

MATHEMATICS

PRE-ALGEBRA A & B

Grade: 9

Length: Two Semesters

Prerequisite: [Recommendation of 8th grade teacher](#)

This course is not offered every year. We must show a considerable need for the course and have a minimum number of students to run this course.

Pre-Algebra at the high school is a true introduction to basic algebra concepts. The course provides a strong foundation in variables, expressions, and integers; solving equations and inequalities; factors, fractions, and exponents; ratio, rate, and proportion; linear functions; systems of equations; quadratics; and non-linear functions. **Technology:** A graphing calculator (TI-84/TI-NSpire) is recommended; a scientific calculator (TI-30) is required.

ALGEBRA 9 A & B – **NCAA APPROVED**

Grades: 9

Length: Two Semesters

Prerequisites: [Pre-Algebra](#)

Algebra 9 A & B is organized around families of functions, with special emphasis on linear and quadratic functions. As you study each family of functions, you will learn to represent them in multiple ways – as verbal descriptions, equations, tables, and graphs. You will also learn to model real-world situations using functions in order to solve problems arising from those situations. In addition to its algebra content, Algebra 1 includes lessons on probability and data analysis as well as numerous examples and exercises involving geometry. **Technology:** A graphing calculator (TI-84/TI-NSpire) is recommended; a scientific calculator (TI-30) is required.

ALGEBRA 1 A & B - **NCAA APPROVED**

Grades: 10

Length: Two Semesters

Prerequisite: [Completion of Pre-Algebra](#)

Algebra 1 is the first in a sequence of college preparatory mathematics courses. The key content for this course includes understanding, writing, solving, and graphing linear equations and inequalities. Students will become familiar with operations on monomial and polynomial expressions, including factoring, and will learn to solve quadratic equations by factoring. Students will also learn to solve a variety of application problems using all of these techniques and will extend their reasoning in many important ways, including justifying steps in an algebraic

procedure. **Technology:** A graphing calculator (TI-84/TI-NSpire) is recommended; a scientific calculator (TI-30) is required.

ADVANCED GEOMETRY 9 A & B – NCAA APPROVED

Grades: 9

Length: Two Semesters

Prerequisite: [completion of an Algebra course](#)

In **Advanced Geometry 9 A & B** you will develop reasoning and problem solving skills as you study topics such as congruence and similarity, and apply properties of lines, triangles, quadrilaterals, and circles. You will also develop problem-solving skills by using length, perimeter, area, circumference, surface area, and volume to solve real world problems. You will be introduced to formal logic and mathematical proof, including both inductive and deductive reasoning.

Technology: A graphing calculator (TI-84/TI-NSpire) is recommended; a scientific calculator is required.

ADVANCED GEOMETRY A & B - NCAA APPROVED

Grades: 10, 11

Length: Two Semesters

Prerequisites: [Credit in Algebra course.](#)

Recommended: B- or better in Advanced Algebra, or an A in Algebra.

In **Advanced Geometry** you will develop reasoning and problem solving skills as you study topics such as congruence and similarity, and apply properties of lines, triangles, quadrilaterals, and circles. You will also develop problem-solving skills by using length, perimeter, area, circumference, surface area, and volume to solve real world problems. You will be introduced to formal logic and mathematical proof, including both inductive and deductive reasoning.

Recommended for students planning to take Pre-Calculus and above.

Technology: A graphing calculator (TI-84/TI-NSpire) is recommended; a scientific calculator is required.

GEOMETRY A & B - NCAA APPROVED

Grades: 10, 11

Length: Two Semesters

Prerequisites: [Credit in Algebra I](#)

Geometry focuses on the key topics that provide a strong foundation in the essentials of geometry, in an informal manner. Students will develop reasoning and problem solving skills through topics such as congruence and similarity, and apply properties of lines, triangles, quadrilaterals, and circles. Students will also develop problem-solving skills by using length, perimeter, area, circumference, surface area, and volume to solve real-world problems.

Technology: A graphing calculator (TI-84/TI-NSpire) is recommended; a scientific calculator (TI-30) is required.

ADVANCED ALGEBRA 2 A & B - NCAA APPROVED

Grades: 9, 10, 11

Length: Two Semesters

Prerequisites: [Credit in Algebra and Geometry.](#)

Recommended: B- or better in Advanced Algebra & Advanced Geometry courses or a B- or better in Advanced Algebra & an A in Geometry.

In **Advanced Algebra 2** you will develop reasoning and problem solving skills as you study topics such as solving linear equations and inequalities, solving absolute value equations and inequalities, graphing linear equations, modeling data and making predictions with linear regressions, graphing linear inequalities, solving systems of equations using various methods, quadratic equations, polynomial functions, exponent rules, radical equations, exponential and logarithmic functions, rational functions, conic sections, probability, sequences and series, and an introduction to trigonometry. **Technology:** A graphing calculator (TI-84/TI-NSpire) is required.

ALGEBRA 2 A & B - NCAA APPROVED

Grades: 10, 11, 12

Length: Two Semesters

Prerequisites: [Credit in Algebra & Geometry](#)

Recommended: For students not planning to go on to Pre-Calculus or other advanced math courses

In **Algebra 2 A & B** you will develop reasoning and problem solving skills as you study topics such as solving linear equations and inequalities, solving absolute value equations and inequalities, graphing linear equations, modeling data and making predictions with linear regressions, graphing linear inequalities, solving systems of equations using various methods, quadratic equations, polynomial functions, exponent rules, radical equations, exponential and logarithmic functions, rational functions, conic sections, probability, sequences and series, and trigonometry. This course will not go into the depth you would see in Advanced Algebra 2.

Technology: A graphing calculator (TI-84/TI-NSpire) is required.

STATISTICS - NCAA APPROVED

Grades: 11, 12

Length: One Semester

Prerequisites: [Completion of Algebra 2](#)

Note: This course is only offered in the **fall** semester

Statistics is the studies of how to collect, organize, analyze, and interpret numerical information from data. Statistics is a math class in which students will study a wide variety of different and interesting descriptive and inferential statistical applications. This course will focus on the use of data and statistics to enhance studies of mathematical topics including design of experiments, measure of central tendency, variation and position, probability and exploratory

data analysis. This course is valuable not only to mathematics majors, but also in non-mathematical fields such as psychology, biological science, education, business, medicine, social sciences, etc. **Technology:** A graphing calculator (TI-84/TI-NSpire) is recommended.

TRIGONOMETRY - NCAA APPROVED

Grades: 11, 12

Length: One Semester

Prerequisite: [Completion of Algebra 2](#)

Recommendation: Minimum of C average in Advanced Geometry or B average in Geometry

Note: This course is only offered in the *winter* semester

Trigonometry is designed for juniors and seniors who want to continue with math, but are not taking Pre-Calculus. Trigonometry students will review key algebra concepts and study trigonometric functions and their graphs, applications involving angles in radians and degrees, trigonometric identities, and trigonometric laws. This course will prepare students for further studies in math and science. Since second semester Pre-Calculus covers the topics introduced in this course, students that have completed Pre-Calculus will **not** earn credit for trigonometry.

Technology: A graphing calculator (TI-84/TI-NSpire) is required.

PRE-CALCULUS A & B - NCAA APPROVED

Grades: 10, 11, 12

Length: Two Semesters

Prerequisite: [Completion of Advanced Algebra 2](#)

Recommendation: Minimum of C average in Advanced Algebra 2

Pre-calculus introduces and/or develops skills related to evaluating functions, graphing and transforming functions, inverse functions, quadratic and higher degree polynomials, complex numbers, rational functions, exponential and logarithmic functions, multiple methods for solving systems of equations, linear programming, applications of matrices, sequences and series, probability, vectors, limits, tangent lines, and area under a curve. Students will also study trigonometric functions and their graphs, applications involving angles in radians and degrees, trigonometric identities, complex numbers, and conic sections. This course will prepare students for further studies in math and science. Additionally, this is the prerequisite for IB Math SL2 and AP Calculus.

Technology: A graphing calculator (TI-84/TI-NSpire) is required.

AP CALCULUS A & B - NCAA APPROVED +GPA

Grades: 11, 12

Length: Two Semesters

Prerequisites: [Completion of Pre-Calculus](#)

Recommendation: Minimum of B- average in Pre-Calculus and teacher recommendation.

This is a college level course covering limits, continuity, derivatives, integrals, approximation, applications and modeling. This course prepares students to take the *AP Calculus AB* test. After completing this course students should be able to...

- work with functions represented in a variety of ways: graphical, numerical, analytical, and verbal.
- understand the connections among these four representations and are expected to be proficient in all of these.
- understand the meaning of the derivative in terms of a rate of change and local linear approximation and should be able to use derivatives to solve a variety of problems.
- understand the meaning of the definite integral both as a limit of Riemann sums and as the net accumulation of change and should be able to use integrals to solve a variety of problems.
- understand the relationship between the derivative and the definite integral as expressed in both parts of the fundamental theorem of calculus.
- communicate with fellow students in group situations as well as presenting problems to the class when discussing homework.

Technology: A graphing calculator (TI-84/TI-NSpire) is required.

IB MATHEMATICAL STUDIES A & B - NCAA APPROVED+GPA

Grades: 11, 12

Length: Two Semesters

Prerequisite: [Completion of Algebra 2 or Advanced Algebra 2 and a strong work ethic](#)

IB Mathematical Studies A & B caters to students with varied backgrounds and abilities. More specifically, it is designed to build confidence and encourage an appreciation of mathematics in students who do not anticipate a need for mathematics in their future studies. Students embarking on this course need to be equipped with fundamental skills and a rudimentary knowledge of basic processes. The students most suited to for this course are those whose main interests lie outside the field of mathematics. For many Mathematical Studies students, this will be their last formal mathematics course. Students are able to use their own inherent, logical thinking skills and do not have to rely on standard algorithms and remembered formulas. Math Studies students are required to complete a twenty-five hour individual project involving the collection and/or generation of data and the analysis and evaluation of that data. Students likely to need mathematics for the pursuit of further qualifications would be advised to consider an alternative IB mathematics course. This course satisfies the requirement for a group (5) course for the IB Diploma.

Technology: A graphing calculator (TI-84/TI-NSpire) is required.

[Requires Summer work.](#)

A Note on IB exams: IB candidates are expected to have access to a graphic display calculator throughout the course. Calculators with any form of the following features are not allowed in IB Diploma exams:

- Symbolic manipulation (algebra or calculus)
- External communication (such as infrared links to other machines)
- Data bank, Dictionary, or QWERTY keyboard
- External storage media (card, tape, plug-in module, etc.)

The TI-89, TI-92, and TI-NSpire CAS are examples of calculators that do not comply with IBO regulations. This course satisfies the requirement for a group (5) course for the IB Diploma.

IB MATHEMATICS SL 2A & 2B - NCAA APPROVED+GPA

Grade: 12

Length: Two Semesters

Prerequisite: [IB Mathematics SL 1A & 1B](#)

IB Mathematics SL 2A & 2B caters to students who already possess knowledge of basic mathematical concepts, and who are equipped with the skills needed to apply simple mathematical techniques correctly. The students will be exposed to and demonstrate understanding of the material graphically, numerically, analytically and verbally. The majority of these students will expect to need a sound mathematical background as they prepare for future studies such as business administration, psychology, economics, and chemistry. The course focuses on introducing important mathematical concepts through the development of mathematical techniques. Students should whenever possible apply the mathematical knowledge they have acquired to solve realistic problems set in an appropriate context. The course will encourage students to be open-minded and risk-takers in regards to mathematics, where topics will be taught both traditionally and in a less formal inquiry-based approach. Major topics studied are series, logarithms, various functions, trigonometry, vectors, statistics, probability, statistical distributions, and calculus. The assessments will include both formal and informal assessments such as; class work, homework, projects, quizzes, tests. All students will be expected to complete an internal assessment that will focus on a mathematical investigation and mathematical modeling.

Technology: A graphing calculator (TI-84/TI-NSpire) is required for this course.

A Note on IB exams: IB candidates are expected to have access to a graphic display calculator throughout the course. Calculators with any form of the following features are not allowed in IB Diploma exams:

- Symbolic manipulation (algebra or calculus)
- External communication (such as infrared links to other machines)
- Data bank, Dictionary, or QWERTY keyboard
- External storage media (card, tape, plug-in module, etc.)

The TI-89, TI-92, and TI-NSpire CAS are examples of calculators that do not comply with IBO regulations. This course satisfies the requirement for a group (5) course for the IB Diploma.

IB MATHEMATICS HL 2A & 2B - NCAA APPROVED +GPA

Grade: 12

Terms: Two Semesters

Prerequisite: [AP Calculus AB and PreCalculus](#)

This course, in conjunction with AP Calculus AB, prepares students for the IB Math Higher Level exam. Core topics covered include, but are not limited to the following: sequences, series, the Binomial Theorem, advanced trigonometry, vectors, complex numbers and DeMoivre's Theorem, probability, and statistical distributions. Each year the instructor will choose to cover

one of the following options from the IB syllabus: further calculus, discrete math, additional statistics, or sets, relations, and groups. Finally, at the teacher's discretion, material to prepare students for the AP Calculus BC exam may be covered as well.

A Note on IB exams: IB candidates are expected to have access to a graphic display calculator throughout the course. Calculators with any form of the following features are not allowed in IB Diploma exams:

- Symbolic manipulation (algebra or calculus)
- External communication (such as infrared links to other machines)
- Data bank, Dictionary, or QWERTY keyboard
- External storage media (card, tape, plug-in module, etc.)

The TI-89, TI-92, and TI-NSpire CAS are examples of calculators that do not comply with IBO regulations. This course satisfies the requirement for a group (5) course for the IB Diploma.

AP STATISTICS - NCAA APPROVED +GPA

Grades: 11, 12

Length: One Semester

Prerequisites: Successful completion of Statistics

Recommendation: Completion of Precalculus in addition to Statistics

Note: This course is only offered in the **winter** semester

The AP Statistics course is equivalent to a one-semester, introductory, non-calculus-based college course in statistics. The course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. There are four themes in the AP Statistics course: exploring data, sampling and experimentation, anticipating patterns, and statistical inference. Students use technology, investigations, problem solving, and writing as they build conceptual understanding.

Math electives that do not take the place of required math courses (Algebra, Geometry, and Algebra 2).

FINANCIAL MANAGEMENT

Grades: 11, 12

Length: One Semester

Financial Management uses realistic simulations to help student experience a “taste” of life. Students evaluate the costs of living on their own to help develop skills for quality consumer decisions, managing finances, purchasing basic necessities, investments and examining their role in the marketplace. **Note:** Colleges may not award math credit for this course.

IB BUSINESS and MANAGEMENT SL - +GPA

Grades: 11 or 12

Length: Two Semesters

Business and Management is a dynamic discipline that examines business decision-making processes and how these decisions impact on and are affected by internal and external environments. The course is designed to develop an understanding of business theory, as well as an ability to apply business principles, practices and skills. The application of tools and techniques of analysis facilitates an appreciation of complex business activities. The course considers the diverse range of business organizations and activities and the cultural and economic context in which business operates. Emphasis is placed on strategic decision-making and the day-to-day business functions of marketing, production, human resource management and finance. Links between the topics are central to the course, and this integration promotes a holistic overview of business activity. It aims to help students understand the implications of business activity in a global market. This course can be taken as a group 3 IB course or as a senior level Math DHS course. **Note:** Colleges may not award math credit for this course, and only counts as a math course in the student's senior year.

BUSINESS MATH

Grades: 11, 12

Length: One Semester

Many students who take this course will likely take math placement tests when they reach college. The **Business Math** course reviews with students how to multiply and divide whole numbers and fractions without using calculators - concepts that are on every math placement and many job placement tests. Students will also work with fractions, decimals, and percents in many real-life applications. Students will find averages and estimate sums and products; solve multi-step problems following a problem-solving plan; cover metric and customary measures and the conversions between them; work with many graphic representations of data; understand and interpret the information in these graphs; organize data in a table, plot, chart, or spreadsheet; find patterns in the data; and critique data displays in the media. **Note:** Colleges may not award math credit for this course.

ACCOUNTING A & B

Grades: 11, 12

Length: Two Semesters

Accounting teaches basic accounting principles necessary on work settings, for personal use or for further study. The student learns the fundamentals of sole proprietorship, partnership, and corporate accounting systems. Successful completing of the course will enable the student to various accounting situations, both personal and business. Students complete a practice set, which simulates an accounting job. **Note:** Colleges may not award math credit for this course.