MATHEMATICS

The mathematics program at Eastchester High School strives to develop students' problem-solving skills, confidence in their mathematical ability and appreciation of the relevance of mathematics to today's society. By offering a variety of courses for students with a wide range of abilities, the mathematics program ensures that students meet and exceed New York State requirements. Students are challenged and encouraged to reach their full potential with skills that will carry them through the university and/or the workplace.

All students must pass three years of mathematics courses and pass one mathematics Regents examination to fulfill the New York State graduation requirements in mathematics. The Algebra I Regents Exam will be administered in June for students enrolled in Algebra I or Algebra IB. Students in Geometry or Geometry Honors will take the Geometry Regents Exam in June. Students in Algebra II and Algebra II Honors will take the Algebra II Regents Exam in June.

MATH COURSE OFFERINGS

715 ALGEBRA I
713 ALGEBRA IA
714 ALGEBRA IB
718 GEOMETRY H
719 PRINCIPLES OF GEOMETRY
725 GEOMETRY
723 GEOMETRY LAB
729 ALGEBRA II H
726 ALGEBRA II
731 PRINCIPLES OF ALGEBRA II
735 INTRO TO COLLEGE ALBEGRA
736 PRE-CALCULUS
737 PRE-CALCULUS HONORS
740 CALCULUS
746 AP CALCULUS AB
747 AP CALCULUS BC
748 AP STATISTICS
705 MATH WORKSHOP
609 COMPUTER PROGRAMMING
623 WEB DESIGN
624 ROBOTICS AND FOUNDATIONS OF ELECTRICAL ENGINEERING
620 AP COMPUTER SCIENCE A
621 AP COMPUTER SCIENCE PRINCIPLES

715 Algebra I

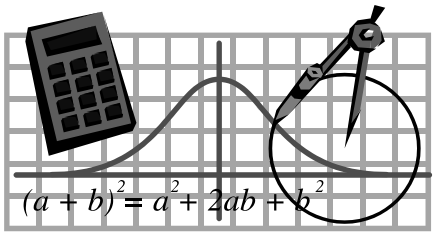
Grade: 9
Unit of Credit: 1
Prerequisite: Math 8

This course is a Regents math course covering the New York State Core Curriculum for Algebra I. The course provides a strong foundation in elementary algebra, functions and their graphs, and statistics. Topics include: equations and inequalities, operations with polynomials, factoring and quadratics, and systems of equations, with emphasis on using these skills to solve contextual problems. Students will take the New York State Common Core Algebra I exam in June.

713 Algebra IA

Grade: 9
Unit of Credit: 1
Prerequisite: Departmental Approval

This is the first year of a two-year program covering the New York State Core Curriculum for Algebra I. It is designed for students who would benefit from an extended study of the material taught in Algebra I. The course reinforces basic arithmetic and algebraic skills and extends them to include elementary algebra, functions and their graphs and statistics. In the second year of the program, students will take Algebra IB and take the New York State Common Core Algebra I exam in June of tenth grade.



714 Algebra IB

Grade: 10
Unit of Credit: 1
Prerequisite: Algebra 1A

This is the second year of a two-year program covering the New York State Core Curriculum for Algebra I. It is designed as a follow-up course to Algebra IA. The course reinforces elementary algebra, functions and their graphs, and statistics. Students will take the New York State Common Core Algebra I exam in June.

718 Geometry H

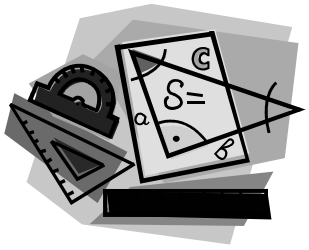
Grade: 9
Unit of Credit: 1
Prerequisite: Final grade of 90% in Algebra I and Departmental Approval

This course is for students who have successfully completed Algebra I in eighth grade. Geometry Honors completes the New York State Curriculum for Geometry. Topics are studied in depth and include Euclidean geometry with proofs, transformations, and constructions. Students will take the Common Core Geometry Regents exam in June.

719 Principles of Geometry

Grade: 11
Unit of Credit: 1
Prerequisite: Algebra IB or final grade below 75% in Algebra I

This course covers the New York State Core Curriculum for Geometry. This course moves at a more moderate pace compared to Geometry. Topics include Euclidean geometry and elementary proofs, logic, and constructions.. This course emphasizes the use of proofs in mathematics as well as contextual problems. A final exam will be given in June.



723 Geometry Lab

Grade: 9
Unit of Credit: 0
Prerequisite: Algebra I

Ninth grade Geometry students who earned a final average below 80% in Algebra 1 will have the opportunity to enroll in Geometry Lab. This support period will take place every other day and aims to reinforce concepts learned in their Geometry course.

725 Geometry

Grade: 10
Unit of Credit: 1
Prerequisite: Algebra I

This course covers the New York State Common Core Curriculum for Geometry. Topics include Euclidean geometry and proof, logic and constructions. This course emphasizes the use of proofs in mathematics as well as contextual problems. Students will take the Common Core Geometry Regents exam in June.

729 Algebra II H

Grade: 10
Unit of Credit: 1
Prerequisite: Final grade of 85% or higher in Geometry H

This course is designed for tenth grade students who have successfully completed Geometry Honors. Beyond topics covered in Course 726, selected additional and more demanding topics are included. The Common Core Algebra II Regents exam will be given in June.

726 Algebra II

Grades: 10-11
Unit of Credit: 1
Prerequisite: Final grade of 75% or higher in Geometry

This course integrates the studies of intermediate algebra, trigonometry and statistics. Topics include complex algebraic functions, systems of equations and inequalities, polynomials and radicals, trigonometric functions, trigonometric applications, trigonometric identities and equations, exponents and logarithms, statistical analysis, curve fitting and models, and elementary function theory. Students will take the Common Core Algebra II Regents exam in June.

731 Principles of Algebra II

Grades: 11-12
Unit of Credit: 1
Prerequisite: Principles of Geometry or a final grade of below 75% in Geometry

This course is designed to introduce students to the study of intermediate algebra and trigonometry. Topics include algebraic functions, systems of equations and inequalities, polynomials and radicals, trigonometry, exponents and logarithms, statistics, and elementary function theory. Students will take a final exam in June.

735 Introduction to College Algebra

Grade: 12
Unit of Credit: 1
Prerequisite: Principles of Algebra II or a final grade of below 75% in Algebra II

This course is designed to give students a thorough preparation for college level mathematics. Topics studied include elementary function theory, polynomials, exponents, logarithms, trigonometry, graphs of functions, and matrices. Students will consistently use the graphing calculator in conjunction with the topics and there will be an emphasis on applications and models. A final exam will be given at the end of the course.

736 Pre-Calculus

Grades: 11-12
Unit of Credit: 1
Prerequisite: Final grade of 75% or higher in Algebra II

This course is an introduction to the topics explored in depth in higher mathematics. It includes real and complex numbers, equations and inequalities, functions and their graphs, sequences, series, induction, exponents, logarithms, vectors, matrices, trigonometry with applications, the conic sections, polar coordinates, and limits.

Students have the option of receiving 4 college credits through SUNY Westchester. The fee for college credit is approximately $276.

737 Pre-Calculus Honors

Grade: 11
Unit of Credit: 1
Prerequisite: Final grade of 85% in Algebra II H

This is a rigorous course that focuses on advanced precalculus and exposure to calculus in preparation for AP Calculus BC. Topics studied are functions and their graphs, sequences, series and induction, trigonometry, conic sections, complex numbers and polar coordinates, limits, and derivatives.

Students have the option of receiving 4 college credits through SUNY Westchester. The fee for college credit is approximately $276.

740 Calculus

Grade: 12
Unit of Credit: 1
Prerequisite: Pre-Calculus

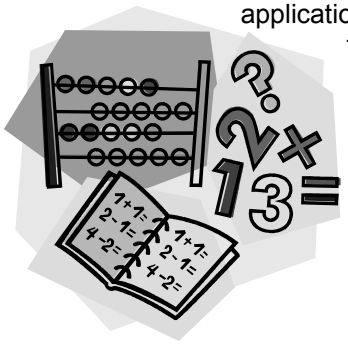
This college level math course is a continuation of the analysis of mathematical functions as presented in Pre-Calculus. Applications of the derivative through curve sketching, related rates, and extreme value word problems complete this differential calculus program. Basic techniques of integration, the fundamental theorem of calculus, and the areas and volume generated by curved surfaces will also be analyzed and evaluated.

Students have the option of receiving 4 college credits through SUNY Westchester. The fee for college credit is approximately $276.

746 AP Calculus AB

Grade: 12
Unit of Credit: 1
Prerequisite: Final grade of 85% or higher in Pre-Calculus

This college level course is intended for students who have a thorough knowledge of college preparatory mathematics, including algebra, geometry and trigonometry. Topics include functions, limits, continuity, derivatives with applications, transcendental functions, and integrals and their applications. Students are required to take the Advanced Placement exam in May.



747 AP Calculus BC

Grade: 12
Unit of Credit: 1
Prerequisite: Final grade of 80% or higher in Pre-Calculus Honors

Calculus BC studies the calculus of functions of a single variable. It includes all topics covered in Calculus AB and additional topics including techniques of integration of series and sequences, polar and parametric equations, and vector valued functions. The content of Calculus BC is designed to qualify the student for placement and credit in a course that is one course beyond that granted for Calculus AB. Students are required to take the AP Calculus BC exam in May.

748 AP Statistics

Grades: 11-12
Unit of Credit: 1
Prerequisite: Final grade of 80% or higher in Algebra II and Precalculus (may be taken concurrently with Precalculus).

The purpose of the AP statistics course is to introduce students to the major concepts and tools for collecting, analyzing and drawing conclusions from data. Students are exposed to four broad conceptual themes:

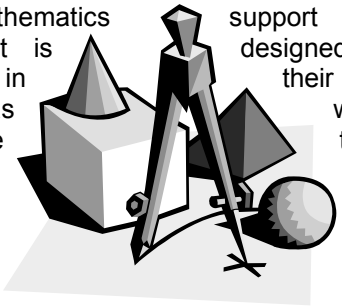
Exploring Data: Describing patterns and departures from patterns
Sampling and Experimentation: Planning and conducting a study
Anticipating Patterns: Exploring random phenomena using probability and simulation
Statistical Inference: Estimating population parameters and testing hypotheses

Students in this course are required to take the Advanced Placement Exam in May.

705 Math Workshop

Grades: 9-12
Unit of Credit: None

This course provides students with an additional period of mathematics support every other day. It is designed to assist students in their coursework as well as help prepare them for mathematics assessments.



The following Math electives may be taken for additional credits in Mathematics beyond the yearly required credit.

609 Computer Programming

Grades: 9-11
Credit: 1
Prerequisites: None

The goal of this course is to provide students with an understanding of how automation and computation can be used to solve problems. There is no background in coding required! Students will leave this course feeling confident in their ability to write programs in a high-level language, allowing them to accomplish simple, yet useful goals. Students will study data types, conditional statements, methods, classes, and object-oriented design. Emphasis will be placed on projects that encourage creativity as well as technical skill. The language used in this course is Java.

623 Web Design

Grades: 9-11
Credit: ½
Prerequisites: None

This is a project-based course that teaches students how to build their own web pages. Students will learn the languages HTML and CSS, and will create their own live homepages to serve as portfolios of their creations. Students will finish this course with tangible, professional, mobile responsive websites.

624 Robotics and Foundations of Electrical Engineering

Grades: 10-12
Credit: 1
Prerequisites: Final Grade of 80% in 609

This course is intended for any student that has an interest in pursuing STEM in college. Students will gain programming and electronics engineering skills through the use of the Arduino. The Arduino is an open-source computer hardware/software platform for building digital devices and interactive objects that can sense and control the physical world around them. In this class the students will learn how the Arduino works in terms of the physical board and how to program their customized board.

621 Advanced Placement Computer Science Principles

Grades: 10-12
Credit: 1
Prerequisites: Completion of 609 or 623

Advanced Placement Science Principles is a foundational course in the logic of coding. It will focus on strategizing to build algorithms using control structures like if-else statements and loops to solve a problem. This course does not have a designated programming language, so the rigor of the course lies in the creativity and computational thinking that one may apply to find a solution. AP Computer Science Principles also explores the global impact of the internet on society, communication, and collaboration.

620 Advanced Placement Computer Science A

Grades: 10-12
Credit: 1
Prerequisites: Final grade of 85% in 621 or 624

Advanced Placement Computer Science A is the equivalent of a first-semester college-level course in computer science. It will emphasize object-oriented programming methodology with a concentration on problem solving and algorithm development as well as the study of data structures, design, and abstraction. Some of the key topics covered are algorithms, data types, control structures, recursion, object-oriented design, program implementation, program analysis, and computing in context. Students will also be exposed to the standard Java class libraries. Although the primary language used in the course is Java, the concepts are readily transferable to any other object-oriented language. Students are required to take the Advanced Placement examination in May.