - 12 - This course is higher than the level of Algebra II and aligns to College Board's AP Calculus BC content. This course is intended for students who have attained the objectives of pre-calculus. AP Calculus BC covers the same topics as AP Calculus AB (Refer to course code 2058 for topics) plus parametric equations, polar coordinates, vector-valued functions, and infinite sequences and series. This course is intended to prepare students for the optional Advanced Placement Exam in this subject and should follow the published College Board guidelines.	11	12
2060	AP Statistics	AP Statistics - Grades 11 - 12 - This course is higher than the level of Algebra II and aligns to College Board's AP Statistics content. This course is intended for students how have attained the objectives of pre-calculus. AP Statistics is an introductory college-level statistics course that introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students cultivate their understanding of statistics using technology, investigations, problem solving, and writing as they explore concepts like variation, distribution; patterns and uncertainty; and data-based predictions, decisions, and conclusions. This course is intended to prepare students for the optional Advanced Placement Exam in this subject and should follow the published College Board guidelines.	11	12
2073	Number Theory-Algebra II Level	Number Theory - Grades 11 - 12 - This course is higher than the level of Algebra II. Course intended for students who have attained the objectives of Algebra II. Number Theory courses are devoted primarily to the study of the integers, their additive and multiplicative structures, the Fundamental Theorem of Arithmetic, congruence, and divisibility.	11	12
2074	Abstract Algebra-Pre-calculus	Abstract Algebra - Pre-calculus level - Grades 11 - 12 - This course is higher than the level of Algebra II. Course intended for students who have attained pre-calculus objectives. Abstract algebra is the set of advanced topics in algebra that deal with abstract algebraic structures rather than the usual number systems. Abstract Algebra-Pre-calculus level courses include a study of the properties of the number system from an abstract perspective, including such topics as number fields (i.e., rational, real, and complex numbers), integral domains, rings, groups, polynomials, and the fundamental theorem of algebra.	11	12
2075	Linear Algebra-Pre-calculus	Linear Algebra - Pre-calculus level - Grades 11 - 12 - This course is higher than the level of Algebra II. Course intended for students who have attained pre-calculus objectives. Linear Algebra-Pre-calculus level courses include matrix algebra, determinants, elementary vector spaces, characteristics equations and eigenvalues.	11	12
2076	Linear Programming-Pre-calculus	Linear Programming - Pre-calculus level - Grades 11 - 12 - This course is higher than the level of Algebra II. Course intended for students who have attained pre-calculus objectives. Linear programming is the fundamental modelling technique in optimal decision-making. Linear Algebra-Pre-calculus level courses include a study of the concepts of LP modelling, exploration of the mathematical properties of LP problems, and a study of the theory of the simplex algorithm as a solution technique.	11	12

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Course ID	Course Name	Long Course Description	Min Grd	Max Grd
2077	SREB Math Ready	SREB Math Ready - Grade 12 - Pre-requisite: either the course series of Algebra I, Geometry and Algebra II or the course series of Integrated Pathway: Mathematics I, II and III. This course is higher than the level of Algebra II. This Southern Regional Educational Board (SREB) course emphasizes an understanding of math concepts. Math Ready students learn the context behind procedures and come to understand the WHYS of using certain formulas or methods to solve a problem. By engaging students in real-world applications, this course develops critical thinking skills that students will use in college and careers. Refer to course code 2076 for standards.	12	12
2078	Mathematical Modeling Grades	Mathematical Modeling - Grades 10 - 12 - This course is higher than the level of Algebra II. This is a project based course using emergent technologies to give students hands on experience exploring mathematical modeling and processes. Students will create an independent research project to address real world situations including using robotics, supercomputing, 3D modeling or other techniques. Students may present their projects and/or compete in robotics, supercomputing or other competitions. Licensure Requirements are the same as course code 2053.	10	12
2083	Integrated Math 4 12th	Integrated Pathway: Mathematics IV - Grade 12 - This course is higher than the level of Algebra II and may include topics in pre-calculus, trigonometry, math analysis and/or calculus. This course is for students who have successfully attained the standards for Integrated Pathway: Mathematics III course and seek an integrated approach to further study mathematics.	12	12
2087	Algebra 2A: Math for Careers	Algebra 2A: Math for Careers Course 1: Grades 9-11 This mathematics/career application course addresses and is aligned to half of the Algebra 2 Common Core State Standards. It includes Linear, Polynomial, Quadratic, and Piecewise Functions and Graphs, Vectors, and Matrices as well as Data, Discrete Math, and Logic. It bridges the gap between textbook theory and career application by connecting the mathematical concepts to high-value careers to increase engagement and create cohesion between students' life experiences and the career plans. If this course is taken with Algebra 2B, the two courses qualify for as an Algebra 2 credit. Note: to receive an Algebra 2 credit both courses must be completed - Algebra 2A and 2B	09	11
2088	Algebra 2B: Math for Careers	Algebra 2B: Math for Careers Course 2: Grades 10-12 This mathematics/career-application course addresses and is aligned to half of the Algebra 2 Common Core State Standards. It includes Radical, Rational, Exponential, and Logarithmic Functions, Conic Sections, Complex Numbers, Trigonometry, and Series and Sequences as well as Binary Numbers, Computer Science Math, and Topology. The course embeds exposure to real-life, high-value careers that bring relevancy to the concepts being taught. If this course is taken with Algebra 2A, the two courses qualify for an Algebra 2 credit. Note: to receive an Algebra 2 credit both courses must be completed - Algebra 2A and 2B	10	12
2096	Mathematics-Independent Study	Mathematics - Independent Study - Grades 9 - 12 - This course is higher than the level of Algebra II, often conducted with instructors as mentors, enables students to explore mathematics topics of interest. This course may be offered in conjunction with other rigorous math courses, or may serve as an opportunity to explore a topic of special interest. They may also serve as an opportunity to study for AP exams if the school does not offer specific courses for that endeavor.	09	12

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Course ID	Course Name	Long Course Description	Min Grd	Max Grd
2097	Financial Literacy-Math	Financial Literacy - Math - Grades 9 -12 - This course provides an understanding of the topics of finance while reinforcing concepts and skills in the high school mathematics standards. This course aligns to at least the Algebra I standards. The finance topics may include: income and careers; money management; credit and debt; and savings and investing. Topic sections cover: personal income, business ownership; budget; taxes; insurance; credit cards; buying verses leasing, mortgages; rent; credit ratings; bankruptcy, bank and brokerage accounts; interest rates; stocks and bonds; retirement; pensions; inheritance; and government financing. The Standards for Mathematical Practice apply throughout this course and, together with the content standards, prescribe mathematics as a coherent, useful, and logical subject that makes sense of problem situations.	09	12
2099	Mathematics-Other	Mathematics - Recommended for Students Grades 5 - 12 - This course code is to be used for college level courses which are not listed above. It may also be used for middle school students if an appropriate MATH course code is unavailable. Typically used with advanced dual credit topics.	05	12

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