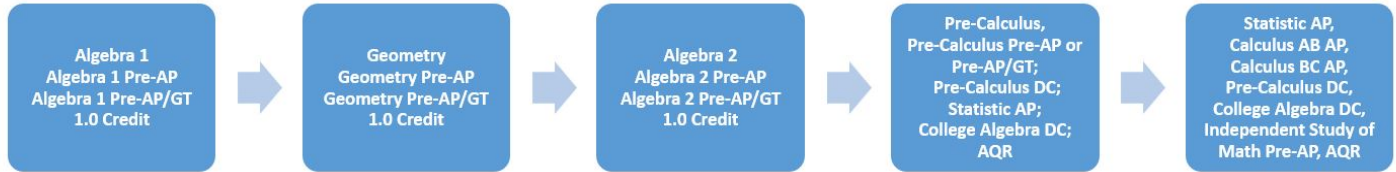


STEM Pathway – Math



MATHEMATICS

Students and Parents should verify the transferability of dual credit course credits by asking your future college or university.

ALGEBRA 1

KISD #: 0330

Grades: 9-10

1 Credit

Prerequisite: 8TH Grade Mathematics

Students will build on the knowledge and skills for mathematics in Grades 6-8, which provide a foundation in linear relationships, number and operations, and proportionality. Students will study linear, quadratic, and exponential functions and their related transformations, equations, and associated solutions. Students will connect functions and their associated solutions in both mathematical and real-world situations. Students will use technology to collect and explore data and analyze statistical relationships. In addition, students will study polynomials of degree one and two, radical expressions, sequences, and laws of exponents. Students will generate and solve linear systems with two equations and two variables and will create new functions through transformations. This course will include the appropriate use of graphing technology. **This course requires an EOC exam.**

ALGEBRA 1 ESL

KISD #: 0330N

Grades: 9-10

1 Credit

Prerequisite: Counselor Approval

Students will build on the knowledge and skills for mathematics in Grades 6-8, which provide a foundation in linear relationships, number and operations, and proportionality. Students will study linear, quadratic, and exponential functions and their related transformations, equations, and associated solutions. Students will connect functions and their associated solutions in both mathematical and real-world situations. Students will use technology to collect and explore data and analyze statistical relationships. In addition, students will study polynomials of degree one and two, radical expressions, sequences, and laws of exponents. Students will generate and solve linear systems with two equations and two variables and will create new functions through transformations. This course will include the appropriate use of graphing technology. This course will cover the essential elements of the regular algebra course with an emphasis on a variety of methods and modalities for instruction to meet the needs of the limited English speaker. **This course requires an EOC exam.**

ALGEBRA 1 PRE-AP

KISD #: 0330Q

Grades: 9-10

1 Credit

Prerequisite: 8th Grade Mathematics

This course will emphasize the study of Algebra 1 concepts with extensions. Students will study linear, quadratic, and exponential functions and their related transformations, equations, and associated solutions. Students will connect functions

and their associated solutions in both mathematical and real-world situations. Students will use technology to collect and explore data and analyze statistical relationships. In addition, students will study polynomials of degree one and two, radical expressions, sequences, and laws of exponents. Students will generate and solve linear systems with two equations and two variables and will create new functions through transformations. The level of instruction/curriculum will focus on preparing the student for advanced placement mathematics courses. This course will include the appropriate use of graphing technology. This course requires an EOC exam.

Advanced Grade Points: Yes

ALGEBRA 1 PRE-AP/GT

KISD #: 0337

Grades: 9-10

1 Credit

Prerequisite: Meet district guidelines

This course will emphasize the study of Algebra 1 concepts with extensions. Students will study linear, quadratic, and exponential functions and their related transformations, equations, and associated solutions. Students will connect functions and their associated solutions in both mathematical and real-world situations. Students will use technology to collect and explore data and analyze statistical relationships. In addition, students will study polynomials of degree one and two, radical expressions, sequences, and laws of exponents. Students will generate and solve linear systems with two equations and two variables and will create new functions through transformations. This course will include the appropriate use of graphing technology. The level of instruction/curriculum will focus on preparing the gifted student for advanced placement mathematics courses. This course may require independent and guided research. GT services are provided through the Pre-AP classes. This course requires an EOC exam.

Advanced Grade Points: Yes

GEOMETRY

KISD #: 0340

Grades: 9-12

1 Credit

Prerequisite: Algebra 1

Students will begin to focus on more precise terminology, symbolic representations, and the development of proofs. Students will explore concepts covering coordinate and transformational geometry; logical argument and constructions; proof and congruence; similarity, proof, and trigonometry; two- and three-dimensional figures; circles; and probability. In proof and congruence, students will use deductive reasoning to justify, prove and apply theorems about geometric figures. Students will apply theorems about circles to determine relationships between special segments and angles in circles.

GEOMETRY PRE-AP

KISD #: 0343Q

Grades: 9-12

1 Credit

Prerequisite: Algebra 1 or Algebra 1 Pre-AP

Students will begin to focus on more precise terminology, symbolic representations, and the development of proofs. Students will explore concepts covering coordinate and transformational geometry; logical argument and constructions; proof and congruence; similarity, proof, and trigonometry; two- and three-dimensional figures; circles; and probability. In proof and congruence, students will use deductive reasoning to justify, prove and apply theorems about geometric figures. Students will apply theorems about circles to determine relationships between special segments and angles in circles. The level of instruction/curriculum will focus on preparing the student for advanced placement mathematics courses.

Advanced Grade Points: Yes

GEOMETRY PRE-AP/GT

KISD #: 0347Q

Grades: 9-12

1 Credit

Prerequisite: Algebra 1 and meets district guidelines

Students will begin to focus on more precise terminology, symbolic representations, and the development of proofs. Students will explore concepts covering coordinate and transformational geometry; logical argument and constructions; proof and congruence; similarity, proof, and trigonometry; two- and three-dimensional figures; circles; and probability. In proof and congruence, students will use deductive reasoning to justify, prove and apply theorems about

geometric figures. Students will apply theorems about circles to determine relationships between special segments and angles in circles. The level of instruction/curriculum will focus on preparing the gifted student for advanced placement mathematics courses. This course may require independent and guided research. GT services are provided through the Pre-AP classes.

Advanced Grade Points: Yes

ALGEBRA 2

KISD #: 0350

Grades: 9-12 **1 Credit**

Prerequisite: **Algebra 1 and Geometry**

Students will build on the knowledge and skills for mathematics Algebra I. Students will broaden their knowledge of quadratic functions, exponential functions, and systems of equations.

Students will study logarithmic, square root, cubic, cube root, absolute value, rational functions, and their related equations.

Students will connect functions to their inverses and associated

equations and solutions in both mathematical and real-world situations. In addition, students will extend their knowledge of data analysis and numeric and algebraic methods.

ALGEBRA 2 (Blended-Learning)

KISD #: 0359

Grades: 11-12 **1 Credit**

Prerequisite: **Algebra 1 and Geometry**

Students will build on the knowledge and skills for mathematics Algebra I. Students will broaden their knowledge of quadratic functions, exponential functions, and systems of equations.

Students will study logarithmic, square root, cubic, cube root, absolute value, rational functions,

and their related equations. Students will connect functions to their inverses and associated equations and solutions in both

mathematical and real-world situations. In addition, students will extend their knowledge of data analysis and numeric and algebraic methods. The class will meet face-to-face twice a week and in an online setting the remaining days of the week. The face-to-face days provide students time to collaborate and work in groups. On the alternate days, students may work online or in the classroom where they can receive individualized instruction. Students must be organized independent learners.

ALGEBRA 2 PRE-AP

KISD #: 0353Q

Grades: 9-12 **1 Credit**

Prerequisite: **Algebra 1 and Geometry**

Students will build on the knowledge and skills for mathematics Algebra I. Students will broaden their knowledge of quadratic functions, exponential functions, and systems of equations.

Students will study logarithmic, square root, cubic, cube root, absolute value, rational functions, and their related equations.

Students will connect functions to their inverses and associated

equations and solutions in both mathematical and real-world situations. In addition, students will extend their knowledge of

data analysis and numeric and algebraic methods. The level of

instruction/curriculum will focus on preparing the student for advanced placement mathematics courses.

Advanced Grade Points: Yes

ALGEBRA 2 PRE-AP/GT

KISD #: 0354Q

Grades: 9-12 **1 Credit**

Prerequisite: **Algebra 1 and Geometry and meets district guidelines**

Students will build on the knowledge and skills for mathematics Algebra I. Students will broaden their knowledge of quadratic functions, exponential functions, and systems of equations.

Students will study logarithmic, square root, cubic, cube root, absolute value, rational functions, and their related equations.

Students will connect functions to their inverses and associated

equations and solutions in both mathematical and real-world situations. In addition, students will extend their knowledge of

data analysis and numeric and algebraic methods. The level of

instruction/curriculum will focus on preparing the gifted student for advanced placement mathematics courses. This course may require independent and guided research. GT services are provided through the Pre-AP classes.

Advanced Grade Points: Yes

PRE-CALCULUS

KISD #: 0360

Grades: 9-12 **1 Credit**

Prerequisite: Geometry and Algebra 2

Pre-calculus is the preparation for calculus. The course approaches topics from a function point of view, where appropriate, and is designed to strengthen and enhance conceptual understanding and mathematical reasoning used when modeling and solving mathematical and real-world problems. Students systematically work with functions and their multiple representations. The study of Pre-calculus deepens students' mathematical understanding and fluency with algebra and trigonometry and extends their ability to make connections and apply concepts and procedures at higher levels. Students investigate and explore mathematical ideas, develop multiple strategies for analyzing complex situations, and use technology to build understanding, make connections between representations, and provide support in solving problems.

PRE-CALCULUS (Blended Learning)

KISD #: 0369

Grades: 11-12

1 Credit

Prerequisite: Geometry and Algebra 2

Pre-Calculus is the preparation for calculus. The course approaches topics from a function point of view, where appropriate, and is designed to strengthen and enhance conceptual understanding and mathematical reasoning used when modeling and solving mathematical and real-world problems. Students systematically work with functions and their multiple representations. The study of Pre-calculus deepens students' mathematical understanding and fluency with algebra and trigonometry and extends their ability to make connections and apply concepts and procedures at higher levels. Students investigate and explore mathematical ideas, develop multiple strategies for analyzing complex situations, and use technology to build understanding, make connections between representations, and provide support in solving problems. In addition to the topics studied in Pre-calculus, other topics will include polar and parametric equations and sequences and series. The class will meet face-to-face twice a week and in an online setting the remaining days of the week. The face-to-face days provide students time to collaborate and work in groups. On the alternate days, students may work online or in the classroom where they can receive individualized instruction. Students must be organized independent learners.

PRE-CALCULUS PRE-AP

KISD #: 0363Q

Grades: 9-12

1 Credit

Prerequisite: Geometry and Algebra 2

Pre-calculus is the preparation for calculus. The course approaches topics from a function point of view, where appropriate, and is designed to strengthen and enhance conceptual understanding and mathematical reasoning used when modeling and solving mathematical and real-world problems. Students systematically work with functions and their multiple representations. The study of Pre-calculus deepens students' mathematical understanding and fluency with algebra and trigonometry and extends their ability to make connections and apply concepts and procedures at higher levels. Students investigate and explore mathematical ideas, develop multiple strategies for analyzing complex situations, and use technology to build understanding, make connections between representations, and provide support in solving problems. In addition to the topics studied in Pre-calculus, other topics will include polar and parametric equations and sequences and series. The level of instruction/curriculum will focus on preparing the student for advanced placement mathematics courses.

Advanced Grade Points: Yes

PRE-CALCULUS DUAL CREDIT

KISD #: 0364Q

Grades: 11-12

1 Credit

Prerequisite: Meets district guidelines

An integrated treatment of the concepts necessary for calculus beginning with a review of algebraic and transcendental functions including trigonometric functions. Topics include binomial theorem, analytic geometry, vector algebra, polar and parametric equations, mathematical induction and sequences and series.

PIP Pre-Calculus

KISD #: 3473

Grades: 10-12

1 Credit

Prerequisite: Algebra 2 Pre-AP or Pre-AP/GT

This course studies the state mandated standards which include functions and their multiple representations. Students investigate and explore mathematical ideas, develop multiple strategies for analyzing complex situations, and use technology to build understanding, make connections between representations, and provide support in solving problems. In addition to the state mandated standards, topics such as area

under a curve, difference quotient, and tangents to curves are also studied. To prepare students in this course for Math SL or HL, additional partner projects and activities are given to students each six weeks. These include “Critical Thinking” problems to extend the content learned in a particular unit and challenge the students, a fall and spring “Portfolio” in which students collaborate to work through more in depth questions, some involving real-life applications, and students participate in their IB required international component project in the spring.

Advanced Grade Points: Yes

CALCULUS ADVANCED PLACEMENT / AB

KISD #: 0365

Grades: 11-12 **1 Credit**

Prerequisite: **Pre-Calculus**

This is an Advanced Placement course designed to meet the requirements of Calculus AB as outlined in the Course Description of the Advanced Placement Program in Mathematics. This course primarily develops the students’ understanding of the concepts of calculus and providing experience with its methods and applications. Topics include limits, derivatives, integrals, and their applications. At the conclusion of this course, students may take the Advanced Placement Calculus AB Exam.

Students may earn credit in either Calculus AB or Calculus BC but not both.

Advanced Grade Points: Yes

CALCULUS ADVANCED PLACEMENT / BC

KISD #: 0367

Grades: 11-12 **1 Credit**

Prerequisite: **Pre-Calculus**

This is an Advanced Placement course designed to meet the requirements of Calculus BC as outlined in the Course Description of the Advanced Placement Program in Mathematics. This course is an extension of Calculus AB rather than an enhancement. In addition to the topics

covered in Calculus AB, this course expands upon the applications of derivatives and integrals. Calculus BC also covers polynomial approximation, sequences, and series. At the conclusion of this course, students may take the Advanced Placement Calculus BC Exam. **Students may earn credit in either Calculus AB or Calculus BC but not both.**

Advanced Grade Points: Yes

STATISTICS

KISD #: 0396

Grades: 11-12 **1 Credit**

Prerequisite: **Algebra 1**

Students will build on the knowledge and skills for mathematics in Kindergarten-Grade 8 and Algebra I. Students will broaden their knowledge of variability and statistical processes. Students will study sampling and experimentation, categorical and quantitative data, probability and random variables, inference, and bivariate data. Students will connect data and statistical processes to real-world situations. In addition, students will extend their knowledge of data analysis.

STATISTICS – ADVANCED PLACEMENT

KISD #: 0397

Grades: 11-12 **1 Credit**

Prerequisite: **Geometry and Algebra 2**

This is an Advanced Placement course designed to meet the requirements of statistics as outlined in the Course Description of the Advanced Placement Program in Mathematics. The purpose of the AP course in statistics is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploring data, planning a study, anticipating patterns, and statistical inference. At the conclusion of this course, students may take the Advanced Placement Statistics Exam.

Advanced Grade Points: Yes

MATHEMATICS SL

KISD #: 3422

Grades: 11-12 **1 Credit**

Prerequisite: **Pre-AP/Pre-IB or Honors Geometry, Algebra 2 and Pre-Calculus**

This is a two-year course taken in the junior and senior years by students planning to include mathematics as a major component of their studies, either as a subject itself or within courses such as physics, engineering, and technology. Students are expected to have a solid foundation in mathematics and be competent in a wide range of analytical and technical skills. This

course will review Algebra, Geometry, and Algebra 2. Methods concentrate on the application of theory to real environmental situations. Topics of study include: set and number theory, elementary coordinate geometry, equations and inequalities, functions, (linear, quadratic, piece, polynomial radical, and rational), exponential and logarithmic functions, conic sections, trigonometry, vectors sequences and series, binomial theorem, statistics and probability. Students are required to work independently and develop an investigation mode, which can be applied to other subject areas, to common world occurrences and to topics that relate to the self-interest of students. The course includes a portfolio based on different areas of the syllabus.

Advanced Grade Points: Yes

MATHEMATICS HL

KISD #: 3424

Grades: 11-12 **1 Credit**

Prerequisite: **Pre-AP Geometry, Pre-AP Algebra 2, and PIB Pre-Calculus and Calculus BC**

This two-year course begins with the study of AP Calculus BC in the junior year and IB Math HL in the senior year. In choosing this course, students will be expecting to include mathematics as a major component of their university studies, either as a subject in its own right or within courses such as physics, engineering and technology. Others may take this subject because they have a strong interest in mathematics and enjoy meeting its challenges and engaging with its problems.

The nature of the subject is such that it focuses on developing important mathematical concepts in a comprehensible, coherent and rigorous way. This is achieved by means of a carefully balanced approach. Students are encouraged to apply their mathematical knowledge to solving problems set in a variety of meaningful contexts. Development of each topic should feature justification and proof of results. Students embarking on this course should expect to develop insight into mathematical form and structure, and should be intellectually equipped to appreciate the links between concepts in different topic areas. They should also be encouraged to develop the skills needed to continue their mathematical growth in other learning environments. Topics of studies include: set and number theory, elementary coordinate geometry, equation and equality, functions (linear equation, quadratic, piece, polynomial radical and rational), exponential and logarithmic functions, trigonometry, vector calculus, and

differential equations. The internally assessed component, the portfolio, offers students a framework for developing independence in their mathematical learning through engaging in mathematical investigation and mathematical modeling. Students will be provided with opportunities to take a considered approach to these activities, and to explore different ways of approaching a problem. The portfolio also allows students to work without the time constraints of a written examination and to develop skills in communicating mathematical ideas. This course is a demanding one, requiring students to study a broad range of mathematical topics through a number of different approaches and to varying degrees of depth.

Advanced Grade Points: Yes

INDEPENDENT STUDY OF MATHEMATICS PRE-AP OR PRE-AP/GT

KISD #: 0384Q, 0386Q

Grades: 11-12 **.5-1 Credit**

Prerequisite: **Meets district guidelines, concurrent enrollment in Pre-Calculus**

In Independent Study in Mathematics, students will extend their mathematical understanding beyond the Algebra II level in a specific area or areas of mathematics such as theory of equations, number theory, non-Euclidean geometry, linear algebra, advanced survey of mathematics, or history of mathematics. Potential students must meet prerequisites and have approval of the mathematics department chairman. When accepted, each student will work independently during an assigned period each day on the course selected, and attend regularly scheduled seminars with his consulting teacher for progress reports and critical evaluations.

Advanced Grade Points: Yes

MATH MODELS WITH APPLICATIONS

KISD #: 0383

Grades: 11-12 **1 Credit**

Prerequisite: **Algebra 1**

Mathematical Models with Applications is designed to build on the knowledge and skills for mathematics in Algebra I and Geometry. Students learn to apply mathematics through

experiences in personal finance, science, engineering, fine arts, and social sciences. Students use algebraic, graphical, and geometric reasoning to recognize patterns and structure, model information, solve problems, and communicate solutions. Students will select from tools such as physical objects; manipulatives; technology, including graphing calculators, data collection devices, and computers; and paper and pencil and from methods such as algebraic techniques,

geometric reasoning, patterns, and mental math to solve problems. This course is not open to students on 4x4 plan who have received credit for either semester of Algebra 2.

ALGEBRAIC REASONING

KISD #: 0351

Grades: 11-12 **1 Credit**

Prerequisite: Algebra 1

In Algebraic Reasoning, students will build on the knowledge and skills for mathematics in Kindergarten-Grade 8 and Algebra I, continue with the development of mathematical reasoning related to algebraic understandings and processes, and deepen a foundation for studies in subsequent mathematics courses.

Students will broaden their knowledge of functions and relationships, including linear, quadratic, square root, rational, cubic, cube root, exponential, absolute value, and logarithmic functions. Students will study these functions through analysis and application that includes explorations of patterns and structure, number and algebraic methods, and modeling from data using tools that build to workforce and college

readiness such as probes, measurement tools, and software tools, including spreadsheets.

FINANCIAL MATHEMATICS

KISD #: 919018

Grades: 10-12 **1 Credit**

Prerequisite: Algebra 1

This course is about personal money management. Students will apply critical-thinking skills to analyze personal financial decisions based on current and projected economic factors. CTE Course for Mathematics Credit – see counselor for detailed information.

ADVANCED QUANTITATIVE REASONING

KISD #: 0391

Grades: 11-12 **1 Credit**

Prerequisite: Algebra 2

In Advanced Quantitative Reasoning, students will develop and apply skills necessary for college, careers, and life. Course content consists primarily of applications of high school mathematics concepts to prepare students to become well-educated and highly informed 21st century citizens. Students will develop and apply reasoning, planning, and communication to make decisions and solve problems in applied situations involving numerical reasoning, probability, statistical analysis, finance, mathematical selection, and modeling with algebra, geometry, trigonometry, and discrete mathematics. This course is designed to prepare students for a variety of future paths in college, including the social sciences, computers, business, and health fields.

INDEPENDENT STUDY DUAL CREDIT COLLEGE ALGEBRA

KISD #: 0389A, 0389DC

Grades: 11-12 **1 Credit**

Prerequisite: Algebra 2 and Counselor Approval

This course builds upon students' algebra skills to prepare them for advanced mathematics courses in college. The focus of the course includes the analysis of absolute value equations and inequalities, graphing skills, functions, and the theory of equations and matrices. Successful completion of the course may result in dual credit for both high school graduation and college coursework. A student interested in this course should contact his/her counselor for details regarding prerequisites, requirements, and testing.

Advanced Grade Points: Yes

MATH IMPROVEMENT

KISD #: 0398

Grades: 9 **.5-1 Credit**

Prerequisite: Meet district guidelines

(THIS COURSE IS REQUIRED FOR THOSE STUDENTS WHO HAVE FAILED THE MATHEMATICS PORTION OF THE EIGHTH GRADE STATE ASSESSMENT.)

Instruction focuses on the specific math objectives measured on the Algebra 1 EOC. Emphasis is on the review and practice of the appropriate test-taking strategies a state assessment examinee must employ to succeed on the test.

MATH IMPROVEMENT

KISD #: 0399

Grades: 10 .5-1 Credit

Prerequisite: Meet district guidelines

This course is strongly encouraged for those students who have failed the mathematics portion of the Algebra 1 EOC. Instruction focuses on the specific math objectives measured on the Algebra 1 EOC. Emphasis is on the review and practice of the appropriate test-taking strategies a state assessment examinee must employ to succeed on the test.

MATH IMPROVEMENT

KISD #: 0400

Grades: 11 .5-1 Credit

Prerequisite: Meet district guidelines

This course is strongly encouraged for those students who have failed the mathematics portion of the Algebra 1 EOC. Instruction focuses on the specific math objectives measured on the Algebra 1 EOC. Emphasis is on the review and practice of the appropriate test-taking strategies a state assessment examinee must employ to succeed on the test.

English Language Learners

As new students arrive in the district, they will be assessed and offered one of the pathways along the Language continuum. These could include the Newcomer Center, ESOL, LES sheltered classes, or classes with a teacher who has received training in sheltered instruction strategies.

TRANSITION TO COLLEGE MATH IMPROVEMENT

KISD #: 0502

Grades: 12 1 Credit (Elective Credit)

Prerequisite: Meet district guidelines

Topics include basic algebraic operations, solving linear equations and inequalities, laws of integer exponents, factoring, rational expressions, the Cartesian coordinate system, graphing lines, finding equations of lines, solving linear systems, special products and factoring, rational expressions and equations, rational exponents, radicals, radical equations, quadratic equations, absolute value equations and inequalities, complex numbers, equations of lines, an introduction to the function concept, and graphing.