

# MATHEMATICS

## COURSES OFFERED

Grade	No.	Course Title	Credit
9-12	328	Algebra I	1.00
9-12	334	Algebra II	1.00
9-12	336	Honors Algebra II	1.00
9-12	342	Geometry	1.00
9-12	344	Honors Geometry	1.00
11-12	360	Transition to College Mathematics	1.00
9-12	371	Precalculus	1.00
9-12	373	Honors Precalculus	1.00
12	376	Advanced Placement Calculus AB	1.00
12	378	Advanced Placement Calculus BC	1.00
11-12	390	Advanced Placement Statistics	1.00
9-12	392	Calculus	1.00

### Typical Mathematics Sequence

Grade 9	Grade 10	Grade 11	Grade 12
Geometry or Honors Geometry	Algebra II or Honors Algebra II	Precalculus Honors Precalculus	Calculus AP Statistics AP Calculus AB

NOTE: More than one mathematics course may be taken in any given year.

#### **ALGEBRA I - 328**

Prerequisite: None  
 Elective  
 Graded: Conventionally  
 Time Frame: Year  
 Recommendation: Grade of D or below in Algebra I in Grade 8.

Algebra I extends the study of number systems to include new numbers and their concepts as well as their applications. The course also includes a study of graphing and algebraic manipulations, interpretations, and the meaning of linear and quadratic equations. Credit in this course satisfies the university articulation specification for an algebra background. A scientific calculator is required.

#### **ALGEBRA II - 334**

Prerequisite: Algebra I and/or concurrent enrollment in Geometry  
 Elective  
 Graded: Conventionally  
 Time Frame: Year  
 Grade: 9-12  
 Credit: 1.00

Algebra II expands the concepts learned in Algebra I with additional graphic interpretation using some geometric concepts. Students study real numbers, variables, equations, exponents, and functions. Skills are developed to evaluate algebraic expressions, to solve equations and verbal problems, to factor, to use the laws of exponents, and to draw and read graphs. A graphing calculator is required.

#### **HONORS ALGEBRA II - 336**

Prerequisite: Honors Geometry or concurrent enrollment in Geometry or Honors Geometry  
 Elective  
 Grade: Weighted  
 Time Frame: Year  
 Recommendation: Teacher Recommendation  
 Grade: 9-12  
 Credit: 1.00

Honors Algebra II is an expanded investigation of concepts learned in Algebra I with additional applications and graphic interpretation. Skills are developed in working with linear equations and inequalities and solving systems. Additional topics studied in-depth include polynomials, radicals, conic sections, series and sequences, and quadratic, exponential, and logarithmic functions. A graphing calculator is required.

#### **GEOMETRY - 342**

Prerequisite: Algebra I and/or concurrent enrollment in Algebra II  
 Elective  
 Graded: Conventionally  
 Time Frame: Year  
 Grade: 9-12  
 Credit: 1.00

This course integrates the concepts of plane, solid, and coordinate geometry. The course investigates the properties of plane geometric figures. Using inductive and deductive methods of reasoning, students present proof of angle and line relationships. A scientific calculator is required.

## **HONORS GEOMETRY - 344**

Prerequisite: Algebra I  
Elective  
Grade: 9-12  
Grade: Weighted Credit: 1.00  
Time Frame: Year  
Recommendation: Teacher Recommendation

Honors Geometry is a unified course integrating the concepts of plane, solid, and coordinate geometry. This advanced course develops reasoning techniques and presents proof in a traditional manner. A scientific calculator is required.

## **TRANSITION TO COLLEGE MATHEMATICS - 360**

Prerequisite: Algebra I and Geometry  
Elective  
Graded: Conventionally Grade: 12 Credit: 1.00  
Time Frame: Year  
Recommendation: Teacher Recommendation

Transition to College Mathematics is an intermediate algebra course for seniors. The course is written with the goal of providing students with a solid foundation in algebra skills and development of problem-solving ability. The basic concepts of graphs and functions are introduced early. These concepts, along with problem solving, data interpretation, and geometric concepts, are emphasized and integrated throughout the course. A graphing calculator is required. NOTE: Colleges and universities may not accept this course as a substitute for Algebra II.

## **PRECALCULUS - 371**

Prerequisite: Algebra II and Geometry  
Elective  
Grade: 9-12  
Grade: Conventionally Credit: 1.00  
Time Frame: Year

Precalculus integrates algebra, geometry, and trigonometry. The students will develop an understanding of the behavior of functions through various methods. They will explore the idea of limits, graph polynomial functions, study systems of equations, and the location of zeroes. In addition, students will examine trigonometric functions and their graphs, identity formulas, work with vectors and polar equations. Work with exponential and logarithmic functions will also be included. All concepts will be taught with an emphasis on the graphing calculator. A graphing calculator is required.

## **HONORS PRECALCULUS - 373**

Prerequisite: Algebra II or Honors Algebra II and Geometry or Honors Geometry  
Elective  
Grade: 9-12  
Grade: Weighted Credit: 1.00  
Time Frame: Year  
Recommendation: Teacher Recommendation

Honors Precalculus students should have a solid background in algebra, geometry, and basic trigonometry. The students will develop an understanding of behaviors of functions. They will explore the idea of limits, graph polynomial functions, and study systems of equations and the location of zeroes. Students will also examine trigonometric functions and their graphs, identity formulas, work with vectors and polar equations, and study exponential and logarithmic functions. All concepts will be taught with an emphasis on the graphing calculator. A graphing calculator is required.

## **ADVANCED PLACEMENT CALCULUS AB- 376**

Prerequisite: Precalculus or Honors Precalculus  
Elective  
Grade: 11-12  
Grade: Weighted Credit: 1.00  
Time Frame: Year  
Recommendation: Teacher Recommendation

Advanced Placement Calculus AB is an extension of advanced mathematical concepts studied in Precalculus. Topics include continuity and limits, composite functions, and graphing. An overview of analysis topics of derivatives and integration is presented with emphasis on application. Students will be encouraged to take the Advanced Placement test for college credit. A graphing calculator is required.

## **ADVANCED PLACEMENT CALCULUS BC - 378**

Prerequisite: Honors Precalculus, AP Calculus AB  
Elective  
Grade: 12  
Grade: Weighted Credit: 1.00  
Time Frame: Year

Topics for Advanced Placement Calculus BC include functions, graphs, and limits; derivatives; integrals, and polynomial approximations and series. The study of limits will be the same level of conceptual understanding as in Advanced Placement Calculus AB. Derivatives will include the analysis of planar curves given in parametric, polar, and vector form including velocity and acceleration vectors. There will be a geometric interpretation of differential equations via slope fields and the relationship between slope fields and derivatives of implicitly defined functions. The course will also include numerical solution of differential equations using Euler's method. The concept of polynomial approximations and series will include the series of constants and Taylor Series. A graphing calculator is required.

### **ADVANCED PLACEMENT STATISTICS - 390**

Prerequisite: Precalculus or Honors Precalculus  
Elective Grade: 11-12  
Graded: Weighted Credit: 1.00  
Time Frame: Year  
Recommendation: Teacher Recommendation

The collection, processing, interpretation, and presentation of numerical data all belong to the domain of statistics. This course will stress the development of statistical thinking, the assessment of credibility and the value of the inferences made from data, both by those who consume them and those who produce them. Students need little or no background in statistics and will be given the opportunity to take the AP Statistics exam in May. The computer will be used to produce graphic displays of data. A graphing calculator is required.

### **CALCULUS - 392**

Prerequisite: Precalculus or Honors Precalculus  
Elective Grade: 9 -12  
Graded: Conventionally Credit: 1.00  
Time Frame: Year

Calculus is an extension of advanced mathematical concepts studied in Precalculus. Topics will be taught at a more deliberate pace and will include continuity and limits, composite functions and graphing. An overview of analysis topics of derivatives and integration is presented with emphasis on application. A graphing calculator is required.