The Mathematics Department Mission Is...

To develop problem solvers that persevere, communicate effectively, reason mathematically, and attend to precision.

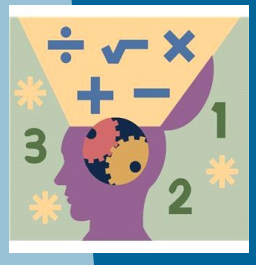
We Believe that...

All students can succeed in Mathematics.

Collaboration leads to success

Math needs to be Accessible to all

High expectations produce great learning.



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DuPage High School District 88

Curriculum Showcase

WILLOWBROOK HIGH SCHOOL

Mathematics Department

GENERAL INFORMATION

GRADUATION REQUIREMENTS:

2 Semesters—Algebra

2 Semesters—Geometry

Geometry, Geometry Honors, Algebra Honors with Geometry

2 Semesters—Mathematics Beyond Geometry

Advanced Algebra and Trig, Advanced Algebra and Trig Honors, Algebra 2

4th Year Math Courses

Into to Quant Lit and Stats, Elmhurst College

Algebra, Pre-Calculus,

Pre-Calculus Honors,

AP Calculus AB, AP Calculus BC, AP Statistics,

Electives

AP Computer Science, Computer Science

Computer Science 2: Mobile App Development

***All students are required to take and pass three years of mathematics. All students must take one year of math that includes algebraic thinking and one year of math that includes geometric**

Be Respectful,
Be Responsible,
Be Engaged

Mathematics Course Descriptions

Algebra
Is designed to prepare students to use algebraic concepts, terms, and symbols to solve problems. The course includes performing operations on real numbers and algebraic expression, solving equations in one and two variables, solving quadratic equations, using graph relationships, and data analysis.

Algebra Honors with Geometry
Is designed for students who have had an Algebra course and/or have a strong mathematics background as shown by performance in Junior High and standardized test scores. The course will include all topics of Algebra with an Integrated approach to applications of Plane Geometry. This course will fulfill the Geometry Credit required for Graduation and allow students great access to Advanced Placement courses during senior year.

Geometry
Is the study of plane Geometry and includes some three-dimensional Geometry. Algebra is used as a tool to enhance the understanding of geometric concepts.

Geometry Honors
Is the study of the mathematical system that develops plane and solid geometry through formal proof. In depth Algebra applications are used throughout the course.

Algebra 2
Is designed to reinforce and expand algebraic concepts: including complex numbers; solving equations; linear inequalities; systems of linear equations and inequalities; quadratics; polynomials; radicals; exponential functions; and logarithms.

Advanced Algebra and Trigonometry
Is designed to reinforce and expand algebraic concepts: including: solving equations; systems of linear equations; polynomials; radicals; quadratics; conic sections; exponential functions, logarithms, statistics and trigonometry.

Advanced Algebra and Trigonometry Honors
Contains the traditional topics of an advanced algebra course in addition to trigonometry, sequences and series, matrices.

Quant Lit. and Statisitcs
Is designed to prepare students for college level general mathematics courses. The College Placement Test ***ALEKS*** will be incorporated throughout the year to prepare students to take the official college placement test. Quant Lit will explore mathematics concepts through real world applications and projects.

College Algebra- Elmhurst College Credit
Students taking College Algebra will experience an online college course taught by an Elmhurst College professor with the guidance and support of a Willowbrook teacher. Successful completion earns students transcripted, college credit. Topics include: Review of algebra, equations, functions and transformations, inequalities and quadratic functions, systems of linear equations and inequalities, and polynomials.

Precalculus
Prepares the student for the study of calculus. Topics include sequences and series; polynomial functions; exponential and logarithmic functions; analytic geometry; complex numbers; trigonometry and circular functions.

Precalculus Honors
Prepares the student for the study of calculus. Topics include sequences, series, limits; polynomials, rationals, logarithmic, and exponential functions; analytic geometry; complex numbers; trigonometry, parametric equations, circular functions; polar coordinates; vectors and determinants.

Calculus AB
Is designed to prepare the student for the Calculus AB Advanced Placement Examination. A satisfactory score on this exam could give the student credit and advanced placement at college. This course includes limits and continuity; differentiation of algebraic functions; applications of the derivative; the definite integral; trigonometric and exponential functions; formal integration; applications of the integral.

Calculus BC
Is designed to prepare the student for the Calculus BC Advanced Placement Examination. A satisfactory score on this exam could give the student credit and advanced placement at college. This course includes Calculus AB Topics and polar coordinates; vectors; parametrically defined functions; sequences and series; elementary differential equations.

AP Statistics
Is designed to prepare the student for the Statistics Advanced Placement Examination. A satisfactory score on this exam could give the student credit and advanced placement in college. This course Includes analysis of data, planning and conducting a research study, producing models using probability and simulation, and methods of statistical inference. Students who plan to take an AP science course in their senior year will benefit greatly from AP Statistics in the junior year.

Computer Science Principles (+AP Option)
This is an introductory computing course for all students. Students will use computer science to solve problems and to also explain how computing innovations and computing systems—including the internet—work, explore their potential impacts, and contribute to a computing culture that is collaborative and ethical.

Advanced Placement Computer Science
Will introduce many of the programming concepts that are covered in a first year college computer science course and prepare the student for the Computer Science Advanced Placement Exam. Using the Java Language, the topics include: string manipulation, recursion, analysis of searching and sorting algorithms, structures, and classes.

Cyber-Security PLTW (+Honors Option)
This course exposes students to the field of cybersecurity through problem-based learning, algorithmic thinking, computational thinking and critical thinking.

CS 2: Mobile App Development (+Honors)
Continues the development of computer programming, but is specific to programming applications for mobile devices. Students use previous knowledge learned through Computer Science or AP Computer Science with the programming language LUA to create the apps. Students will start with the basics and templates as they build towards creating their very own app.