MATHEMATICS

These course descriptions communicate the general content of the senior high mathematics courses. The courses are presented in three major strands to provide an idea of general types of mathematics programs throughout the four years of senior high school.

HONORS: This is the advanced placement strand. Each course in this sequence should be considered for highly capable mathematics students. Each course in this strand has a weighted grading scale. The major courses in this strand are Honors Geometry, Honors Algebra 2 with Trigonometry, Honors Pre-Calculus, AB Honors Calculus, BC Honors Calculus and AP Statistics. Students successfully completing Algebra 1 in the eighth grade (with teacher recommendation) have met the prerequisite for beginning the program.

COLLEGE PREPARATORY MATHEMATICS: This strand of courses will prepare students for future work in mathematics and the sciences. The major courses in this sequence are Algebra, Geometry A, Algebra 2 with Trigonometry, Finite Math, and Pre-Calculus. This strand is a follow-up of either eighth grade Algebra 1 or Math Modeling.

GENERAL COURSES FOR COLLEGE BOUND: Courses listed in this strand are Algebra 1, Geometry B, Algebra 2, and College Prep Math. Math Modeling in eighth grade or Algebra at the high school are prerequisites for courses in this strand. This strand is not suggested as preparation for universities with rigorous admission requirements or for students who wish to pursue a technical or math-related career.

The prerequisites listed on the next two pages represent requirements the student must meet for enrollment in a given course. Students who fail to meet the prerequisite must obtain the written consent of the math department to enroll.

ALGEBRA 1 **117101/117102**
Grades: 9-10
ALGEBRA 1
1 Math credit
Prerequisite: Mathematical Modeling: Algebra in Context (formerly Pre-Algebra 2)

Algebra 1 is a critical turning point in the development of mathematical thinking. Everything that is quantifiable - whether through its measurable characteristics or changes over time - can be modeled and analyzed using algebraic and logical reasoning. Prior to this course, students have largely modeled and solved problems in real-world contexts with mathematical symbols. In Algebra 1, students move beyond working simply with concrete objects and begin analyzing the abstract world of mathematical objects. This analysis requires exploration and imagination as students create, discover, and uncover unifying patterns and structures in the realm of mathematics. An improved understanding of these structures will enhance all students' ability to apply algebra to real-world contexts for predictions and inferences, thus helping them better understand and respond to the challenges of our ever-changing world. This college preparatory course emphasizes real number operations, the manipulation of algebraic expressions, and the solution of algebraic sentences. At the conclusion of this course, students take the Algebra 1 End of Course Assessment required by the state of Missouri.

GEOMETRY A **117201/117202**
Grades: 9-12
GEOMETRY A
1 Math credit
Prerequisite: Algebra 1

This course requires students to focus on logical proof and critical thinking when solving problems or evaluating arguments. There is an emphasis on deductive reasoning and critical thinking. Geometric properties and concepts in both the plane and 3-dimensional space are covered. Topics include logic and probability, angles and lines, transformations, similarity, triangles, trigonometry, circles, and other polygons.

HONORS GEOMETRY **118201/118202**
Grades: 9-10
+GEOMETRY
1 Math Credit
Prerequisite: Algebra 1 (Grade 8) or consent of department

This course requires students to focus on logical proof and critical thinking when solving problems or evaluating arguments. There is a strong emphasis on usage of precise mathematical language, deductive reasoning, and critical thinking. Geometric properties and concepts in both the plane and 3-dimensional space are covered. Rigorous higher order algebraic concepts are integrated throughout. Topics include logic and probability, angles and lines, transformations, similarity, triangles, trigonometry, circles, and other polygons. A weighted grade is given.

MATHEMATICS

GEOMETRY B **116201/116202**
Grades: 10-12
GEOMETRY B
1 Math credit
Prerequisite: Completion of Algebra program

The emphasis of this course is on geometric relationships of figures, visualization of geometric properties and measurement. Algebraic skills are integrated through application of geometric concepts. An introduction to proofs, mathematical language, logical reasoning, and critical thinking is included. Topics include logic and probability, angles and lines, transformations, similarity, triangles, trigonometry, circles, and other polygons.

ALGEBRA 2 WITH TRIGONOMETRY **117401/**
Grades: 10-12 **117402**
ALG 2/TRIG
1 Math Credit
Prerequisite: Geometry A or consent of department

In this course, students will study families of functions including linear, quadratic, exponential, logarithmic, radical, rational, and trigonometric. These functions will be represented through equations, tables, and graphical representations. Modeling of real world scenarios and application of concepts to problems arising from those situations will be highlighted. This course is recommended for students planning to pursue a career in a STEM or Business field.

HONORS ALGEBRA 2 WITH TRIGONOMETRY
Grades: 10-11 **118401/118402**
+ALG2/TRIG
1 Math Credit
Prerequisite: Honors Geometry or consent of department

This course, which covers second year algebra topics and trigonometry is designed for highly mathematically capable students interested in pursuing STEM professions. The focus is on the analysis and understanding of mathematical relations and functions. Students will analyze linear, quadratic, absolute value, polynomial, rational, radical, exponential, and logarithmic functions graphically, numerically, and algebraically. Purchase of a graphing calculator is strongly recommended. A weighted grade is given.