MATHEMATICS

"Who cares about math and when am I ever going to need it?" is a frequent lament among students. Broadly speaking, we should study math (or anything) because it is (1) Useful. Mathematical problems abound in daily life, mathematical proficiency is required for many jobs, and mathematics is essential for science, engineering, and research. (2) Important. A mathematically informed citizenry will make better economic and political decisions about risk, policy, and resource allocation. (3) Interesting. Doing mathematics teaches patterns of problem-solving and insight that transfer to other knowledge domains and mathematical proof teaches skills in rigor, argumentation and persuasion that transfer to other knowledge domains.

ALGEBRA I
1 credit/4.0 weight

In this course, students learn to solve linear equations, use linear equations to solve word problems, solve systems of linear equations, factor and solve quadratic equations and simplify expressions involving polynomials, exponents and radicals. Topics in Algebra 1 comprise a large portion of many college entrance exams.

ALGEBRA II
1 credit/4.0 weight
Prerequisite: Algebra I

This course leads to an understanding of algebra beginning with review of Algebra 1 concepts and extending these same concepts and skills. Topics such as solving polynomial, exponential, logarithmic, and trigonometric equations are first encountered in this course. The study of angles and triangles are the main emphasis of the trigonometry section of the course. *(This course is available online through LHSOC.)*

ALGEBRA II (Honors)
1 credit/4.5 weight
Prerequisite: Algebra I

Honors Algebra II continues students' study of advanced algebraic concepts including functions, polynomials, rational expressions, systems of functions and inequalities, and matrices. Students will be expected to describe and translate among graphic, algebraic, numeric, tabular, and verbal representations of relations and use those representations to solve problems. Emphasis should be placed on practical applications and modeling. Appropriate technology, from manipulatives to calculators and application software, should be used regularly for instruction and assessment.

DISCRETE MATH (Honors)
1 credit/4.5 weight
Prerequisite: Algebra II, Geometry

Introduction to basic concepts of mathematics and mathematical reasoning. Logic, sets, number theory, mathematical induction, direct and indirect formal proofs. Active instruction in mathematical writing is given throughout the course and mathematical writing (including effective and correct English expression) is a major component of the course requirements.

GEOMETRY
1 credit/4.0 weight
Prerequisite: Algebra I

This course is a study of geometric figures in two and three dimensions. It is designed to increase a student's understanding of spatial relations. Emphasis is also placed upon applying algebra to geometric problem solving and applying the basic terminology and concepts of geometry in a logical and organized manner, including formal proofs. *(This course is available online through LHSOC.)*

GEOMETRY (Honors)
1 credit/4.5 weight
Prerequisite: Algebra I

Geometry continues students' study of geometric concepts building upon middle school topics. Students will move from an inductive approach to deductive methods of proof in their study of two- and three-dimensional geometric figures. Reasoning skills will be emphasized and students will broaden their use of the coordinate plane. Appropriate technology, from manipulatives to calculators and graphics software, will be used regularly for instruction and assessment.

PRE-CALCULUS
1.0 credit units/4.0 weight
Prerequisite: Algebra II, Geometry

Analytic Geometry and Trigonometry are integrated with other important topics in mathematics by an approach that stresses the use and understanding of functions. Study will include such topics as rational and irrational numbers, vectors, polar coordinates, sequences and series, matrices, and probability. *(This course is available online through LHSOC.)*

PRE-CALCULUS (Honors)
1 credit/4.5 weight
Prerequisite: Algebra II, Geometry

Pre-Calculus provides students an honors-level study of trigonometry, advanced functions, analytic geometry, and data analysis in preparation for calculus. Applications and modeling should be included throughout the course of study. Appropriate technology, from manipulatives to calculators and application software, are used regularly for instruction and assessment. *(Spring Only)*

CALCULUS (AP)
2 credit/5.0 weight
Prerequisite: Pre-Calculus. Must meet AP course requirements.

In AP Calculus the students will gather an understanding of the concepts of Calculus and the applications of Calculus. Students will look at problems and express the results graphically, numerically, analytically, and verbally. Students will use technology to draw connections between the relationships of the different topics in calculus. Through the use of the unifying themes of derivatives, integrals, limits, approximation, and applications and modeling, the course becomes a cohesive whole rather than a collection of unrelated topics. Students are required to take the AP College Board Calculus AB exam in May. *(This is a year-long class.)*