

DEPARTMENT OF MATHEMATICS

ALGEBRA 1

Grade: 9

Prerequisites: none

Credit: 1 credit; ½ credit per semester

Taught from a function approach, this two-semester course is the foundation of all mathematics courses. Students will analyze data as it relates to the real world. Concepts and skills involve operations and properties of real numbers, linear functions, linear inequalities, quadratic functions, factoring polynomials, exponential functions, variation and system of linear equations and inequalities.

ALGEBRA 1 - PRE AP

Grade: 9

Prerequisites: none

Credit: 1 credit; ½ credit per semester

Curriculum is essentially the same as Algebra 1, but with an accelerated pace, more extensions, and depth and complexity.

GEOMETRY

Grade: 9-11

Prerequisites: successful completion of Algebra I

Credit: 1 credit; ½ credit per semester

Major areas of concentration in this two-semester course include: elements of geometry, definitions, theorems, the nature of inductive and deductive reasoning; the study of properties of lines, angles, and triangles, perpendicular lines, parallel lines; congruence; area; similarity; circles; surface area; volume; and transformations.

GEOMETRY - PRE AP

Grade: 9-10

Prerequisites: Algebra 1 Pre-AP or Algebra 1 Prep with teacher/dean recommendation

Credit: 1 credit; ½ credit per semester

This two-semester course is an enhancement of geometric topics included in the geometry curriculum. In addition to those topics other areas of concentration will include: logic, angles, properties of lines, congruent and right triangles, polygons, trigonometric functions and identities, circles, transformations, coordinate geometry, surface area and volume, and inductive and deductive reasoning.

ALGEBRA 2

Grade: 10-12

Prerequisites: successful completion of geometry credit

Credit: 1 credit; ½ credit per semester

This two-semester course is devoted to continue the student preparation for upper level classes as Pre-Calculus and Statistics. It includes matrices, polynomials, radicals, rational expressions, exponential and logarithmic functions, and conic sections.

ALGEBRA 2 - PRE AP

Grade: 10-11

Prerequisites:

Pre-AP Geometry or Geometry Prep with teacher/counselor recommendation

Credit: 1 credit; ½ credit per semester

Major areas of concentration in this two semester honors course include: number systems (real and complex) equalities, inequalities, permutations, combinations, probability, the factor, remainder, and binomial theorems, systems of linear equations in two and three variables, descriptive statistics, oblique triangles, properties of trigonometric and circular functions. Throughout the course there is a thorough and exhaustive study of functions.

PRE-CALCULUS

Grade: 12

Prerequisites: successful completion of Algebra 2 and Geometry

Credit: 1 credit; ½ credit per semester

Major areas of concentration in this two-semester course include: linear functions, inequalities and systems; polynomial and rational functions and inequalities; transformations of functions and relations; conics; real and complex number systems; exponential and logarithmic functions; sequences and series; combinatorics and probability; trigonometric and circular functions and identities; polar coordinates.

PRE-CALCULUS - PRE AP

Grade: 10 – 12

Prerequisites: successful completion of Algebra 2 PreAP and Geometry PreAP or counselor/teacher recommendation

Credit: 1 credit; ½ credit per semester

Major areas of concentration in this two-semester honors course include all of the topics of the Pre-Calculus Preparatory course in greater depth and: statistics; vector and parametric equations; limits.

AP CALCULUS AB

Grade: 11 – 12

Prerequisites: Pre-Calculus PreAP or teacher/dean recommendation

Credit: 1 credit; ½ per semester

This two-semester honors course is the equivalent of one college semester course of Calculus (Calculus I), culminating with the AP Calculus AB Exam in May. Major areas of concentration are: I. Functions, Graphs and Limits, including: analysis of graphs; limits of functions: II. Derivatives, including: concept of the derivative; derivative at a point; derivative as a function; second derivatives; applications of derivatives; Mean Value Theorem; optimization; computation of derivatives; related rates. III. Integrals, including: interpretations and properties of definite integrals; applications of integrals; distance, velocity and acceleration; Fundamental Theorem of Calculus; Mean Value Theorem for Integrals; techniques of anti-differentiation; applications of anti-differentiation; exponential growth and decay; numerical approximations to definite integrals.

AP CALCULUS BC

Grade: 11 – 12

Prerequisites: Algebra I PreAP, Geometry PreAP, Pre-Calculus Pre AP or teacher/dean recommendation

Credit: 1 credit; ½ per semester

This two-semester honors course is the equivalent of two college semesters of Calculus (Calculus I and Calculus II), culminating with the AP Calculus BC Exam in May. Major areas of concentration include all of topics I (including parametric, polar and vector functions), II and III of the AP Calculus AB course and: IV. Polynomial Approximations and Series, including: concept of series; series of constants, Taylor series.

MATH MODELS

Grade: 11 – 12

Prerequisites: Algebra 1, Geometry, Algebra II, or dean recommendation

Credit: 1 credit, ½ per semester

Students use algebraic, graphical, and geometric reasoning to recognize patterns and structure, to model information, and to solve problems from various disciplines. Students use mathematical methods to model and solve real-life applied problems involving money, data, chance, patterns, music, design, and science. Students use mathematical models from algebra, geometry, probability, and statistics and connections among these to solve problems from a wide variety of advanced applications in both mathematical and nonmathematical situations. Students use a variety of representations (concrete, pictorial, numerical, symbolic, graphical, and verbal), tools, and technology (including, but not limited to, calculators with graphing capabilities, data collection devices, and computers) to link modeling techniques and purely mathematical concepts and to solve applied problems.