

# MATHEMATICS

**NOTE:** **P** – course is sufficiently rigorous to meet University of California “a-g” requirement  
**HP** – advanced placement/honors course with weighted grade point

**NOTE:** SUHSD policy states that all students must complete and pass Algebra I as part of the graduation requirements. Students in ESL 1, ESL 2, or ESL 3 take LEP math classes.

## **ALGEBRA READINESS /ALGEBRA TOPICS** - Grade 9

Algebra Readiness/Algebra Topics is the first year of a two-year sequence designed for students who require academic intervention based on test scores. The course will start with a foundation in the fundamentals of mathematics and progresses to the first part of a grade-level algebra 1 class second semester. Students receive elective credit for Algebra Readiness/Algebra Topics, but the course does not count as math credit for graduation.

## **ALGEBRA I – P** - Grades 9, 10, 11

This course covers elementary algebra topics such as order of operations, rational number operations, solving linear equations and inequalities, polynomials, factoring, rational expressions, functions, graphing of linear and quadratic functions, systems of linear equations, and radical expressions.

## **ALGEBRA SUPPORT** - Grades 9, 10

Algebra Support supplements the regular Algebra 1 class for students who need extra support to be successful. Students receive extra guided practice for the concepts being taught concurrently in algebra, with a basic skills review. (*Students receive elective credit for Algebra Support, but the course does not count as math credit for graduation.*)

## **INTEGRATED MATH – P** - Grades 10, 11, 12

Prerequisite: Passing Algebra I with D- or better

This course focuses on strengthening Algebra I skills while introducing students to many important geometry topics. It also helps prepare students for the CAHSEE exam and works to change negative attitudes that students may have about their abilities in math in order to encourage them to stay on a college-prep math sequence.

## **GEOMETRY – P** - Grades 9, 10, 11, 12

Prerequisite: Completion of Algebra I

A rigorous college-prep course required by all 4-year colleges. Geometrical concepts are discovered by, and taught to, students through guided lessons. Topics covered include inductive and deductive reasoning, angles, polygons, congruent triangles, constructions, circles, right triangles, similarity, solids, logic, and introductory trigonometry.

## **ENRICHED GEOMETRY – P** - Grade 9

Prerequisites: Completion of Algebra I with a B+ or higher, or teacher recommendation

Designed for the upper-level college bound student, this is a rigorous class that goes into more depth and breadth than the regular Geometry course. With an emphasis on deductive reasoning, this course studies all topics covered in regular geometry as well as enrichment topics. Students are required to understand and explain the logic behind their problem solving strategies.

## **ALGEBRA II – P** - Grades 9, 10, 11, 12

Prerequisite: Completion of Algebra I and Geometry with a C or better.

Algebra 2 is a college-prep course required for admission to almost all four-year colleges. Students review and expand upon concepts learned in Algebra I. The topics include linear, quadratic, exponential, and logarithmic functions, systems of equations, conic sections, sequences, series, polynomials, rational expressions, the complex number system, and probability. Real-world applications of each topic are explored throughout the course.

## **ALGEBRA II/TRIGONOMETRY – P** Grades 9, 10, 11, 12

Prerequisite: Completion of Enriched Geometry or Geometry with a B or better and preferably an A in both.

This course is an acceleration of Algebra II and a bridge to Pre-Calculus. The topics covered include those covered in Algebra II plus trigonometry unit including the Laws of Sines and Cosines, graphing trigonometric functions, solving trigonometric equations, and verifying trigonometric identities.

### **PRE-CALCULUS – P** Grades 9, 10, 11, 12

Prerequisite: Completion of Algebra II or Algebra II/Trig with a grade of C or better.

Pre-Calculus is a challenging elective course whose purpose is to prepare students to take AP Calculus. It includes trigonometry, including circular trig, right triangle trig, angular velocity and real world modeling with sinusoidal functions. Other content includes logarithms, function theory, rational functions, polar functions, conic sections, probability and statistics.

### **STATISTICS – P** Grades 12

Prerequisite: Completion of Algebra II or Algebra II/Trig with a grade of C or better.

The purpose of Statistics is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Course work will include exploring data, planning a study, anticipating patterns, and statistical inference. Hands-on activities will be emphasized.

### **ADVANCED PLACEMENT CALCULUS (AB) - HP** Grades 10, 11, 12

Prerequisite: Completion with C or better in Pre Calculus or B+ in Alg II/Trig

AP Calculus AB focuses on differential calculus, which examines rates of change and slope, and integral calculus, which investigates the accumulation of data and area under curves. Other topics include distance, velocity and acceleration, volume of solids and integration of exponential and logarithmic functions. Students are prepared for the AP Calculus AB Exam taken in May.

### **ADVANCED PLACEMENT CALCULUS (BC) - HP** Grades 10, 11, 12

Prerequisite: Completion of AP Calculus AB with a grade of B or better.

AP Calculus BC focuses on differential calculus, which examines rates of change and slope, and integral calculus, which investigates the accumulation of data and area under curves. Students are prepared for the AP Calculus BC Exam taken in May. Topics offered in BC Calculus that are not in AB Calculus include: Integration by Parts, Series and Sequences, l'Hospital's Rule, and Parametric and Polar Relations.

### **ADVANCED PLACEMENT STATISTICS - HP** Grades 10, 11, 12

Prerequisite: Completion of Pre-Calculus or Algebra II/ Trigonometry with a grade of C or better.

This course is based on the College Board Advanced Placement Statistics course. The students study four broad conceptual themes: 1. Exploring data: Observing patterns and departures from patterns 2. Planning a study: Deciding what and how to measure 3. Anticipating patterns: Producing models using probability and simulation 4. Statistical inference: Confirming models. Students will prepare to take the Advanced Placement examination in statistics.

### **DISCRETE MATHEMATICS –MATH 268, CAÑADA COLLEGE** Grades 10, 11, 12

Prerequisites: AP Calculus AB or BC or College Calculus (Cañada Program through Math 252) with B or better & Cañada College Math Placement Test

This one semester course is an in-depth-study of finite discrete mathematics with particular emphasis on computer science applications. Topics include logic, sets, functions and relations, mathematical induction, recursion, Boolean algebra, elementary number theory, probability, algebraic structures, statistics, graphs, counting and combinatorics. The concept of mathematical proofs will also be introduced and illustrated with examples from number theory. This Cañada College class is offered on the Woodside campus through the concurrent enrollment program. Students must complete the concurrent enrollment process including the community college math placement exam.

### **MULTIVARIABLE CALCULUS – MATH 253, CAÑADA COLLEGE (Cañada Title: ANALYTICAL GEOMETRY AND CALCULUS III)** Grades 10, 11, 12

Prerequisite(s): AP Calculus BC or College Calculus (Cañada Program through Math 252) with B or better & Cañada College Math Placement Test

This one semester course is the third in a series of calculus and analytic geometry. This is the calculus of multivariable functions. The course covers topics in vectors, partial derivatives, double and triple integrals, line integrals and vector analysis theory such as Green's, Stokes', and Gauss' Theorems. This Cañada College class is offered on the Woodside campus through the concurrent enrollment program. Students must complete the concurrent enrollment process including the community college math placement exam.

### **LINEAR ALGEBRA – MATH 270, CAÑADA COLLEGE** - Grades 10, 11, 12

Prerequisite(s): AP Calculus BC or College Calculus (Cañada Program through Math 252) with a B or better & Cañada College Math Placement Test

This one semester course covers applications of vectors and matrices to systems of linear equations, linear transformations, eigenvectors and eigenvalues, vector spaces and inner products. This Cañada College class is offered on the Woodside campus through the concurrent enrollment program. Students must complete the concurrent enrollment process including the community college math placement exam.

### **ORDINARY DIFFERENTIAL EQUATIONS – MATH 275, CAÑADA COLLEGE** - Grades 10, 11, 12

Prerequisite(s): AP Calculus BC or College Calculus (Cañada Program through Math 252) with a B or better & Cañada College Math Placement Test

This one semester course covers applications involving differential equations and analytical, graphical and numerical solutions of linear differential equations and systems of linear differential equations, power-series solutions of nonlinear differential equations, and solution of linear differential equations with constant coefficients by Laplace Transforms. This Cañada College class is offered on the Woodside campus through the concurrent enrollment program. Students must complete the concurrent enrollment process including the community college math placement exam.

**Note:** The Cañada College math course offerings (Math 268, Math 270, Math 253, and Math 275) will depend on enrollment and student interest. It is anticipated that in any given year, two of the four one-semester courses will be offered. For example, in a given academic year, Math 268 may be offered in the fall, followed by Math 270 in the spring. The next year would offer Math 253 in the fall, followed by Math 275 in the spring.

### **COMPUTER SCIENCE - P** – Grades 9 10, 11, 12

The Beauty and Joy of Computing is an exciting course offering at WHS. Computing has changed the world in profound ways. It has opened up wonderful new ways for people to connect, design, research, play, create and express themselves. However, just using a computer is only a small part of the picture. The real transformative and empowering experience comes when one learns how to program the computer and translate ideas into code. This course will teach students how to do exactly that, using Snap! and processing languages. Snap! is purely graphical. Processing is a language designed to teach artists how to code. In addition, we will learn about and discuss other areas of computing and ways computers will affect our lives: social media, privacy, identity and security the future of computing, technology in the workplace, and more.

### **ADVANCED PLACEMENT COMPUTER SCIENCE PRINCIPLES - HP** – Grades 10, 11, 12

Suggested Prerequisite: Concurrent enrollment in Algebra I

**Creative Thinkers Wanted!** This course can help students prepare for success in computer science majors and careers but also throughout a broad range of other fields and interests. What is the difference between the NEW AP Computer Science Principles and AP Computer Science A? AP Computer Science A is a problem-solving and programming-focused course using Java as the specific coding language. AP Computer Science Principles is built around other fundamentals of computing, and teachers will select the programming language(s) used in class. The AP CS Principles course also includes problem-solving, working with data, and understanding the structure of the internet and how it works.

### **ADVANCED PLACEMENT COMPUTER SCIENCE A - HP** Grades 10, 11, 12

Prerequisite: Concurrent enrollment in Algebra II/Trig or higher

A college level course that prepares students to pass the AP Computer Science exam. Content includes classes and data abstraction, conditional and logical expressions, recursion, various types of arrays, string class, exception handling, inheritance, sorting algorithms and searches.

### **MOBILE APPS DEVELOPMENT –P** -Grades 10, 11, 12

Suggested Prerequisite: AP Computer Science A

Mobile Apps builds on concepts developed in the AP Computer Science A course. We will focus on building and selling apps and games for the Google Play Store. Our coding practice depends on a sound understanding of Object Oriented Programming principles. We will extend these ideas as we develop games and apps in several programming environments including Eclipse with Java, Android Studio with Java, and Unity with the C# programming language. Students will work both individually and in teams on a variety of projects throughout the year.