

MATHEMATICS DEPARTMENT

The mathematics curriculum places emphasis on developing: 1) accuracy and facility in performing fundamental mathematical operations, 2) ability to analyze and solve problems of a variety of types and varying degrees of difficulty and 3) an understanding of the nature and structure of mathematics so that students will be able to apply basic principles to entirely new areas. The courses are designed for students to develop competence in common core standards and demonstrate they are college and career ready through collaboration with peers and teachers, written and oral communication, and in analyzing and solving complex, real world problems using standard and creative means.

The levels of courses will differ in pace, manner of presentation, and selection of materials.

*With the exception of sophomores who elect to enroll in both Honors Algebra 2 and Geometry, ONLY seniors are allowed to take TWO math courses—provided they already have one math credit.

Students graduating in 2018, in preparation for college and state requirements are strongly encouraged to complete four credits in math, including Algebra I, Geometry, and Algebra 2 or Probability and Statistics.

415 PRE-ALGEBRA  **Standard** **1 Credit**

Grades 9, 10, 11, 12

This course is designed to prepare the student for Algebra 1. Topics in the first half of the course include positive and negative numbers, pattern representation, exponents, expressions and solving of equations. The second half of the course will explore rate of change, slope, relationships with linear functions and non-linear functions. Problem Solving and real life application of these topics will be constantly used throughout this course.

420 ADVANCED PLACEMENT STATISTICS/UConn ECE   **College** **1 Credit**

Grades 11, 12

The topics in the course are divided into four major themes: exploratory analysis, planning a study, probability, and statistical inference. Students receive preparation for the Advanced Placement examination in the spring.

Students may enroll in the class for high school credit only, or for high school and college credit at the University of Connecticut. Students who elect to register for the class at UConn may incur a small fee payable to the university. Students who meet the university's requirements (a grade of C, 73 or higher) at the end of the course will earn college credits.

422 PROBABILITY AND STATISTICS   **Accelerated** **1 Credit**

Grades 10, 11, 12

Prerequisite: 2 math credits

This course deals with the fundamental concepts involved in collecting, analyzing, and presenting data. Classical probability involving cards, dice, and coins will be explored. Descriptive statistics such as mean, mode, median, range, and standard deviation will be analyzed using authentic and relevant data.

427 BUSINESS MATHEMATICS  **Standard** **1 Credit**

Grades 11, 12

Prerequisite: Must have at least 1 math credit

This course is designed to develop skills in performing the fundamental processes involved in mathematics and to develop the ability to apply mathematical knowledge to solve problems. The heart of the course is the real world application of computation skills. Students will apply mathematical fundamentals to realistic situations in a simulated business setting. Spreadsheet and data base applications are used.

431 ALGEBRA 1   **Honors** **1 Credit**

Grades 9, 10

This is a comprehensive course with a strong emphasis on the real world application of Algebraic concepts. Topics include, and are limited to, arithmetic and geometric sequences; relations and functions; solving equations and inequalities under real numbers; multiple representations of data; linear and on linear modeling; systems of equations; quadratics and exponential functions; while using technology for problem solving.

- 434 ALGEBRA 1**   **Accelerated** **1 Credit**
 Grades 9, 10, 11, 12
 This course develops the algebraic thinking skills necessary for students to succeed in advanced mathematics courses through a strong emphasis on real world application. Units of study are aligned to the Connecticut Standards. Topics include positive and negative numbers; dependent and independent variables in equations and formulas; fractions, and fractional equations; special products and factoring; powers, roots and radicals; and solving and graphing equations, inequalities and systems of equations. The course includes an introduction to quadratic equations, proportions and variation.
- 442 Applied Problem Solving in STEM**  **Accelerated** **1 Credit**
 This class focuses on applied mathematics through RC cars and Vex technology. The students will focus on problem solving and other mathematics based concepts. This course is recommended for people who are interested in hands-on learning with math.
- 451 GEOMETRY**   **Honors** **1 Credit**
 Grade: 10, 11
Prerequisite: Algebra 1
 This course examines two and three dimensional geometric figures and their properties. Connections between algebra and geometry are enhanced so that students are able to make sense of the world around them. This course is aligned to the Connecticut Standards and includes the study of inductive and deductive reasoning, angle measurement and angle relations, parallel lines and planes, congruence of triangles, similarity of polygons, coordinate geometry and area and volume of solids. It provides the necessary background for the study of honors level Algebra 2.
- 452 GEOMETRY**   **Accelerated** **1 Credit**
 Grades 10, 11, 12
Prerequisite: Algebra 1
 This course examines two and three dimensional geometric figures and their properties. Connections between algebra and geometry are enhanced so that students are able to make sense of the world around them. This course is designed to present a logical development, with emphasis on basic concepts and understanding of geometry. This course is aligned to the Connecticut Standards and its topics include measurements and relationships of lines, angles, triangles, circles, polygons, and solid figures. Although emphasis is placed on methods of proof, numerical problems are constantly used throughout the course.
- 453 GEOMETRY**   **Standard** **1 Credit**
 Grades 10, 11, 12
Prerequisite: Algebra 1
 This course is designed to present a logical development, with emphasis on basic concepts and understanding of geometry. It deals with measurements and relationships of lines, angles, triangles, circles, polygons, and solid figures. Although emphasis is placed on methods of proof, numerical problems are constantly used throughout the course. This course is aligned to the Connecticut Standards and is similar to Geometry 452 but with less emphasis on geometric proofs.
- 461 ALGEBRA 2**   **Honors** **1 Credit**
 Grades 9, 10, 11
Prerequisite: Algebra 1
 This accelerated course is a rigorous study of the real number system, relations and functions. The complex number system, sequences, series, circular functions, matrices and probability are also presented. The graphing calculator is used when appropriate. The course is aligned to the Connecticut Standards and qualify for college credit (see College Career Pathways section).
- 462 ALGEBRA 2**   **Accelerated** **1 Credit**
 Grades 10, 11, 12
Prerequisite: Algebra 1
 This course deals with sequences leading to the study of functions. The structure of the number system is developed. A careful treatment of both analytic aspects and practical applications of graphs, equations and trigonometry is presented. This course will expose students to many topics they will encounter on college placement exams. The course is aligned to the Connecticut Standards and may qualify for college credit (see College Career Pathways section).

463 ALGEBRA 2  	Standard	1 Credit
Grades 10, 11, 12 Prerequisite: Algebra 1 This course is designed to prepare the student for more advanced courses in mathematics. Topics include linear functions and inequalities, factoring, complex number operations, logarithms, quadratic functions, and an introduction to trigonometry. May qualify for college credit (see College Career Pathways section).		
464 ELEMENTARY ALGEBRA  	Accelerated	1 Credit
Grade 12 Prerequisite: Algebra 2 This course is a review of fundamental algorithms of whole numbers, integers, rational numbers, percent, radicals, and numbers with exponents. It will also include writing and simplifying algebraic expressions, creating and graphing linear functions, solving simple equations, solving and graphing systems of linear equations, proportions, and factoring quadratic and cubic expressions. This course is aligned with Central Connecticut State University's Math 099 course. Students who meet specific levels of proficiency will be exempt from the non-credit math class at CCSU or Tunxis. Students will have access to CCSU online vista blackboard and must complete independent computer assignments and take practice assessments. *Students are placed in this course based on prior success in math classes and teacher recommendation.		
472 ALGEBRA 3  	Accelerated	1 Credit
Grades 11, 12 Prerequisite: Geometry and Algebra 2 This course is designed to strengthen and extend algebraic skills for those students who have completed Algebra 2 but do not meet the prerequisite grade requirement to be eligible for Pre-calculus. Topics included in this course are quadratic, polynomial, exponential, logarithmic, and trigonometric functions.		
471 PRE-CALCULUS  	Honors	1 Credit
Grades 11, 12 Prerequisite: Algebra 2 Pre-Calculus is a prerequisite for taking AP Calculus AB and provides an excellent background for students needing to take a calculus course in college. The course includes not only all standard topics, but also integrates the use of technology via the graphing calculator. The wide variety of types and multiple levels of exercises meet many different learning styles. Communication exercises including reading, writing, discussion and visual thinking are presented within applications.		
480 ADVANCED PLACEMENT CALCULUS AB  	College	1 Credit
Grade 12 Prerequisite: Pre-calculus This course deals with coordinate systems, algebraic functions and graphs, limits, derivatives and anti-derivatives. The second half of the course includes the definite integral and applications, transcendental functions and formal integration. Students enrolled will be prepared to take the AP exam.		
490 ADVANCED PLACEMENT COMPUTER SCIENCE A 	College	1 Credit
Elective credit only AP Computer Science is a course which emphasizes object oriented programming methodology with a concentration on problem solving and algorithm development. The course uses the JAVA programming language to study data structures and program design.		