

HONORS ALGEBRA 1

GRADE	CREDITS
9	4

Placement: Based on grade in previous math course, teacher recommendation, and assessment results.

This course is designed for students who have demonstrated strong ability and high achievement in Mathematics thus far. It is offered to students who will ultimately take Calculus or AP Calculus. Algebraic skills are developed to a higher degree of difficulty. The material is presented at a faster pace and in a more challenging manner than in Algebra 1.

Topics covered include: number systems; properties; algebraic equations; the coordinate plane; graphs of equations; problem solving by use of algebraic principles; exponents; factoring; systems of equations; operations with polynomials; quadratic equations; radicals; probability; and functions.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Algebra 1, Common Course, Randall I. Charles

ALGEBRA 1

GRADE	CREDITS
9, 10, 11, 12	4

This course is designed for students who have successfully completed the mathematics program in grades K-8. It is an introduction to abstract mathematical ideas and it is considered to be the first step in a college preparatory math sequence.

Topics covered include: number systems; properties; algebraic equations; the coordinate plane; graphs of equations; problem solving by use of algebraic principles; exponents; factoring; systems of equations; operations with polynomials; quadratic equations; radicals; probability; and functions.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Algebra 1, Common Course, Randall I. Charles

HONORS GEOMETRY

GRADE	CREDITS
9, 10	4

Prerequisite: “B” or better in Algebra 1 or B- or better in Honors Algebra 1.

This course is designed for students who have demonstrated strong ability and high achievement in Mathematics thus far. It is offered to students who will ultimately take Calculus or AP Calculus. Basic geometric concepts are explored in greater depth and in a more challenging manner.

This course deals with parallel and perpendicular lines, planes, angles, triangles, polygons and circles. Also, the Pythagorean Theorem, linear systems, ratio, proportion, congruency, similarity, areas, surface areas, volumes, and Coordinate Geometry are taught. Special emphasis is given to the formal geometric proof and logical reasoning. Students are required to analyze given conditions, organize data, and interpret results. Activities are promoted to help students develop problem-solving skills in mathematical situations.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Geometry, Common Core, Randall I. Charles

GEOMETRY

GRADE	CREDITS
9, 10, 11, 12	4

Prerequisite: “C” or better in Algebra 1 or Honors Algebra 1 or B-.

This course explores the basic structure of geometry. It is offered as the second course in a regular college preparatory math sequence.

This course covers topics including points, lines, planes, angles, parallel lines and planes. Definitions, postulates, and theorems are studied throughout the course. Also included are concepts dealing with congruency and similarity of polygons along with an extensive study of the right triangle and circles. Areas of plane figures, constructions, volumes and surface areas of solids, and coordinate geometry are studied. Logical reasoning is introduced.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Geometry, Common Core, Randall I. Charles

HONORS ALGEBRA 2

GRADE	CREDITS
10, 11, 12	4

Prerequisite: “B“ or better in Geometry and in Algebra 1 or “B-“ or better in Honors Geometry and in Honors Algebra 1.

This course is designed for students who have demonstrated high potential and ability to handle the abstract concepts of higher mathematics. This challenging course is offered to ensure those students an opportunity to be fully prepared to proceed to PreCalculus and Calculus.

Topics covered are as follows: real numbers; equations; inequalities; graphs; polynomials; logarithms; matrices; sequences and series; factoring; rational expressions; complex numbers; functions; and conic sections. Problem solving techniques are developed throughout the course. Constant use of a scientific calculator is made. Additional topics include: probability.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Algebra 2,Common Core, Randall I. Charles

ALGEBRA 2

GRADE	CREDITS
10, 11, 12	4

Prerequisite: Passing grade in Geometry

This course logically follows Algebra 1 and Geometry. It is the third course in a college preparatory Math sequence. Successful completion of this course will fulfill Math requirements for many colleges. It is designed for students with good math ability who have performed well in their math courses thus far, and who have demonstrated the potential to handle abstract mathematical concepts.

Topics covered are as follows: real numbers; equations; inequalities; graphs; polynomials; factoring; rational expressions; logarithms; matrices; sequences and series; complex numbers; functions; logarithms; conic sections including circles, parabolas, ellipses and hyperbolas. Problem solving techniques are developed throughout the course. Constant use of a scientific calculator is made. Optional topics may include: matrices and probability.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Algebra 2,Common Core, Randall I. Charles

HONORS PRECALCULUS

GRADE	CREDITS
10, 11, 12	4

Prerequisite: “B” or better Algebra 2 or “B-“ or better in Honors Algebra 2.

This course is designed to prepare students for calculus. It is suggested for students who performed well in Geometry and Algebra 2 and who hope to enroll in college upon their graduation.

Topics included are: A review of algebraic concepts; functions and their graphs; polynomial and rational functions; exponential and logarithmic functions; conic sections; polar coordinates; sequences, series; and matrices. A large segment of this course is devoted to the study of trigonometry. Additional topics include: polar coordinates and matrices.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: PreCalculus, With Limits, Roland E. Larson, Robert P. Hostetler
(A graphing calculator is suggested.)

PRECALCULUS

GRADE	CREDITS
10, 11, 12	4

Prerequisite: “C-“ or better in Algebra 2 or “B-“ or better in Essentials of Algebra 2.

This course prepares students for higher-level math courses. It is suggested for those students who have performed well in geometry and algebra and hope to enroll in college.

Topics included are: A review of algebraic concepts; functions and their graphs; polynomial and rational functions; sequences and series; exponential and logarithmic functions. A large segment of this course is devoted to the study of trigonometry. Additional topics include conic sections; polar coordinates; matrices, and determinants.

Students will be evaluated on the basis of tests, class participation, and assignments..

Text: PreCalculus, With Limits, Roland E. Larson, Robert P. Hostetler

AP CALCULUS AB

GRADE	CREDITS
11, 12	6

Prerequisite: “B-“ or better in PreCalculus or Honors PreCalculus.
Departmental approval and/or some prerequisite summer activities may be required.

This course is the most advanced math course offered at the high school. It is designed for students who have clearly shown a keen aptitude and ability to handle algebraic, geometric and trigonometric concepts. Students who enroll in this course will take the advanced placement test in late Spring.

Topics covered are as follows: functions; limits; differentiation; continuity; curve sketching; related rates; maxima and minima; velocity and rates; integration; areas under and between curves; volumes; average value; natural logarithms; exponential functions; and slope fields.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Calculus: A Brief Edition, 6th Edition, Howard Anton
(A graphing calculator is required)

HONORS CALCULUS

GRADE	CREDITS
11, 12	4

Prerequisite: “B-“ or better in PreCalculus or “C-“ or better in Honors PreCalculus.

This course is offered as an alternative to Advanced Placement Calculus. Although the topics covered are the same as in AP Calculus, the depth of coverage is less extensive. It is designed for students who have shown an aptitude and ability to handle algebraic, geometric, and trigonometric concepts.

Topics covered include: functions, limits, differentiation, continuity, curve sketching, related rates, maxima and minima, velocity and rates, integration, area under and between curves, volumes, average values, natural logarithms, exponential functions, and integration by parts.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Calculus: Graphical, Numerical, Algebraic, Finney
(A graphing calculator is required)

S A T / TRIG

GRADE	CREDITS
10, 11, 12	2

Prerequisite: A passing grade in Algebra 1, Geometry and Algebra 2.

This course is multidimensional. Students will be given the opportunity to improve their understanding of mathematical concepts and learn techniques to aid them in taking the Scholastic Aptitude Test (SAT). Practice SAT tests will be given.

The trigonometry portion of this course deals with the following topics: trigonometric functions and their graphs; trigonometric identities; law of cosines; law of sines and practical applications.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Official Study Guide for the New SAT, College Board
Trigonometry, Arthur F. Coxford.
Handouts

HONORS PROBABILITY AND STATISTICS

GRADE	CREDITS
11, 12	4

Prerequisite: "C-" or better in any level of Algebra 2.

This course is designed for students who have completed PreCalculus. Statistical information has become commonplace. Virtually everyone uses or consumes some statistical information every day. This course will serve as a general-purpose introduction to the topics of probability and statistics.

Topics covered will include: Graphical representation of statistical data, frequency distributions, measures of central tendency and variability, elements of probability and probability distribution, sampling methods, estimation of parameters, hypothesis testing, correlation, regression analysis, t -test and chi-square.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Statistics: Informed Decisions using Data. Michael Sullivan III.
(A graphing calculator is required.)

AP COMPUTER SCIENCE A

GRADE	CREDITS
11, 12	6

Prerequisite: “B-“ or better in Honors Computer Science or permission of the instructor; and completed Pre-Calculus or taking Pre-Calculus concurrently.

This course will teach the design and implementation of computer programs to solve problems that are fundamental to the study of computer science.

A large part of the APCS course is built around the development of computer programs that correctly solve a given problem. These programs should be understandable, adaptable, and when appropriate, reusable. At the same time, the design and implementation of computer programs are used as a context for introducing other important aspects of computer science, including the development and analysis of algorithms, the development and use of fundamental data structures, the study of standard algorithms and typical applications, and the use of logic and formal methods. In addition, an understanding of the basic hardware and software components of computer systems and the responsible use of these systems are integral parts of the course. Topics covered include but are not limited to: computer hardware, classes, inheritance, programming control structures, looping techniques, searching and sorting algorithms, general Object Oriented Program design, and class design.

Students will learn to program using the Java programming language.

Students will be evaluated on the basis of tests, class participation, and assignments.

HONORS COMPUTER SCIENCE

GRADE	CREDITS
10, 11, 12	4

Prerequisite: “B-“ or better in Algebra 1.

The course will focus on an overview of the field of computer science. Students will study the history of computer science and gain a basic knowledge of the following topics: computer architecture, high-level language programming, software engineering, computer graphics, and robotics.

Current topics in computer science will also be discussed whenever applicable. The course will require hands-on computer time.

Students will be evaluated on the basis of tests, class participation, and assignments.

Text: Computer Science: An Overview, Brookshear

MATHEMATICAL LITERACY AND REASONING

GRADE	CREDITS
11, 12	4

Prerequisite: A passing grade in Algebra II.

This course is designed to stress the connections between contemporary mathematics and modern society. Applications to be studied include: business and civic management, statistics, elections, fairness and game theory, identification of numbers and information science, the mathematics of money and banking. Math Literacy integrates the six main Common Core high school math standards, Number and Quantity, Algebra, Geometry, Functions, Modeling, and Probability and Statistics. Students will be assessed with quizzes, tests, homework, and project work.

Text: For all Practical Purposes, COMAP.