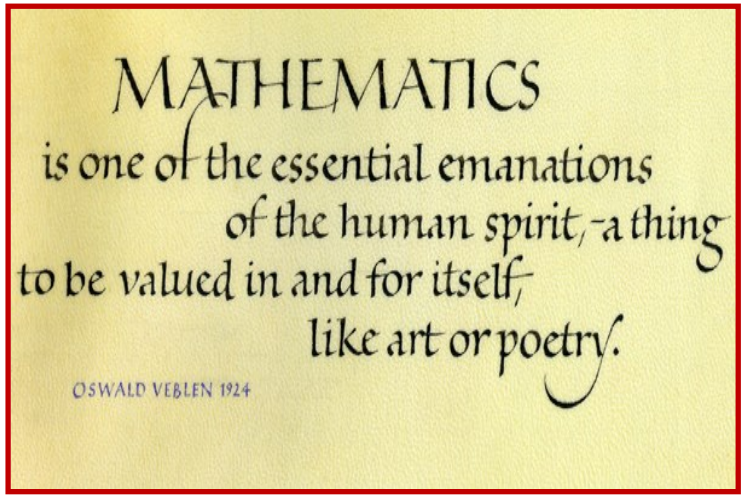
JERICHO HIGH SCHOOL

99 Cedar Swamp Road
Jericho, NY 11753

Mathematics



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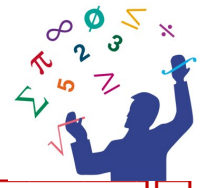
Concepts in Mathematics

Arithmetic and algebra will be integrated throughout the semester. Emphasis will be place on fundamental operations of integers and rational numbers, ratio and proportion, percent, factoring, linear and fractional equations, exponents, radicals, quadratic equations and right triangles. Mathematical functions will be represented numerically, algebraically, verbally and graphically. Formal symbolic logic, arguments and methods of proof will be explored. This course will prepare students for an entrance level mathematics test for first semester college students.

Prerequisite(s):	Algebra II or Intermediate Algebra
Grade(s):	12
Credit:	1
Meets:	5 periods weekly



Advanced Computer Programming

The first semester of the course will have a major focus on abstract data types and data structures that students will understand and implement. These include Linked lists (singly, doubly, circular), Stacks, Queues, Priority queues, Sets, Maps, Trees, Heaps and Hash Tables. The following additional Java topics will be taught: Big-Oh notation, Worst-case and Average-case time, Space Analysis, Quick Sort and Heapsort. The second semester will include the basics of the Python Language. Students will learn to read as well as write simple Python code.

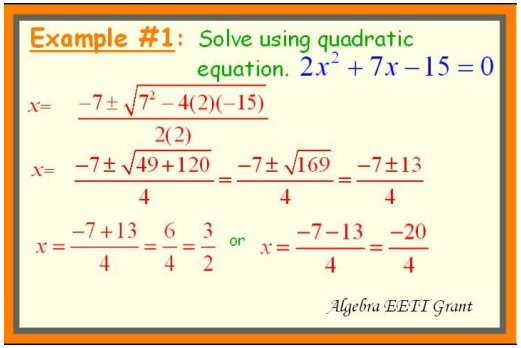
Prerequisite(s): Advanced Placement Computer Science A
Grade(s): 11 - 12
Credit: 1
Meets: 5 periods weekly

Advanced Placement Statistics

This course is designed to be comparable to a typical non-calculus-based-technology introductory statistics course taught in a college/university. The course emphasizes (1) exploring data, (2) planning a study, (3) anticipating patterns and (4) statistical inference. The TI-84 graphing calculator will be the chief tool for data analysis. Students are required to take the Advanced Placement Examination in May.

Prerequisite(s): Geometry
Grade(s): 10 - 12
Credit: 1
Meets: 5 periods weekly

Algebra I



This is the first course in the New York State Mathematics sequence. This course will assist students in developing skills and processes to be applied using a variety of techniques to successfully solve problems in a variety of settings. Problem situations may result in all types of linear equations in one variable, quadratic functions with integral coefficients and roots as well as absolute value and exponential functions. Students will solve problems that require right triangle trigonometry. Elementary probability theory will be used to determine the probability of independent, dependent and mutually exclusive events. The graphing calculator will be used as a tool to enhance instruction. The New York State Algebra I Regents exam will be administered in June.

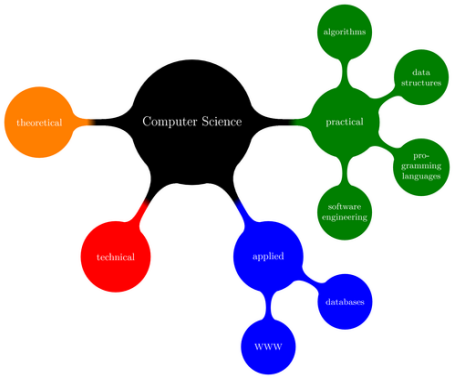
Prerequisite(s): Math 8
Grade(s): 9
Credit: 1
Meets: 5 periods weekly

Geometry

This is the second course in the New York State Mathematics sequence. Students will have the opportunity to make conjectures about geometric situations and prove in a variety of ways, both formal and informal, that their conclusion follows logically from their hypothesis. Congruence and similarity of triangles will be established using appropriate theorems. Transformations including rotations, reflections, translations, and glide reflections and coordinate geometry will be used to establish and verify geometric relationships. A major emphasis of this course is to allow students to investigate geometric situations. It is intended that students will use the traditional tools of compass and straightedge as well as dynamic geometry software that models these tools. Geometry is meant to lead students to an understanding that reasoning and proof are fundamental aspects of mathematics and something that sets it apart from the other sciences. The New York State Geometry Regents exam will be administered in June.

Prerequisite(s):	Algebra I
Grade(s):	9 - 10
Credit:	1
Meets:	5 periods weekly

Advanced Placement Computer Science A



This is a college level course in programming using the Java language. The course emphasizes object-oriented programming methodology with a concentration on problem-solving and algorithm development. This includes important concepts such as inheritance and data structures. Students will complete hands-on structured labs throughout the curriculum as required by the College Board.

Prerequisite(s):	Algebra 2
Grade(s):	10— 12
Credit:	1
Meets:	5 periods weekly

Advanced Placement Computer Science Principles

This is an introductory college-level course. Students cultivate their understanding of computer science through working with data, collaborating to solve problems, and developing computer programs as they explore concepts like creativity, abstraction, data and information, algorithms, programming, the internet, and the global impact of computing. Students are required to take the Advanced Placement exam in May. 40% of their score is based on their performance tasks via a digital portfolio.

Prerequisite(s):	Strong Foundation in Algebra
Grade(s):	10—12
Credit:	1
Meets:	5 periods weekly

Multivariable Calculus

Students will learn the calculus of multivariable functions and vector fields. Before they can study the calculus of multiple dimensions, students will need to learn some concepts in Linear Algebra, such as: linear systems, matrices, matrix multiplication, properties of matrix operations, matrix transformations, solutions of linear systems of equations, the inverse matrix, cross product, dot product, Gauss-Jordan Elimination, orthogonal matrices, and determinates. Topics in the calculus component of the course will include: multivariable functions and their derivatives, partial derivatives, vector fields, gradient, divergence, curl, double and triple integrals, parameterized curves, flows, line integrals, Green's theorem, and flux integrals. Additionally, students will study other topics from multivariable calculus, including: Stoke's Theorem and the Divergence Theorem. The TI89 graphing calculator will be used as a tool to enhance instruction.

Prerequisite(s): AP Calculus BC (Score of at least 3 on the Advanced Placement Exam)
Grade(s): 12
Credit: 1
Meets: 5 periods weekly

Exploratory Programming

This course is an introductory course to computer programming. The basic concepts of how a computer works will be taught. Students will create websites by writing HTML using notepad ++. Java applets will be embedded into HTML documents and executed using a web browser. Students will create interactive programs and games using Python, while learning about functions, loops, classes and a number of different aspects of coding. Finch robots will be used as a way to help students bring their codes and programs to life.

Prerequisite(s): None
Grade(s): 9 -12
Credit: 1
Meets: 5 periods weekly

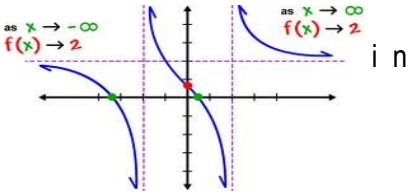
Algebra II

This is the third course in the New York State Mathematics sequence. Students will build on their work with linear, quadratic, and exponential functions, and extend their repertoire of functions to include polynomial, rational and radical functions. Students will hone their abilities to model situations and solve equations, including quadratic equations, exponential equations and logarithmic equations. The Algebra II Regents exam will be administered in June.

Prerequisite(s): Geometry
Grade(s): 10 - 11
Credit: 1
Meets: 5 periods weekly

Precalculus

This course will focus on functions and their transformations including polynomial, rational, exponential, logarithmic, and trigonometric. Trigonometric identities, rates of change, limits, and sequences and series will be studied. This course (or Precalculus Research) is required for students in grade 10 or 11 who intend to enroll in Advanced Placement Calculus AB or BC. The TI89 graphing calculator will be used as a tool to enhance instruction.



Prerequisite(s): Algebra II Grade(s): 10 -11
Credit: 1
Meets: 5 periods weekly

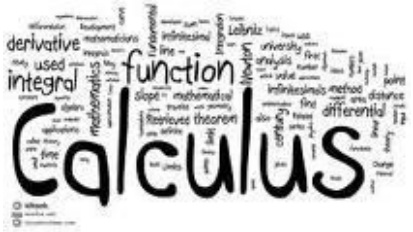
Precalculus Research

This course will include topics in our current Precalculus syllabus, with students delving deeper into mathematical concepts. Additional topics such as three dimensional geometry, vectors, mathematical induction, and fields will be included. The TI89 graphing calculator will be used as a tool to enhance instruction. A research paper is required.

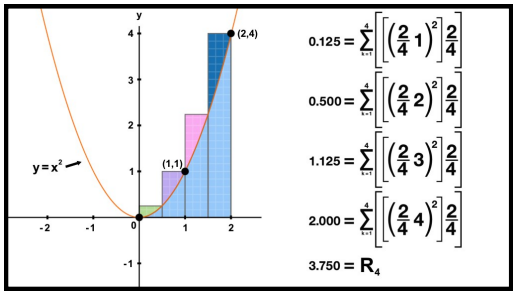
Prerequisite(s): Algebra II (and a desire to explore research in the area of mathematics)
Grade(s): 10 - 11
Credit: 1
Meets: 5 periods weekly

Advanced Placement Calculus AB

In this course, students study topics from analytic geometry and calculus. They study lines, conic sections, limits, derivatives, related rates, maxima and minima, curve sketching, slope fields, Mean Value Theorem, differentiation of trigonometric, exponential, and logarithmic functions, differential equations, area under a curve, volumes of revolution and volumes of cross sections, integration, and differential equations. The TI89 graphing calculator will be used as a tool to enhance instruction. Students are required to take the Advanced Placement Examination in Calculus (AB level) in May.



Prerequisite: Precalculus
Grade(s): 12
Credit: 1
Meets: 5 periods weekly

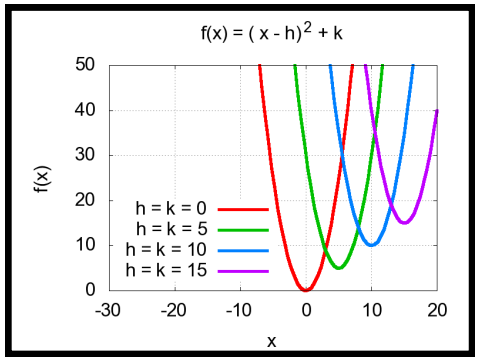


Advanced Placement Calculus BC

This course consists of a full academic year of work in calculus. In addition to the topics studied in Calculus AB, the BC course includes additional topics such as infinite series, logistic growth, vector functions, L'Hospital Rule, polar coordinates, improper integrals, partial fractions and arc length. The TI89 graphing calculator will be used as a tool to enhance instruction. Students are required to take the Advanced Placement Examination (BC level) in May. The AP exam will have both a BC score and an AB subscore.

Prerequisite(s): Precalculus or Precalculus Research
Grade(s): 11—12
Credit: 1
Meets: 7 1/2 periods weekly (double period every other day)

Precalculus (C)

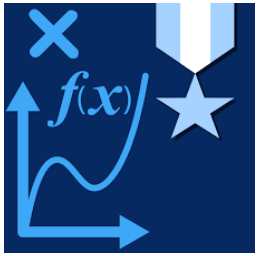


This course will build on the immediate and advanced algebraic skills of the students, having students apply these skills with a higher level of critical thinking. This course will focus on functions and their transformations, limits and derivatives. The TI89 graphing calculator will be used as a tool to enhance instruction.

This course may be taken for college credit through Molloy College.

Prerequisite(s): Algebra II
Grade(s): 12
Credit: 1
Meets: 5 periods weekly

Advanced Placement Precalculus



The AP Precalculus course has a focus on functions through algebraic, graphic, numerical, and verbal representations. The course is also based on modeling where students will understand that functions model real-life phenomena. Students will inspect characteristics, such as end-behavior, short run behavior (zeros, intercepts, asymptotes, and relative extrema), and relative rates of change. The proposed course framework is attached for your reference.

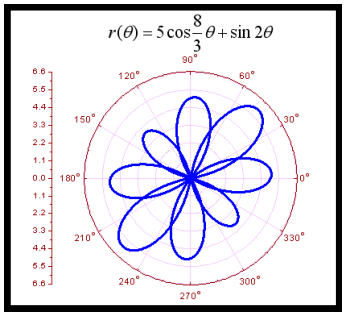
Requirement: Algebra II
Grade (s): 12
Credit: 1
Meets: 5 periods weekly

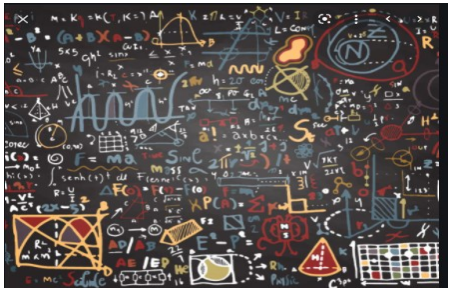
Calculus (C)

This course affords students the opportunity to investigate calculus concepts through applications related to a variety of fields including business, science, engineering, and technology. Topics such as: limits and continuity, derivatives, maxima and minima, antiderivatives, definite integral, Fundamental Theorem of Calculus, and techniques for integration will be studied. The TI89 graphing calculator will be used as a tool to enhance instruction.

This course may be taken for college credit through Molloy College.

Prerequisite(s): Precalculus recommended/ Algebra II required.
Grade(s): 12
Credit: 1
Meets: 5 periods weekly





Precalculus BC (Alternate day, full year course)

This course is designed for 10th or 11th graders who wish to take Precalculus concurrently with Algebra II in order to take AP Calculus the subsequent school year. This course is condensed to include only those topics that are prerequisites for AP Calculus. These topics include polynomial, rational, exponential, logarithmic, and trigonometric functions and their transformations. An introduction to calculus is embedded in the course which includes a study of limits, derivatives, Power Rule, Product Rule, Quotient Rule and Chain Rule. The TI89 graphing calculator will be used as a tool to enhance instruction.

Co-requisite: Algebra II (and a desire to take AP Calc)
Grade: 10 or 11
Credit: 0.5
Meets: 2.5 periods weekly, full year