Mathematics

ALGEBRA I Grade 8-10 3130

Credit(s): 1 Grade level(s): 7-10

Prerequisite(s): Gr 7-8: Meet recommendation criteria.

Gr 9-10: Math 8 and recommendation of Math 8 teacher.

Algebra I is the beginning of the academic mathematics sequence. Students are encouraged to develop self-reliance, a questioning attitude, and verbal precision relating to mathematical problems. Topics to be studied include fundamental algebraic language, the real number system, equations and inequalities, polynomials, factoring, coordinate graphing, relations and functions, systems of linear equations and inequalities, rational and radical expressions, quadratics, and data set analysis. Manipulatives and graphing calculators will be used in this course. Pre-AP Algebra I will provide more critical thinking and higher order problem solving and application of information.

ALGEBRA 1 + 3130DB

ALGEBRA READINESS ELECTIVE 3130ARE

Credit(s): 1 Math + 1 Elective = 2 Grade level(s): 9-10

Prerequisite(s): Math 8 and recommendation of Math 8 teacher.

Algebra I is the beginning of the academic mathematics sequence. The purpose of the Algebra Readiness elective is to prepare students for success in Algebra I by reinforcing critical pre-algebraic skills and concepts. Students will take this course along with Algebra I in a double-block structure. Students are encouraged to develop self-reliance, a questioning attitude, and verbal precision relating to mathematical problems. Topics to be studied include fundamental algebraic language, the real number system, equations and inequalities, polynomials, factoring, coordinate graphing, relations and functions, systems of linear equations and inequalities, rational and radical expressions, quadratics, and data set analysis. Manipulatives and graphing calculators will be used in this course.

PRE-AP GEOMETRY Gr 8-9 3143P

GEOMETRY Gr 9-11 3143

Credit(s): 1 Grade level(s): 8-11

Prerequisite(s): Algebra I and teacher recommendation

Geometry follows Algebra I in the sequence of college preparatory courses. This course deals with the geometry of points, lines, and planes enriched throughout with fundamental concepts of solid geometry. Logical reasoning, the nucleus of the course, is used in developing the concepts of inductive and deductive proofs. Algebra, coordinate and transformational geometry are integral parts of the course. Problem-solving strategies and real-world connections are integrated throughout the course. Pre-AP Geometry will provide more critical thinking and higher order problem solving and application of information.

GEOMETRY + 3143DB

GEOMETRY READINESS ELECTIVE 3143GRE

Credit(s): 1 Math + 1 Elective = 2 Grade level(s): 9-11

Prerequisite(s): Algebra I and recommendation of teacher.

Geometry follows Algebra I in the sequence of college preparatory courses. The purpose of the Geometry Readiness elective is to prepare students for success in Geometry by reinforcing critical pre-geometric skills and concepts. Students will take this course along with Geometry in a double-block structure. Geometry deals with the study of points, lines, and planes enriched throughout with fundamental concepts of solid geometry. Logical reasoning, the nucleus of the course, is used in developing the concept of inductive and deductive proofs. Algebra, coordinate and transformational geometry are integral parts of the course. Problem-solving strategies and real-world connections are integrated throughout the course.

COMPUTER MATHEMATICS 3184

(plus 2 courses of a career and technical concentration) 3184

Credit(s): 1 Grade level(s): 11-12

Prerequisite(s): Geometry

This course will utilize the graphing calculator to explore mathematical problem- solving through computer programming. Students will analyze data in charts, graphs, and tables; design, write, and test computer programs that define constraints of a given problem; design algorithms to solve a given problem; design and implement input/output phases of a program; define simple variable data types; translate mathematical expressions into a computer statement; implement conditional statements (if/then/else); and implement loops and iterative loops. Choosing this course in place of Algebra II will eliminate a student’s ability to enroll in Physics.

ALGEBRA, FUNCTIONS, AND DATA ANALYSIS 3134

Credit(s): 1 Grade level(s): 9-12

Prerequisite(s): Algebra I and Geometry

This course is designed for students who have successfully completed the standards for Algebra I and Geometry. Within the context of mathematical modeling and data analysis, students will study functions and their behaviors, systems of inequalities, probability, experimental design and implementation, and analysis of data. Data will be generated by practical applications arising from science, business, and finance. Students will solve problems that require the formulation of linear, quadratic exponential, or logarithmic equations or a system of equations. Through the investigation of mathematical models and interpretation/analysis of data from real life situations, students will strengthen conceptual understandings in mathematics and further develop connections between algebra and statistics. Students should use the language and symbols of mathematics in representations and communication throughout the course. The infusion of technology (graphing calculator and/or computer software) in this course will assist in modeling and investigating functions and data analysis.

PRE-AP ALGEBRA II Grade 9-10 3135P

ALGEBRA II Grade 11-12 3135

Credit(s): 1 Grade level(s): 9-12

Prerequisite(s): “B” or higher in Geometry or with written teacher recommendation

Algebra II is designed to be an extension of Algebra I. Students enrolled in Algebra II are assumed to have mastered basic Algebra I concepts. New concepts that broaden algebraic reasoning are introduced. Some of the topics studied include polynomials, factoring, quadratics, systems of linear and nonlinear equations and inequalities, rational expressions, radicals, relations/functions and their graphs, matrices and determinants, exponential and logarithmic functions, sequences and series, conic sections, and analysis of collected data. Graphing calculators will be an integral part of this course. Pre-AP Algebra II will provide more critical thinking and higher order problem solving and application of information.

PRE-AP COMPUTER PROGRAMMING 6640P
Credit(s): 1 Grade level(s): 9-12
Prerequisite(s): None

This course is designed to develop the students’ understanding of computer technology, equipment, operating methods, and appropriate vocabulary of the computer system using programming languages. Emphasis will be placed on the use of a disk operating system,

programming design by analysis, coding, and documentation of the problems as encountered in mathematics, science, and business applications.

School(s) offering course: All HS

AP COMPUTER SCIENCE A 3185
Credit(s): 1W Grade level(s): 10-12
Prerequisite(s): Pre-AP Computer Programming or permission of instructor

The major emphasis is on programming methodology, algorithms, and data structures. Applications of computing provide the context in which these subjects are treated. Applications are used to develop student awareness of the need for particular algorithms and data structures, as well as to provide topics for programming assignments to which students can apply their knowledge. A particular programming language constitutes the vehicle for implementing computer-based solutions to particular problems. Treatments of computer systems and the social implications of computing are integrated into the course and not isolated as separate units.

School(s) offering course: All HS

COLLEGE ALGEBRA 3137

Credit(s): 1 Grade level(s): 10-12

Prerequisite(s): Algebra II (for 12thgrade students; students who have passed Precalculus may not enroll in this course.)

This is a college preparatory course that extends topics from Algebra II and introduces additional ones. One quarter of the course deals with trigonometry topics. The remainder of the course concentrates on the study of functions, matrices, and probability. This course is recommended for college-bound seniors who do not have the background or interest to take the more in-depth course of Precalculus.

PRECALCULUS 3164

Dual Enrollment 3164D

Credit(s): 1 (1w for dual enrollment) Grade level(s): 10-12

Prerequisite(s): Algebra II with a grade of “C” or above

This course is designed to prepare students who plan to pursue college studies in mathematics, engineering, or the sciences. The central theme of this course is functions as models of change. Each family of functions is represented symbolically, numerically, graphically, and verbally.

Emphasis is placed on problem solving and real-world applications. Topics include an introduction to functions; linear functions; exponential and logarithmic functions; transformations of functions; trigonometric functions; composite, inverse, and combination functions; polynomial and rational functions; trigonometry of vectors; and related topics, including geometric series, parametric equations, implicitly defined curves, and complex numbers. The graphing calculators will be used throughout the course. For dual enrollment, a unit on systems of equations and inequalities using matrices will be included.

AP STATISTICS 3192

Credit(s): 1W Grade level(s): 10-12

Prerequisite(s): "B" in Algebra II

This course is equivalent to an introductory, non-calculus based, college course in statistics which is typically required for college majors such as engineering, psychology, sociology, health science, and business. The purpose of this course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Graphing calculators will be used throughout the course.

AP CALCULUS AB 3177

Dual enrollment 3177D

Credit(s): 1W Grade level(s): 10-12

Prerequisite(s): Precalculus with a grade of "C" or better or recommendation of Precalculus teacher.

Advanced Placement Calculus AB consists of a full year of work in calculus and related topics. This course is intended for students who have a thorough knowledge of analytic geometry and elementary functions in addition to college preparatory algebra, geometry, and trigonometry. The purpose of the course is to prepare the student for advanced placement in college calculus.

AP CALCULUS BC 3180

Dual enrollment 3180D

Credit(s): 1W Grade level(s): 12

Prerequisite(s): AP Calculus AB

AP Calculus BC is a course designed to build on the concepts learned in AP Calculus AB and to prepare students for the higher levels of mathematics. The diversity of topics and versatility of

the knowledge gained in this course will enable students to solve problems in many fields of study, including physics, engineering, biology, and chemistry. The course includes vectors and dynamical systems, series and approximation, advanced integration techniques, parametric and polar functions, multiple variable functions, differential equations, and real-world modeling examples. The students will extend the applications of calculus to a wider arena of physical phenomena through the use of technology.