



## High School Course Guide

## Mathematics Course Descriptions

29011 Applied Consumer Skills IV (B)

1 credit

Gr: 9-12



**Prerequisite:** Eligible for A. L. E. program/placement by the ARD Committee.

**Description:** [Applied Learning Environment (A. L. E.) Course] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Algebra I and determined by the ARD Committee to be a suitable substitute for Algebra I.

20044 Fundamentals of Algebra I (B)

1 credit

Gr: 9-12



**Prerequisite:** Middle School Math required by ARD as denoted on Schedule Page.

**Description:** [CAMPUS BASED SPECIAL EDUCATION (CBSE) COURSE] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Algebra I and determined by the ARD Committee to be a suitable substitute for Algebra I.

29066 Basic Algebra I (B)

1 credit

Gr: 9-12



**Prerequisite:** Middle School Math required by ARD as denoted on Schedule Page.

**Description:** [Base/ABC/PAC]. This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Algebra I and determined by the ARD Committee to be a suitable substitute for Algebra I.

21217 Algebra I for English Learners (R)

1 credit

Gr: 9-12



**Prerequisite:** English learner

**Description:** [ENGLISH LEARNER (EL) COURSE] This course is based on the TEKS for Algebra I as accommodated for students receiving services as English learners at the beginning, intermediate, and advanced levels of language proficiency. Accommodations occur for English learners in time, pacing, methodology, and/or method of assessment.

21224 Algebra 1 (R)

1 credit

Gr: 9-12

**Prerequisite:** None

**Description:** The primary focus for students in this course is developing logical reasoning by making and justifying generalizations based on their experiences with fundamental algebraic concepts, especially functional relationships and problem solving in real situations. Linear and quadratic functional relationships are examined in a variety of problem situations, and these functions form the basis for the study of equations and the development of algebraic skills. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) and tools as well as having regular access to technology that allows function plotting, coordinate graphing, algebraic analysis, and computation. This course addresses all of the essential knowledge and skills for Algebra 1 and is designed to prepare students for the STAAR End-of-Course exam.

21213 Pre AP Algebra 1 (H)

1 credit

Gr: 9-12



**Prerequisite:** None

**Description:** The primary focus for students in this course is developing logical reasoning by making and justifying generalizations based on their experiences with fundamental algebraic concepts, especially functional relationships and problem solving in real situations. Linear and quadratic functional relationships are examined in a variety of problem situations, and these functions form the basis for the study of equations and the development of algebraic skills. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) and tools as well as having regular access to technology that allows function plotting, coordinate graphing, algebraic analysis, and computation. At an honors or Pre AP level, this course addresses the essential knowledge and skills for first-year algebra at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

21212 Pre AP MST Algebra 1 (H)

1 credit

Gr: 9-12



**Prerequisite:** None

NOTE: All courses may not be offered on every campus.

**Description:** [Math-Science-Technology magnet course offered only at NGHS] MST Algebra I will address all of the essential knowledge and skills for Algebra I and will focus on linear and quadratic relationships and problem solving in real situations, thus allowing students to develop logical reasoning by making and justifying generalizations based on their experiences with fundamental algebraic concepts. Students in this magnet class will utilize advanced classroom tools such as concrete manipulatives, graphing calculators, data collection probe ware, and interactive multimedia software applications. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**29012 Applied Consumer Skills V (B)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Eligible for A. L. E. program/placement by the ARD Committee.

**Description:** [Applied Learning Environment (A. L. E.) Course] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Geometry and determined by the ARD Committee to be a suitable substitute for Geometry.

**20063 Fundamentals of Geometry (B)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Algebra I required by ARD as denoted on Schedule Page.

**Description:** [CAMPUS BASED SPECIAL EDUCATION (CBSE) COURSE] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Geometry and determined by the ARD Committee to be a suitable substitute for Geometry.

**29068 Basic Geometry (B)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Algebra I required by ARD as denoted on Schedule Page.

**Description:** [Base/ABC/PAC]. This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Geometry and determined by the ARD Committee to be a suitable substitute for Geometry.

**21418 Geometry for English Learners (R)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** English learner, Algebra 1

**Description:** [ENGLISH LEARNER (EL) COURSE] This course is based on the TEKS for Geometry as accommodated for students receiving services as English learners at the beginning, intermediate, and advanced levels of language proficiency. Accommodations occur for English learners in time, pacing, methodology, and/or method of assessment.

**21410 Geometry (R)**

**1 credit**

**Gr: 9-12**

**Prerequisite:** Algebra 1

**Description:** This course addresses the components of the basic structure of geometry such as dimensionality, congruence, and similarity through the study of size, shape, location, and direction relationships. Connections to algebra and to the world outside of school are generated through a variety of applications and settings. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) as well as having regular access to technology that allows geometric constructions, coordinate graphing, algebraic analysis, and computation. This course addresses the essential knowledge and skills for geometry and is designed to prepare students for the STAAR End-of-Course exam.

**21413 Pre AP Geometry (H)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Algebra 1

**Description:** This course addresses the components of the basic structure of geometry such as dimensionality, congruence, and similarity through the study of size, location, and direction relationships. Connections to algebra and to the world outside of school are generated through a variety of applications and settings. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) as well as having regular access to technology that allows geometric constructions, coordinate graphing, algebraic analysis, and computation. At an honors or pre AP level, this course addresses the essential knowledge and skills for geometry at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics and is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

NOTE: All courses may not be offered on every campus.

**21416 Pre AP AMS Geometry (H)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Algebra 1

**Description:** (NGHS pilot program during 2016-17) This course addresses the components of the basic structure of geometry such as dimensionality, congruence, and similarity through the study of size, location, and direction relationships. Connections to algebra and to the world outside of school are generated through a variety of applications and settings. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) as well as having regular access to technology that allows geometric constructions, coordinate graphing, algebraic analysis, and computation. At an honors or pre AP level, this course addresses the essential knowledge and skills for geometry at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics and is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21412 Pre AP MST Geometry (H)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Algebra 1

**Description:** [Math-Science-Technology magnet course offered only at NGHS] MST Geometry will address all of the essential knowledge and skills for Geometry and will focus on student explorations of geometric concepts, making connections to algebra and connections to the world outside of school through a variety of applications and settings. Students in this magnet class will utilize advanced classroom tools such as concrete manipulatives, graphing calculators, data collections probe ware, and interactive multimedia software applications. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21414 Geometry (IntH)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Algebra I (H) or (IntH)

**Description:** [International Honors course offered only at GHS] The use of manipulatives, problem solving situations, current events, and application to careers/daily living underscores geometry's role in the field of mathematics and as an integral part of the sciences. Exposure to the historical context of geometry, significant mathematicians, language derivatives, etc. pervade the course. Students should anticipate a minimum of hour study/project/homework per evening.

**29013 Applied Consumer Skills VI (B)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Eligible for A. L. E. program/placement by the ARD Committee.

**Description:** [Applied Learning Environment (A. L. E.) Course] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Mathematical Models with Applications and determined by the ARD Committee to be a suitable substitute for Mathematical Models with Applications.

**20049 Fundamentals of Mathematical Models with Applications (B)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Geometry required by ARD as denoted on Schedule Page.

**Description:** [CAMPUS BASED SPECIAL EDUCATION (CBSE) COURSE] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Mathematical Models with Applications and determined by the ARD Committee to be a suitable substitute for Mathematical Models with Applications.

**29056 Basic Mathematical Models with Applications (B)**

**1 credit**

**Gr: 9-12**



**Prerequisite:** Geometry required by ARD as denoted on Schedule Page.

**Description:** [Base/ABC/PAC] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Mathematical Models with Applications and determined by the ARD Committee to be a suitable substitute for Mathematical Models with Applications.

NOTE: All courses may not be offered on every campus.



## High School Course Guide

## Mathematics Course Descriptions

### 21417 Mathematical Models with Applications (R)

1 credit

Gr: 9-12

**Prerequisite:** Algebra 1

**Description:** In this course, students use algebraic, graphical, statistical, and geometric reasoning to recognize patterns and structure, to model information, and to solve real-life applied problems involving money, data, chance, patterns, music, design, and science. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) as well as having regular access to graphing calculator technology.

### 88598 Financial Mathematics (R)

1 credit

Gr: 11-12

**Prerequisite:** Algebra I

**Description:** Financial Mathematics is a course about personal money management. Students will apply critical thinking skills to analyze personal financial decisions based upon the current and projected economic factors. Math and calculations related to the real world experiences include some of the following: net pay, income taxes, calculate mortgage payment, property taxes, mortgage insurance, closing cost, interest cost, etc.

### 88070 Mathematical Applications in Agriculture (R)

1 credit

Gr: 11-12

**Prerequisite:** Prior completion of one AFNR credit, or teacher recommendation.

**Description:** To be prepared for careers in agriculture, food, and natural resources, students must acquire technical knowledge in the discipline as well as apply academic skills in mathematics. Students should apply knowledge and skills related to mathematics, including algebra, geometry, and data analysis in the context of agriculture, food, and natural resources. To prepare for success, students are afforded opportunities to reinforce, apply, and transfer their knowledge and skills related to mathematics in a variety of contexts. [This Career and Technical Education course offers Advanced Math credit.]

### 20045 Fundamentals of Algebra II (B)

1 credit

Gr: 9-12



**Prerequisite:** Geometry required by ARD as denoted on Schedule Page.

**Description:** [CAMPUS BASED SPECIAL EDUCATION (CBSE) COURSE] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Algebra II and determined by the ARD Committee to be a suitable substitute for Algebra II.

### 21221 Algebra 2 (R)

1 credit

Gr: 9-12

**Prerequisite:** Geometry

**Description:** The primary focus for students in this course is developing logical reasoning by making and justifying generalizations based on their experiences with fundamental as well as advanced algebraic concepts, especially functional relationships and problem solving in real situations. Building on the study of linear and quadratic functions from first-year algebra and the study of size, shape, location, and direction relationships from geometry, functional relationships are extended to include radical, rational, exponential, and logarithmic functions. These functions are examined in a variety of problem situations and form the basis for the study of equations and the development of algebraic skills. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) and tools as well as having regular access to technology that allows function plotting, coordinate graphing, algebraic analysis, and computation. This course addresses the essential knowledge and skills for second-year algebra and, therefore, is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics.

### 21233 Pre AP Algebra 2 (H)

1 credit

Gr: 9-12



**Prerequisite:** Geometry

**Description:** The primary focus for students in this course is developing logical reasoning by making and justifying generalizations based on their experiences with fundamental as well as advanced algebraic concepts, especially functional relationships and problem solving in real situations. Building on the study of linear and quadratic functions from first-year algebra and the study of size, shape, location, and direction relationships from geometry, functional relationships are extended to include radical, rational, exponential, and logarithmic functions. These functions are examined in a variety of problem situations and form the basis for the study of equations and the development of algebraic skills. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) and tools as well as having regular access to technology that allows function plotting, coordinate graphing, algebraic analysis, and computation. At an honors or pre AP level, this course addresses the essential knowledge and skills for second-year

NOTE: All courses may not be offered on every campus.

algebra at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics and is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21235 Pre AP AMS Algebra 2 AB (H)****1 credit****Gr: 9-12****Prerequisite:** Geometry

**Description:** (NGHS pilot program during 2016-17) *This course is double blocked during first semester. Students taking this course are expected to take Pre-Calculus AB (H) during second semester.* The primary focus for students in this course is developing logical reasoning by making and justifying generalizations based on their experiences with fundamental as well as advanced algebraic concepts, especially functional relationships and problem solving in real situations. Building on the study of linear and quadratic functions from first-year algebra and the study of size, shape, location, and direction relationships from geometry, functional relationships are extended to include radical, rational, exponential, and logarithmic functions. These functions are examined in a variety of problem situations and form the basis for the study of equations and the development of algebraic skills. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) and tools as well as having regular access to technology that allows function plotting, coordinate graphing, algebraic analysis, and computation. At an honors or pre AP level, this course addresses the essential knowledge and skills for second-year algebra at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics and is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21236 Pre AP AMS Algebra 2 (H)****1 credit****Gr: 9-12****Prerequisite:** Geometry

**Description:** (NGHS pilot program during 2016-17) The primary focus for students in this course is developing logical reasoning by making and justifying generalizations based on their experiences with fundamental as well as advanced algebraic concepts, especially functional relationships and problem solving in real situations. Building on the study of linear and quadratic functions from first-year algebra and the study of size, shape, location, and direction relationships from geometry, functional relationships are extended to include radical, rational, exponential, and logarithmic functions. These functions are examined in a variety of problem situations and form the basis for the study of equations and the development of algebraic skills. Students use a variety of representations (concrete, numerical, algorithmic, and graphical) and tools as well as having regular access to technology that allows function plotting, coordinate graphing, algebraic analysis, and computation. At an honors or pre AP level, this course addresses the essential knowledge and skills for second-year algebra at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics and is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21232 Pre AP MST Algebra 2 (H)****1 credit****Gr: 9-12****MST****Prerequisite:** Geometry

**Description:** [Math-Science-Technology magnet course offered only at NGHS] MST Algebra II will address all of the essential knowledge and skills for Algebra II and will focus on more advanced functional relationships and problem solving in real situations, thus continuing to develop logical reasoning by making and justifying generalizations based on the students' experiences with advanced algebraic concepts. Students in this magnet class will utilize advanced classroom tools such as concrete manipulatives, graphing calculators, data collection probe ware, and interactive multimedia software applications. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21234 Algebra 2 (IntH)****1 credit****Gr: 9-12****Prerequisite:** Geometry (IntH)

NOTE: All courses may not be offered on every campus.



**Description:** [International Honors course offered only at GHS] This course will cover all the essential elements of Algebra II, and a number of topics in trigonometry. Applications will be cross-discipline with a “real world” project each six weeks, allowing students to research career options and apply math in a broadened life context. Students should anticipate a minimum of 1/2 hour study/homework on most evenings.

**C276A College Preparatory Mathematics** **1 credit** **Gr: 12**

**Prerequisite:** intent to enroll in community college, academic indicators of need

**Description:** This course is for students whose academic performance indicates they are not yet ready for college-level coursework. Students will gain and demonstrate the necessary college readiness skills in mathematics to be successful in college-level, credit bearing courses without the need for remedial or developmental coursework.

**29014 Applied Consumer Skills VII (B)** **1 credit** **Gr: 9-12**



**Prerequisite:** Eligible for A. L. E. program/placement by the ARD Committee.

**Description:** [Applied Learning Environment (A. L. E.) Course] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for mathematics and determined by the ARD Committee to be a suitable substitute for mathematics.

**29015 Applied Consumer Skills VIII (B)** **1 credit** **Gr: 9-12**



**Prerequisite:** Eligible for A. L. E. program/placement by the ARD Committee.

**Description:** [Applied Learning Environment (A. L. E.) Course] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for mathematics and determined by the ARD Committee to be a suitable substitute for mathematics.

**20045 Fundamentals of Algebra II (B)** **1 credit** **Gr: 9-12**



**Prerequisite:** Geometry required by ARD as denoted on Schedule Page.

**Description:** [CAMPUS BASED SPECIAL EDUCATION (CBSE) COURSE] This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Algebra II and determined by the ARD Committee to be a suitable substitute for Algebra II.

**29067 Basic Algebra II (B)** **1 credit** **Gr: 9-12**



**Prerequisite:** Geometry required by ARD as denoted on Schedule Page.

**Description:** [Base/ABC/PAC]. This is a locally designed course aligned with the Texas Essential Knowledge and Skills for Algebra II and determined by the ARD Committee to be a suitable substitute for Algebra II.

**21502 Advanced Quantitative Reasoning (R)** **1 credit** **Gr: 9-12**

**Prerequisite:** Algebra I, Geometry, Algebra II

**Description:** Designed for liberal arts students, this advanced quantitative reasoning course includes the study of sets, logic, sets of numbers, mathematical systems, algebra, linear programming, permutations, combinations, probability, and geometry. Additional topics will be selected from mathematics of finance, introduction to computers, introduction to statistics, and introduction to matrices. Recreational and historical aspects of selected topics are also included. This course will provide credit for high school Independent Study in Mathematics, as well as dual credit through DCCCD for College Mathematics I and II if students meet the dual credit enrollment criteria in mathematics.

**21619 PreCalculus (R)** **1 credit** **Gr: 9-12**

**Prerequisite:** Algebra I, Geometry, Algebra II

**Description:** In this course, students use symbolic reasoning and analytical methods to represent mathematical situations, to express generalizations, and to study mathematical concepts and the relationships among them. Students use functions, equations, and limits as useful tools for expressing generalizations and as means for analyzing and understanding a broad variety of mathematical relationships. Students also use functions as well as symbolic reasoning to represent and connect ideas in geometry, probability,

NOTE: All courses may not be offered on every campus.

statistics, trigonometry, and calculus and to model physical situations. Students use a variety of representations (concrete, numerical, algorithmic, and graphical), tools, and technology to model functions and equations and solve real-life problems. This course addresses the essential knowledge and skills for precalculus and, therefore, is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics.

**21621 Pre AP PreCalculus (H)****1 credit****Gr: 9-12****Prerequisite:** Algebra I, Geometry, Algebra II

**Description:** In this course, students use symbolic reasoning and analytical methods to represent mathematical situations, to express generalizations, and to study mathematical concepts and the relationships among them. Students use functions, equations, and limits as useful tools for expressing generalizations and as means for analyzing and understanding a broad variety of mathematical relationships. Students also use functions as well as symbolic reasoning to represent and connect ideas in geometry, probability, statistics, trigonometry, and calculus and to model physical situations. Students use a variety of representations (concrete, numerical, algorithmic, and graphical), tools, and technology to model functions and equations and solve real-life problems. At an honors or pre AP level, this course addresses the essential knowledge and skills for precalculus at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics and is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21620 Pre AP AMS PreCalculus AB (H)****1 credit****Gr: 9-12****Prerequisite:** Algebra I, Geometry, Algebra II

**Description:** (NGHS pilot program during 2016-17) *This course is double blocked during second semester.* In this course, students use symbolic reasoning and analytical methods to represent mathematical situations, to express generalizations, and to study mathematical concepts and the relationships among them. Students use functions, equations, and limits as useful tools for expressing generalizations and as means for analyzing and understanding a broad variety of mathematical relationships. Students also use functions as well as symbolic reasoning to represent and connect ideas in geometry, probability, statistics, trigonometry, and calculus and to model physical situations. Students use a variety of representations (concrete, numerical, algorithmic, and graphical), tools, and technology to model functions and equations and solve real-life problems. At an honors or pre AP level, this course addresses the essential knowledge and skills for precalculus at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics and is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21618 Pre AP MST PreCalculus (H)****1 credit****Gr: 9-12****Prerequisite:** Algebra I, Geometry, Algebra II

**Description:** [Math-Science-Technology magnet course offered only at NGHS] MST Precalculus will address all of the essential knowledge and skills for Precalculus and will focus on using symbolic reasoning and analytical methods to represent mathematical situations, to express generalizations, and to study mathematical concepts and the relationships among them. Students in this magnet class will utilize advanced classroom tools such as concrete manipulatives, graphing calculators, data collection probe ware, and interactive multimedia software applications. \*Pre AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21637 Pre AP PreCalculus (H) (Dual Credit)****1 credit****Gr: 11-12****Prerequisite:** Algebra I, Geometry, Algebra II and satisfy Dual Credit enrollment criteria

**Description:** This course offers dual credit through DCCCD for College Algebra and Trigonometry. In this course, students use symbolic reasoning and analytical methods to represent mathematical situations, to express generalizations, and to study mathematical concepts and the relationships among them. Students use functions, equations, and limits as useful tools for expressing generalizations and as means for analyzing and understanding a broad variety of mathematical relationships. Students also use functions as well as symbolic reasoning to represent and connect ideas in geometry, probability, statistics, trigonometry, and calculus and to model physical situations. Students use a variety of representations (concrete, numerical, algorithmic, and graphical), tools, and technology to model

NOTE: All courses may not be offered on every campus.

functions and equations and solve real-life problems. At an honors or pre AP level, this course addresses the essential knowledge and skills for precalculus at greater depth with a broader scope and a faster pace along with higher expectations for student performance. This course is an excellent preparation for college entrance examinations (SAT, ACT, etc.) and further study in mathematics and is designed for students who plan to take an advanced placement (AP) mathematics course in high school. \*AP and Dual Credit courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21638 On Ramps PreCalculus****1 credit****Gr: 9-12****Prerequisite:** Algebra I, Geometry, Algebra II

**Description:** Students will deepen and extend their knowledge of functions, graphs, and equations from their high school algebra and geometry courses so they can successfully work with the concepts in a rigorous university-level calculus course. This course is designed to push students well beyond “drill and kill” type exercises, with an emphasis on unpacking mathematical definitions and making logical arguments to their peers.

**21237 On Ramps College Algebra****1 credit****Gr: 9-12****Prerequisite:**

**Description:** Students will deepen their critical thinking skills and develop their ability to persist through challenges as they explore function families: linear absolute value, quadratic, polynomial, radical, rational, exponential, and logarithmic. Students analyze data algebraically and with technology while developing their knowledge of properties of functions, matrices, and systems of equations and complex numbers.

**21918 On Ramps Statistics****0.5 credit****Gr: 9-12****Prerequisite:**

**Description:** On Ramps Statistics is a dual enrollment data analysis course for high school juniors and seniors seeking to develop the quantitative reasoning skills and habits of mind necessary to succeed in the higher education environment. This course will target conceptual understanding and hone highly relevant mathematical skills through scaffolded introduction to statistical methodologies, informal game play, and strategic lab exercises that engage students in hands-on analysis of real data. Valuable programming and coding skills are acquired as a means to conducting these analyses, giving students a solid foundation in data science. Team-based problem solving is highly valued, and assessments will guide students through self-reflective analyses of their own preparedness and depth of understanding.

**88596 Statistics & Risk Management (R)****1 credit****Gr: 9-12****Prerequisite:** Algebra 2 and Accounting I

**Description:** [Career and Technical Education course offering math credit] Students will use a variety of graphical and numerical techniques to analyze patterns and departures from patterns to identify and manage risk that could impact an organization. Students will use probability as a tool forecasting data within business models to make decisions. Students will determine the appropriateness of methods used to collect data to ensure conclusions are valid.

**21915 AP Statistics****1 credit****Gr: 9-12****Prerequisite:** Algebra 2

**Description:** This college-level course is designed to prepare students for the Advanced Placement examination in Statistics. The purpose of the course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad themes: exploring data, planning a study, anticipating patterns in advance using probability and simulation, and statistical inference. \*AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21636 AP Calculus AB (Dual Credit)****1 credit****Gr: 11-12****Prerequisite:** College Algebra and Trigonometry (MATH 1314, 1316)

**Description:** This college-level course is designed to prepare students for the AB Advanced Placement examination in Calculus (one semester college credit) as well as earning dual credit for a semester of PreCalculus (MATH 2412) and Calculus I (MATH 2413) through DCCCD. The course introduces students to the major topics in introductory calculus: functions and graphs, limits and continuity,

NOTE: All courses may not be offered on every campus.



differential calculus, and integral calculus. \*AP and Dual Credit courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21623 AP Calculus AB****1 credit****Gr: 9-12****Prerequisite:** PreCalculus

**Description:** This college-level course is designed to prepare students for the AB Advanced Placement examination in Calculus (one semester college credit) and introduces students to the major topics in introductory calculus: functions and graphs, limits and continuity, differential calculus, and integral calculus. \*AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21625 AMS AP Calculus AB****1 credit****Gr: 9-12****Prerequisite:** PreCalculus

**Description:** (NGHS pilot during 2016-17) This college-level course is designed to prepare students for the AB Advanced Placement examination in Calculus (one semester college credit) and introduces students to the major topics in introductory calculus: functions and graphs, limits and continuity, differential calculus, and integral calculus. This is a one semester course. \*AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21626 AP Calculus BC****1 credit****Gr: 11-12****Prerequisite:** PreCalculus

**Description:** This college-level course is designed to prepare students for the BC Advanced Placement Examination in Calculus (two semesters college credit) and introduces students to the major topics in calculus: functions and graphs, limits and continuity, differential calculus, and integral calculus, as well as polar equations, surface area, length of a curve, slope fields, Euler's method sequences and series, and additional integration techniques. \*AP courses address learning objectives at greater depth and faster pace along with higher expectations for student performance.

**21641 AMS Discrete Mathematics (H)****1 credit****Gr: 9-12****Prerequisite:** AP Calculus AB

**Description:** A course designed to prepare math, computer science, and engineering majors for a background in abstraction, notation, and critical thinking for the mathematics most directly related to computer science. Topics include logic, relations, functions, basic set theory, countability and counting arguments, proof techniques, mathematical induction, combinatorics, discrete probability, recursion, sequence and recurrence, elementary number theory, graph theory, and mathematical proof techniques.

**21642 AMS Multivariable Calculus – Calculus III (H)****1 credit****Gr: 9-12****Prerequisite:** AP Calculus BC

**Description:** This course is a study of advanced topics in calculus, including vectors and vector-valued functions, partial differentiation, Lagrange multipliers, multiple integrals and Jacobians, application of the line integral including Green's Theorem, the Divergence Theorem, and Stokes' Theorem.

**21643 AMS Independent Study in Mathematics – Linear Algebra (H)****1 credit****Gr: 9-12****Prerequisite:** AP Calculus BC

**Description:** Introduces and provides models for application of the concepts of vector algebra. Topics include finite dimensional vector spaces and their systems of linear equations using multiple methods including Gaussian elimination and matrix inversion; matrices determinants; linear transformations; quadratic forms, eigenvalues and eigenvectors; and applications in science and engineering.

NOTE: All courses may not be offered on every campus.

**21644 AMS Independent Study in Mathematics – Differential Equations (H) 1 credit Gr: 9-12**



**Prerequisite:** AP Calculus BC

**Description:** This course is a study of ordinary differential equations, including linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods, boundary value problems, and applications.

**88193 Engineering Math (R) 1 credit Gr: 11-12**

**Prerequisite:** Algebra 2

**Description:** (Sachse High School only) Students solve and model robotic design problems. Students use a variety of mathematical methods and models to represent and analyze problems involving data acquisition, spatial application and robotics with computer programming.

**88589 MST Engineering Mathematics (R) 1 credit Gr: 10-12**

**MST**

**Prerequisite:** Algebra 2

**Description:** [Math-Science-Technology magnet course offered only at NGHS] Engineering Mathematics is a course where students solve and model robotic design problems. Students use a variety of mathematical methods and models to represent and analyze problems involving data acquisition, spatial applications, electrical measurement, manufacturing processes, materials engineering, mechanical drives, pneumatics, process control systems, quality control, and robotics with computer programming.

**21629 MST Independent Study in Mathematics (H) 1 credit Gr: 9-12**

**MST**

**Prerequisite:** PreCalculus

**Description:** [Math-Science-Technology magnet course offered only at NGHS] This MST capstone class will provide the student with the opportunity to expand on and complement the many varied experiences that he or she has been associated with in the earlier stages of the MST program. With the help of private businesses, students will see Math, Science and Technology come to life in the workplace. Individual and group projects will be an integral part of the curriculum. In the classroom, the most widely used mathematical concepts, from modern industry, will be applied. The problems will be compelling, real world applications, which are designed to enhance creativity and problem solving. Instruction will be delivered through interactive multimedia presentations.

**21622 IB Mathematics: Applications & Interpretation SL (Yr.1) (IB) 1 credit Gr: 11**



**Prerequisite:** Algebra II (IntH)

**Description:** [International Baccalaureate course offered only at GHS] This course covers the topics of mathematical functions, trigonometry, statistics, probability and calculus. Emphasis is on a more hands on use of technology. Students are required to complete a project focusing on the investigative, problem-solving and modelling skills leading to an individual exploration that involves investigating an area of mathematics. This course is best suited for students pursuing the social sciences, natural sciences, medicine, business or psychology.

**Xxxxx IB Mathematics: Applications & Interpretation SL (Yr. 2) (IB) 1 credit GR: 12**



**Prerequisite:** IB Mathematics: Applications & Approaches SL (Yr. 1)

**Description:** [International Baccalaureate course offered only at GHS] This course will continue the course of study begun in the year one course. Topics covered will include mathematical functions, trigonometry, statistics, probability and calculus. Emphasis is on a more hands on use of technology. Students are required to complete a project focusing on the investigative, problem-solving and modelling skills leading to an individual exploration that involves investigating an area of mathematics. This course is best suited for students pursuing the social sciences, natural sciences, medicine, business or psychology.

NOTE: All courses may not be offered on every campus.

**21632 IB Mathematics: Analysis & Approaches SL (Yr. 1) (IB)****1 credit****Gr: 11****Prerequisite:** Algebra II (IntH)

**Description:** [International Baccalaureate course offered only at GHS] This course prepares students for further study in areas requiring a significant amount of mathematical knowledge, such as physics, engineering, economics. Emphasis is on a pure algebraic approach. Students will use analytical and evaluative skills to develop portfolio items in calculus and abstract algebra. Students should anticipate a collegiate pace and performance level. Students are required to complete an individual mathematical exploration investigating an area of mathematics.

**21624 IB Mathematics: Analysis & Approaches SL (Yr. 2) (IB)****1 credit****Gr: 12****Prerequisite:** IB Mathematics: Analysis & Approaches SL (Yr. 1)

**Description:** [International Baccalaureate course offered only at GHS] This course will continue the course of study begun in the year one course. Students will be prepared for further study in areas requiring a significant amount of mathematical knowledge, such as physics, engineering, economics. Emphasis is on a pure algebraic approach. Students will use analytical and evaluative skills to develop portfolio items in calculus and abstract algebra. Students should anticipate a collegiate pace and performance level. Students are required to complete an individual mathematical exploration investigating an area of mathematics.

**21627 IB Mathematics: Analysis & Approaches HL (Yr. 2) (IB)****1 credit****Gr: 12**

**Prerequisite:** IB Mathematics: Analysis & Approaches SL (Yr. 1), Students planning to take the IB Math HL exam are required to have a 90 or above average in previous IB math courses at GHS.

**Description:** [International Baccalaureate course offered only at GHS] This course will continue the course of study begun in the year one course. Students will be prepared for further study in areas requiring a significant amount of mathematical knowledge, such as physics, engineering, economics. Emphasis is on a pure algebraic approach. Students will use analytical and evaluative skills to develop portfolio items in calculus and abstract algebra. Students should anticipate a collegiate pace and performance level. Students are required to complete an individual mathematical exploration investigating an area of mathematics. Successful completion of this course will prepare students for the HL exam.