



Mathematics Courses

We live in a time of extraordinary and accelerating change. New knowledge, tools, and ways of doing and communicating mathematics continue to emerge and evolve. The need to understand and be able to use mathematics in everyday life and in the workplace has never been greater and will continue to increase.

In this changing world, those who understand and can do mathematics will have significantly enhanced opportunities and options for shaping their futures. Colleges and universities are requiring three years and recommending four years of high school mathematics, through Pre-Calculus, along with coursework in computer applications or programming. Vocational and technical schools require a strong math background for many of their programs.

The mathematics curriculum in District 196 addresses the concerns that have been identified in mathematics education. The curriculum provides materials that use current technology, provides real-life applications, integrates with other subjects, and presents material needed by all students in the future. Success in any mathematics course requires a solid background from previous coursework, proper study skills, and a commitment to daily work.

All students are required to earn nine (9) trimester credits. Students must complete courses in Intermediate Algebra, Geometry, and Algebra II. For all students, computer programming credits do not count toward the mathematics graduation requirement. New ninth graders will be enrolled in one of three levels based on input from eighth grade mathematics teacher, previous grades in mathematics, and standardized test scores.

Some students take two mathematics courses concurrently. Students who desire to double up with two mathematics courses in one year should seek faculty advice and will be required to have a faculty member recommend a waiver for the prerequisite.

Mathematics Curriculum

These are the recommended paths for the majority of students. Some students may be enrolling in these courses in other years.

9th Grade

Choose one required class:	<input type="checkbox"/> Intermediate Algebra Concepts <input type="checkbox"/> Intermediate Algebra <input type="checkbox"/> Honors Geometry
Electives available:	Intro to Computers**, or Computer Programming I**, or Computer Programming II** (These computer classes are one trimester courses and do not have to be taken in the same year)

10th Grade

Choose one required class:	<input type="checkbox"/> Geometry Concepts <input type="checkbox"/> Geometry <input type="checkbox"/> Honors Geometry <input type="checkbox"/> Honors Algebra II (may be taken at the same time as Geometry, teacher recommendation only)
Electives available:	Numeracy I0** (taken with Geometry – teacher recommendation only) AP Computer Science Principles** Introduction to Computers**, or Computer Programming I**, or Computer Programming II** (These computer classes are one trimester courses and do not have to be taken in the same year)

** counts as an elective credit towards graduation, not as a math credit.

MATHEMATICS COURSES

11th Grade

Choose one required class: ___ Algebra II Concepts
 ___ Algebra II
 ___ Honors Algebra II
 ___ Pre-Calculus
 ___ Honors Pre-Calculus

Electives available: AP Statistics (may be taken with Honors Pre-Calculus or Pre-Calculus)
 AP Computer Science**
 Numeracy 11** (taken with Algebra II – teacher recommendation only)
 AP Computer Science Principles**
 Intro to Computers**, or Computer Programming I**, or Computer Programming II**
(These computer classes are one trimester courses and do not have to be taken in the same year)

12th Grade

___ Technical Math
___ College Algebra, Probability, and Statistics (CAPS)
___ Pre-Calculus (may be taken with AP Statistics and/or AP Computer Science)
___ AP Calculus AB (may be taken with AP Statistics and/or AP Computer Science)
___ AP Calculus BC (may be taken with AP Statistics and/or AP Computer Science)
___ AP Statistics
___ AP Computer Science **
___ AP Computer Science Principles**
___ Intro to Computers**, or Computer Programming I**, or Computer Programming II**
(These computer classes are one trimester courses and do not have to be taken in the same year)

Accelerated

Multivariable Calculus (may be taken with AP Statistics and/or AP Computer Science)
Advanced Computer Science** (elective credit after AP Computer Science)
Linear Algebra/Differential Equations

** counts as an elective credit towards graduation, not as a math credit.

NOTE: Certain classes may be taken concurrently as advised by current math teacher.


NOTE: Students who are successful in Intermediate Algebra may move up a level to Honors Geometry upon recommendation of the instructor. Students who are successful in Geometry may move up a level to Honors Algebra II upon recommendation of the instructor.

NOTE: Technical Mathematics, Geometry Concepts, Intermediate Algebra Concepts and Algebra II Concepts may not meet college entrance requirements.

Students enrolled in all levels of Geometry, Algebra II, Technical Mathematics, CAPS, Pre-Calculus, AP Statistics, AP Calculus AB and AP Calculus BC must have a graphing calculator. The Texas Instruments TI-83 Plus or TI-84 is required.

COURSES OFFERED TO STUDENTS IN GRADES 9, 10, 11, AND 12

Students should register for all three courses in an A, B, C sequence.

 0601 Intermediate Algebra Concepts A Grades 9, 10, 11, 12
0602 Intermediate Algebra Concepts B Prerequisite: Algebra I
0603 Intermediate Algebra Concepts C

Intermediate Algebra Concepts is a study of both linear and non-linear topics in Algebra. Topics include operations, solving equations, linear functions, systems of equations, quadratic equations, polynomials, and statistics. There will be an introduction to probability and simulation, transformations and connections to geometry. **Note: This is a year-long course; Students should register for all three courses.** Continuation in this course is contingent upon earning a passing grade the previous trimester. A scientific calculator is required but a TI-83 Plus or TI-84 graphing calculator is recommended.

MATHEMATICS COURSES

COURSES OFFERED TO STUDENTS IN GRADES 10, 11 AND 12

Students should register for all three courses in an A, B, C sequence.

- ☘ 0625 Algebra II Concepts A Grades 10, 11, 12
- 0626 Algebra II Concepts B Prerequisite: Geometry Concepts
- 0627 Algebra II Concepts C

This course will closely examine linear, exponential and quadratic functions. Topics will be studied in the context of graphical, numerical and algebraic interpretations. Probability and statistics will be a strong component of this course. Technology will be integrated throughout and the TI-83+ or TI-84 is required. **Students should register for all three courses.** Continuation in this course is contingent upon receiving a passing grade the previous trimester.

- ☘ 0628 Algebra IIA Grades 10, 11, 12
- 0629 Algebra IIB Prerequisite: Geometry, Intermediate Algebra
- 0630 Algebra IIC

The major focus for this course will be the study of functions, including linear, quadratic, rational and exponential. Probability and statistics along with linear systems will be a strong component of this course. Trigonometry, including right triangle trig, law of sines, law of cosines and circular trig will be studied. The TI-83+ or TI-84 is required. **Students should register for all three courses.** Continuation in this course is contingent upon receiving a passing grade the previous trimester.

- ☘ 0631 Geometry Concepts A Grades 10, 11, 12
- 0632 Geometry Concepts B Prerequisite: Intermediate Algebra Concepts
- 0633 Geometry Concepts C

Basic concepts of geometry will be reinforced through applications and concrete activities. Topics studied will include measurement, formulas in two and three dimensions, similarity, coordinate geometry and trigonometry. Connections that require a review of algebra will be integrated throughout the course. **Students should register for all three courses.** Continuation in this course is contingent upon receiving a passing grade the previous trimester. **Note: Certain colleges and universities will not accept Geometry Concepts in determining admission for students. College-bound students are strongly urged to select Geometry.** A scientific calculator is required but a TI-83 Plus or TI-84 graphing calculator is recommended. A protractor, compass and ruler are also required.

- ☘ 0634 Geometry A Grades 10, 11, 12
- 0635 Geometry B Prerequisite: Intermediate Algebra or equivalent
- 0636 Geometry C

This course exposes students to the concepts of geometry in two and three dimensions. Topics include measurement, formulas, coordinate geometry, similarity, logic and trigonometry. Concepts will be studied in the context of applications and concrete demonstrations. Connections that require a review of algebra will be a strong component of this course. **Students should register for all three courses.** Continuation in this course is contingent upon receiving a passing grade the previous trimester. A TI-83 Plus or TI-84 graphing calculator is required. A protractor, compass and ruler are also required.

- ☘ 0637 Numeracy 10A Grade 10
- 0638 Numeracy 10B Prerequisite: Intermediate Algebra Teacher Recommendation
- 0639 Numeracy 10C

Tenth grade Numeracy is a course designed to help students improve their math skills and is taken in addition to Geometry. There will be emphasis on learning a variety of mathematical and algebraic skills to improve self-monitoring and to maximizing the understanding of the math content standards. In addition, there will be emphasis on understanding word problems and effective test taking strategies to aid students on the Math MCA and ACT tests. This is a recommended year-long course. **NOTE: This course is a math elective and does not qualify as one of the math credits required for graduation. NOTE: This course is not an NCAA core academic class.**

- ☘ 0640 Honors Algebra II A Grades 10, 11, 12
- 0641 Honors Algebra II B Prerequisite: Honors Geometry or
- 0642 Honors Algebra II C Geometry with minimum grade of "A"



The major focus of this course will be the study of functions, including linear, quadratic, rational and exponential. Probability and statistics along with linear systems and linear programming will be strong components of this course. Trigonometry, including right triangle trig, law of cosines, and law of sines will be introduced. Continuation in this course is contingent upon receiving a passing grade the previous trimester. **Students should register for all three trimesters.** The TI-83+ or TI-84 graphing calculator is required.

MATHEMATICS COURSES

 0622 Advanced Placement Computer Science Principles A	Grades: 10, 11, 12
 0623 Advanced Placement Computer Science Principles B	Prerequisite: none
0624 Advanced Placement Computer Science Principles C	

In addition to a focus on learning how to program, this year long AP Computer Science Principles course is also designed to help all students widen the scope of computer science through an exploration of the creative aspects as well as understanding the intellectual and everyday contributions that computing offers. The AP Computer Science Principles Assessment in May consists of two parts: a through-course portfolio submission and assessment and an end-of-course AP exam.

While the course is open to all 10-12 grade students who are interested in the growing world of computing including programming and beyond, it may be best taken during 10th grade year to help prepare for AP Computer Science junior year and Advanced Computer Science senior year. **NOTE: This course is a math elective and does not qualify as one of the math credits required for graduation.** **NOTE: This course is not an NCAA core academic class.**

 0646 Advanced Placement Computer Science A	Grades 10, 11, 12
 0647 Advanced Placement Computer Science B	Prerequisite: Honors Geometry with grade of "A" or Algebra II
0648 Advanced Placement Computer Science C	

This course is an in-depth study of the Java Programming language which provides a solid foundation for computer-related careers: computer programming, mathematics, engineering, business, and the natural sciences. Emphasis will be on gaining knowledge of computer systems--variables, expressions, input-output, conditionals, loops, object-oriented programming, classes and simple recursion. Major topics will include searching, sorting, data structures, and strings. This course will help prepare students for the AP Computer Science A exam offered each May. **NOTE: This course is a math elective and does not qualify as one of the math credits required for graduation.** **NOTE: This course is not an NCAA core academic class.**

COURSES OFFERED TO STUDENTS IN GRADES 11 AND 12

 0651 Advanced Computer Science A	Grades 11, 12
0652 Advanced Computer Science B	Prerequisite: AP Computer Science
0653 Advanced Computer Science C	


Advanced Computer Science is a course for those students who have successfully completed AP Computer Science or the equivalent and are interested in learning advanced programming concepts. This course reviews concepts learned in AP Computer Science and provides an introduction to the fundamental algorithms and data structures of computer science: sorting, searching, recursion, lists, maps, sets, stacks, queues, trees, and graphs. to the analysis of algorithms. It also provides an introduction to mobile device application development. **Note: This course is a math elective and does not qualify as one of the math credits required for graduation.** **Note: This course is not an NCAA core academic class.** **Students successfully completing Advanced Computer Science A, B, C may be able to earn college credit from a local post-secondary institution. Students should contact the course instructor for more information regarding articulation agreements and participating post-secondary institutions.**

 0654 Numeracy 11A	Grade 11
0655 Numeracy 11B	Prerequisite: Geometry Teacher Recommendation
0656 Numeracy 11C	

Eleventh grade Numeracy II is a course designed to help students improve their math skills and is taken in addition to Algebra II. There will be emphasis on learning a variety of mathematical and algebraic skills to improve self-monitoring and to maximizing the understanding of the math content standards. In addition, there will be emphasis on understanding word problems and effective test taking strategies to aid students on the Math MCA and ACT tests. This is a recommended year-long course. **NOTE: This course is a math elective and does not qualify as one of the math credits required for graduation.** **NOTE: This course is not an NCAA core academic class.**



 0663 Pre-Calculus A	Grades 11, 12
0664 Pre-Calculus B	Prerequisite: Algebra II with grades of B+ or better
0665 Pre-Calculus C	

The Pre-Calculus course continues the study of functions and other pre-calculus topics. A major focus will be on the fundamental concepts of trigonometry and analytic geometry. Graphical, numerical and algebraic modeling of functions will be included and technology will be fully integrated. Continuation in this course sequence is contingent upon receiving a passing grade the previous trimester. The TI-83+ or TI-84 graphing calculator is required.

 0666 Honors Pre-Calculus A	Grades 11, 12
0667 Honors Pre-Calculus B	Prerequisite: Honors Algebra II with grade of "B" or better
0668 Honors Pre-Calculus C	

The Pre-Calculus course continues the study of functions. A major focus will be on the fundamental concepts of trigonometry and analytic geometry. Graphical, numerical and algebraic modeling of functions will be included and technology will be fully integrated. A primary objective will be to foreshadow the important ideas of calculus. Continuation in this course sequence is contingent upon receiving a passing grade the previous trimester. The TI-83+ or TI-84 graphing calculator is required.

MATHEMATICS COURSES

 0669 Advanced Placement Statistics A	Grades 11, 12
 0670 Advanced Placement Statistics B	Prerequisite: Honors Algebra II or grade of A in Algebra II
0671 Advanced Placement Statistics C	

This course will provide in depth coverage of the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Topics include Exploring Data (observing patterns and departures from patterns), Planning a Study (deciding what and how to measure), Anticipating Patterns (producing models using probability and simulation) and Statistical Inference (confirming models). The goal of AP Statistics is to prepare students for success on the Advanced Placement Statistics examination. The TI-83+ or TI-84 graphing calculator is required. **Note: There is a \$5 requested donation for covering experimental and simulation costs.**

COURSES OFFERED TO STUDENTS IN GRADE 12

 0675 College Algebra, Probability and Statistics (CAPS) A	Grade 12
0676 College Algebra, Probability and Statistics (CAPS) B	
0677 College Algebra, Probability and Statistics (CAPS) C	Prerequisite: Algebra II


College Algebra, Probability, and Statistics (CAPS) have been designed to meet the needs of seniors who have a demonstrated an interest in continuing their mathematics study beyond Algebra II, but are not intending to pursue a post-secondary course of study with a math/science focus. The target group of students include those who demonstrate skills and abilities in mathematics that are greater than those needed for Tech Math but may be problematic for success in Pre-Calculus. Topics will include analyzing data, chance of probability, functions and trigonometry. The TI-83+ or TI-84 graphing calculator is required. **Note: There is a \$5 requested donation for covering experimental and simulation costs.**

 0679 Advanced Placement Calculus AB A	Grade 12
 0680 Advanced Placement Calculus AB B	Prerequisite: Honors Pre-Calculus or Pre-Calculus
0681 Advanced Placement Calculus AB C	

In this course, students will study rates of change, along with limits of a function. Formal differentiation and its application to real problems will be included. Students will study integration to find the area under a curve and its application to real problems. Calculus will be presented from a graphical, numerical, and symbolic point of view. The goal is for students to obtain a strong conceptual understanding to accommodate diverse applications. A significant focus will be on preparation for the Advanced Placement exam. Continuation of this course sequence is contingent upon receiving a passing grade the previous trimester. The TI-83+ or TI-84 graphing calculator is required.

 0683 Advanced Placement Calculus BC A	Grade 12
 0684 Advanced Placement Calculus BC B	Prerequisite: Honors Pre-Calculus with grades of A
0685 Advanced Placement Calculus BC C	

The BC curriculum will include all topics listed for Calculus AB along with these additional topics: L'Hopital's Rule, Advanced Techniques of Integration, Euler's Method, Analysis Using Calculus of Parametric, Polar, and Vector Functions, Sequences and Series and Taylor Polynomials. Students interested in majors requiring two or more semesters of college Calculus should consider this course. Students should be aware that because of the multitude of topics covered the pacing for BC Calculus is much faster than Calculus AB. Continuing in this course is contingent upon receiving a passing grade the previous semester. The TI-83+ or TI-84 graphing calculator is required.

 0686 Technical Mathematics A	Grade 12
0687 Technical Mathematics B	Prerequisite: Passing grade in Algebra II or Algebra II Concepts
0688 Technical Mathematics C	

Technical Mathematics will begin with a review of Algebra and Geometry topics. New concepts of probability, statistics and trigonometry will be introduced. Hands-on laboratory activities, cooperative learning and reading will be components of the course. Technical Mathematics is appropriate for students who experienced difficulty in Algebra II or Geometry. The TI-83+ or TI-84 graphing calculator is required.

MATHEMATICS COURSES

☘	0693 Calculus 3: Multivariable Calculus A	Grade 12	
	0694 Calculus 3: Multivariable Calculus B	Prerequisite:	Math Department recommendation
	0695 Calculus 3: Multivariable Calculus C		

Multivariable Calculus is the study of calculus concepts learned in BC Calculus applied to 2 and 3 dimensions. Topics include vectors in two and three dimensions, analytic geometry of three dimensions, parametric curves, partial derivatives, the gradient, optimization in several variables, multiple integration with change of variables across different coordinate systems, line integrals, and Green's Theorem. This course should only be taken by those that have passed the Advanced Placement BC Calculus exam.

Students successfully completing Multivariable Calculus may be able to earn college credit from a local post-secondary institution. Students should contact the course instructor for more information regarding articulation agreements and participating post-secondary institutions.

☘	0696 Calculus 4: Differential Equations with Linear Algebra A	Grade 12	
	0697 Calculus 4: Differential Equations with Linear Algebra B	Prerequisite:	Math Department recommendation
	0698 Calculus 4: Differential Equations with Linear Algebra C		

This course covers matrix theory and linear algebra, emphasizing topics useful in other disciplines. Linear Algebra is a branch of mathematics that studies systems of linear equations and the properties of matrices. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering. Due to its broad range of applications, linear algebra is one of the most widely taught subjects in college-level mathematics. Differential Equations is about using the derivative to describe how a quantity changes. These equations are then solved and used to predict the future value of the quantity being modeled. There will be three types of techniques for making these predictions. We will use analytical to find formulas, qualitative and numerical techniques to find estimates for the future values of the quantity. This course should only be taken by those that have passed the Advanced Placement BC Calculus exam.

Students successfully completing Linear Algebra/Differential Equations may be able to earn college credit from a local post-secondary institution. Students should contact the course instructor for more information regarding articulation agreements and participating post-secondary institutions.

☘	1805 ACT Prep	Grades 10, 11, 12	
		Prerequisite:	None

Whether you have taken the ACT test before or you are new to the experience, this course will prepare you to do your personal best. The trimester long elective course will navigate students through the ACT testing process and will focus on understanding the format of the test, building strategies for answering more questions correctly and pacing yourself during a timed test. Students build confidence and skills that will boost their scores on the actual test. Students will have access to hundreds of practice questions and an online program that helps them continue preparing even after the course is completed. One assignment for the course will be to take a mock test under actual testing conditions outside the normal school day. Students are encouraged to purchase an ACT Prep workbook to enhance their learning in the class. **Note: The course is a general elective credit and does not qualify as one of the [English, Math, Science, Social Studies] credits required for graduation. Note: This course is not an NCAA core academic class.**