

**HIGH SCHOOL
PROGRAM OF STUDIES
MATHEMATICS
2009 - 2010**

Board of Education of Carroll County
Westminster, Maryland

Approved at the October 22, 2008 Board of Education Meeting

PRE-ALGEBRA

Course #: 201511- I (Basic) 1 credit

This course is designed for those students who have demonstrated marked deficiencies in mathematics. Course content includes basic concepts with fractions, decimals, algebra language, integers, and one-step equations. Students will begin instruction on the State of Maryland's Core Learning Goals for the Algebra/Data Analysis Test.

Prerequisites and other notes: Ninth grade students are placed in this course on recommendations of previous mathematics instructors. This course is for elective credit only and cannot count for any of the required math credits.

ALGEBRA I / DATA ANALYSIS

Course #: 201816 (Academic) 1 credit

This course (or the extended time 2 credit alternative – see below) is required of all students seeking a diploma. In Algebra I/Data Analysis, the student will learn to solve linear equations and inequalities showing the solution set graphically; to solve verbal problems algebraically; to recognize and apply the properties of the real number system and to solve systems of linear equations. Skills in working with graphing calculators, polynomials, finding products, as well as applications are stressed. Probability and data analysis will be emphasized. Factoring will be included if time permits. This course prepares students for the High School Assessment-Algebra and Data Analysis.

ALGEBRA I / DATA ANALYSIS - Part A

Course #: 201716 (Academic) 1 credit

This is the first half of a two-credit extended time Algebra I/Data Analysis sequence. This course provides more time for students to be successful with this important course content. This course together with Algebra I/Data Analysis Part B prepares students for the High School Assessment - Algebra and Data Analysis.

ALGEBRA I / DATA ANALYSIS –Part B

Course #: 202016 (Academic) 1 credit

This course is the second half of a two-part course that enables students to complete a two-credit Algebra I/Data Analysis program. This course together with Algebra I/Data Analysis Part A prepares students for the High School Assessment - Algebra and Data Analysis and successful completion fulfills the Maryland State algebraic topics mathematics graduation requirement.

Prerequisites and other notes: Algebra I/Data Analysis - Part A.

INTERMEDIATE ALGEBRA /DATA ANALYSIS

Course #: 202216 (Academic) 1 credit

HONORS INTERMEDIATE ALGEBRA /DATA ANALYSIS

Course #: 202218 (Honors) 1 credit

This course is designed for the student who plans to continue her/his education beyond high school. The topics include factoring, functions, quadratic equations systems, of equations/inequalities, complex numbers, and rational expressions/equations. The solution of related problems using the graphing calculator will be included. (Honors Algebra Intermediate/Data Analysis will also include matrices.)

Prerequisites and other notes: Algebra I/Data Analysis. [Note: Beginning with students entering 9th grade in Fall of 2009, this course will **not** satisfy the Maryland university system graduation requirements.]

GEOMETRY

Course #: 203916 (Academic) 1 credit

HONORS GEOMETRY

Course #: 203918 (Honors) 1 credit

This course provides for the development of a mathematical system through the use of deductive reasoning, logic, constructions, and proofs. Topics include deductive and inductive reasoning, triangles, quadrilaterals, other polygons; similarity, congruency, circles, space geometry, and trigonometry.

Prerequisites and other notes: Algebra I/Data Analysis

APPLIED GEOMETRY

Course #: 204316 (Academic) 1 credit

This course is an alternative to the academic geometry course and meets the Maryland state geometry graduation requirement. Applications of Geometry in a variety of career settings will be emphasized.

Prerequisites and other notes: Algebra / Data Analysis – Course 1 Part B is a pre-requisite. Students earning credit in Applied Geometry can meet Carroll County local graduation requirements by completing a state-approved completion program or by earning a minimum of two additional higher-level math credits (Intermediate Algebra / Data Analysis and Algebra II/ Data Analysis).

ALGEBRA II/ DATA ANALYSIS

Course #: 202316 (Academic) 1 credit

HONORS ALGEBRA II/DATA ANALYSIS

Course #: 202318 (Honors) 1 credit

This course is designed for students looking to continue their education after high school. The topics studied include polynomials, factoring, complex numbers, quadratic equations, graphs of functions, systems of equations and inequalities, matrices, probability correction and regression, polynomial & rational functions, exponential & logarithmic functions, and analytic geometry.

Prerequisites and other notes: Intermediate Algebra/Data Analysis and Geometry. [Note: Beginning with students entering 9th grade in the Fall of 2009, successful completion of this course is required to satisfy the Maryland university system graduation requirements.]

TRIGONOMETRY

Course #: 204506 (Academic) ½ credit

Topics included in this course are trigonometric and circular functions, sum and difference formulas, the Laws of Sines and Cosines, radian measure, graphs of trigonometric functions, trigonometric identities and equations, and inverse trigonometric functions. Trigonometric applications are stressed.

Prerequisites and other notes: Intermediate Algebra /Data Analysis and Geometry.

PROBABILITY AND STATISTICS

Course #:205006 (Academic) ½ credit

This course is designed for students desiring to learn how to organize and interpret quantitative data and to understand concepts of probability. Applications in other content areas will be stressed.

Prerequisites and other notes: Intermediate Algebra /Data Analysis.

AP PROBABILITY AND STATISTICS

Course #: 205019

1 credit

Topics included in this course are broken into four main categories: Exploratory Analysis, Planning a Study, Probability, and Statistical Inference. Students are expected to sit for the AP Statistics Examination. Possible college credit can be earned with a score of 3, 4, or 5 on the examination.

Prerequisites and other notes: Intermediate Algebra/Data Analysis (Algebra II/Data Analysis highly recommended).

TRIGONOMETRY & PRE-CALCULUS

Course #: 204516 (Academic)

1 credit

This Course is designed for students looking to continue their education after high school. Topics studied include trigonometry analytic geometry, sequences, series, and an introduction to limits, derivatives & integration.

Prerequisites and other notes: Algebra II/Data Analysis.

HONORS TRIGONOMETRY & PRE-CALCULUS

Course #: 204518 (Honors) 1 credit

This course is intended for college-bound students who will major in fields that use higher level mathematics. Topics include trigonometry, vectors, polar & parametric equations, math induction, sequences, series, and an introduction to limits, derivatives & integration.

Prerequisites and other notes: Algebra II/Data Analysis (Level 8 highly recommended)

HONORS PRE-CALCULUS

Course #:205618 (Honors) 1 credit

This course includes topics which should be part of the background of college-bound students who intend to major in mathematics or a field of science. Topics studied include functions and relations, exponents, logarithms, analytic geometry, mathematical induction, sequences series, complex numbers, and limits.

Prerequisites and other notes: This course is ONLY for students who have successfully completed the discontinued Honors Trigonometry Course # **204618** which was last offered during the 08-09 school year.

HONORS CALCULUS

Course #:205718 (Honors) 1 credit

In this course students explore the concepts of limits, derivatives, and integrals and prepare for further studies in calculus. Limits are essential since they provide the foundation for both differential and integral calculus. Students will learn the interpretations, techniques, and applications of both derivatives and integrals.

Prerequisites and other notes: Trigonometry & Pre-calculus (Academic) or Pre-calculus (Academic) or Honors Trigonometry and Honors Pre-Calculus.

AP CALCULUS AB

Course #: 205319 1 credit

In this course, students study graphs, functions, limits, derivatives, and integrals, and prepare for further studies in calculus. Students will learn the interpretations, techniques, and applications of both derivatives and integrals. Much work will be done with graphing calculators. Students are expected to sit for the College Board's Advanced Placement Calculus AB Examination.

Prerequisites and other notes: Either Honors Trigonometry & Pre-calculus or both Honors Pre-calculus and Honors Trigonometry are highly suggested. [Students completing Trigonometry & Pre-calculus (Academic) or Pre-calculus (Academic) should obtain a teacher recommendation].

AP CALCULUS BC

Course #: 205219 1 credit

Much emphasis is placed on preparing for the AP Calculus BC test. In addition to applying concepts from Calculus, students investigate advanced techniques of integration, polar and parametric equations, and infinite series. Topics such as Taylor, Power, and Maclaurin series will be emphasized. Students are expected to sit for the College Board's Advanced Placement Calculus BC Examination.

Prerequisites and other notes: AP Calculus AB.

MATHEMATICS AIDE

Course #: 206006 (Academic) ½ credit
206016 (Academic) 1 credit

This course is designed for students interested in learning how to assist other students in improving their content knowledge and/or skills in mathematics. Specifically, the aide helps the teacher in the preparation and/or distribution of instructional materials, tutoring and helping individual students, and providing other assistance to the teacher as needed. Instructional Aides are required to attend training. Their supervision is the responsibility of the assigned teacher.

Prerequisites and other notes: This course is for elective credit only and cannot be used as one of the required courses for graduation. Ten (10) service-learning hours may be earned.

INDEPENDENT STUDY - MATHEMATICS

Course #: 206308 (Honors)	½ credit
206318 (Honors)	1 credit

Independent Study: Mathematics allows students to work independently in an area of study or research which is an extension of a topic previously studied or an area of study or research not covered in the high school course of studies. Work is done during the student's unassigned time under the direction of a faculty advisor. Regularly scheduled conferences will occur. Students register only on the recommendation of their teacher and guidance counselor.

Prerequisites and other notes: Permission of the instructor and approval of the principal are required.