

# Math Courses

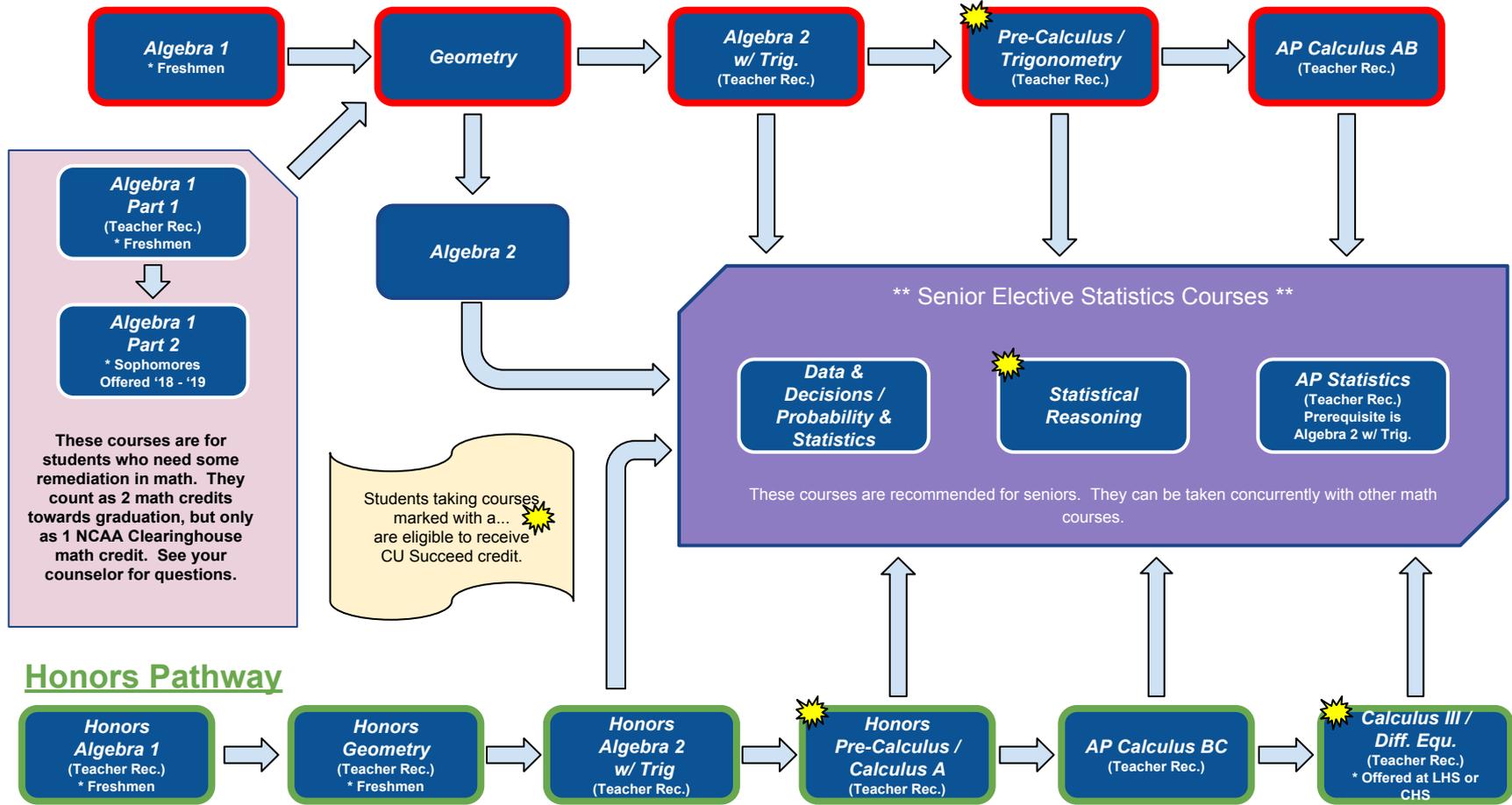
Course Title	9th Grade	10th Grade	11th Grade	12th Grade
Algebra I	•			
Algebra I Honors	•			
Algebra I Part 1	•			
Algebra I Part 2		•		
Algebra II			•	•
Algebra II with Trigonometry		•	•	•
AP Calculus AB			•	•
AP Calculus BC			•	•
AP Statistics			•	•
Calculus III & Differential Equations				•
Data & Decisions				•
Geometry		•	•	•
Honors Algebra II with Trigonometry	•	•	•	•
Honors Geometry	•	•	•	
Honors Pre-Calculus & Calculus A		•	•	•
Pre-Calculus with Trigonometry		•	•	•
Probability & Statistics				•
Statistical Reasoning				•

*Mathematics takes us into the region of absolute necessity, to*

*Bertrand Russell*

# Ponderosa High School MATH Pathways 2017-2018

## Traditional Pathway



## Honors Pathway

Students can move from one pathway to the other by teacher recommendation.

During the 11th and 12th grade years, several creative options become open to students based upon their long-term plans and goals. Please speak with your Math teacher or the Math Department Chair about your long term goals so they can provide appropriate guidance.

\*Students who have successfully completed AP Calculus BC in their junior year are eligible to enroll in Calculus III / Differential Equations at either Chaparral or Legend High School. Please see your counselor for more information.

**Algebra I**  
60400S1 & 60400S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
9



**Prerequisites:** 8th Grade Math

**Graduation Req:** Math

Algebra I covers the following topics: operations with and use of variables; order of operations with real numbers; linear, exponential and quadratic relationships and inequalities; factoring; operations with polynomials; exponents and radicals; basic probability and statistics. Students in this course should master these skills, along with a variety of other mathematical skills, necessary to move into a Geometry course.

**Algebra I Honors**  
60409S1 & 60409S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
9



**Prerequisites:** Teacher recommendation

**Graduation Req:** Math

The Algebra I Honors course provides students who have successfully completed an introductory Algebra course, but would benefit from the challenge of a fast-moving and rigorous course that will prepare them for the high expectations of Honors Geometry, Honors Algebra II/Trig, and beyond. This student-centered honors class encourages collaboration and communication along with critical thinking and creative processing amongst peers. High level problem solving skills in predictable and unpredictable situations will be utilized to challenge students to obtain mastery of a broad Algebra curriculum. Honors Algebra I covers the following topics: operations with and use of variables; order of operations with real numbers; linear, exponential and quadratic relationships and inequalities; factoring; operations with polynomials; exponents and radicals; basic probability and statistics.

**Algebra I - Part 1**  
60380S1 & 60380S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
9

**Prerequisites:** 8th grade mathematics and teacher recommendation (from middle school)

**Graduation Req:** Math

This course requires a two-year commitment from the student. **Completion of both Algebra I Part 1 and Algebra I Part 2 will count as one credit for CCHE and NCAA requirements.**

In this year-long course, students study the first half of Algebra I and are expected to complete the course by taking Algebra I Part II the following year. Students review basic computational skills and begin working with variables to simplify algebraic expressions and solve first degree equations. Students study real numbers, polynomials, and graphing. Organizational and study skills are emphasized.

**Algebra I - Part 2**  
60385 S1 & 60385 S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
10



**Prerequisites:** Algebra I Part 1 and/or teacher recommendation

**Graduation Req:** Math

Successful completion of both Algebra I Part 1 and Part 2 will fulfill the Algebra I graduation requirement. In addition, **completion of both Algebra I Part 1 and Algebra I Part 2 will count as one credit for CCHE and NCAA requirements.**

In this year-long course, students study the second half of Algebra I, continuing work with variables, real numbers, first and second degree equations and inequalities, factoring, polynomials, radicals, and graphing. **(Course to be offered in 2018-2019).**

## Algebra II

60440S1 & 60440S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
11-12



**Prerequisites:** Geometry

**Graduation Req:** Math

Students study algebraic equations and functions. Other topics include linear inequalities, systems of equations, polynomials, factoring, rational expressions, radicals, and solving quadratic equations. Real world applications are included.

## Algebra II with Trigonometry

60590S1 & 60590S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
10-12



**Prerequisites:** Geometry or Honors Geometry

**Graduation Req:** Math

This course expands and clarifies concepts introduced in Algebra I and Geometry. Topics include linear and quadratic functions and systems, exponential, logarithmic, rational, and piecewise functions. The course also includes three-dimensional systems, complex numbers, inverses, sequences, series, probability, and some numerical and analytical trigonometry. The students will explore many of these concepts using the graphing calculator.

## AP Calculus AB

60625S1 & 60625S2

**Credit:** \$93 AP Exam, TI-83/84  
1 Graphing Calculator,  
Textbook

**Grade:**  
11-12



**Prerequisites:** Pre-Calculus with Trigonometry

**Graduation Req:** Math

Students study the topics listed in The College Board AP Calculus AB topic description outline. Major topics covered include differentiation, indefinite and definite integration, and problem solving involving calculus concepts. This course is the equivalent of one semester of a college calculus course and leads to the national AP exam in May.

## AP Calculus BC

60650S1 & 60650S2

**Credit:** \$93 AP Exam, TI-83/84  
1 Graphing Calculator,  
Textbook

**Grade:**  
11-12



**Prerequisites:** Calculus A or AP Calculus AB

**Graduation Req:** Math

Students study the topics listed in The College Board AP Calculus BC topic description outline. Major topics covered include differentiation, indefinite and definite integration, problem solving involving calculus concepts, and sequence and series and their applications. This course is the equivalent of two semesters college calculus course and leads to the national AP exam in May.

**AP Statistics**  
60801S1 & 60801S2

**Credit:** 1  
**\$93 AP Exam & TI-83/84 Graphing Calculator**

**Grade:**  
11-12



**Prerequisites:** Algebra II with Trigonometry, Pre-Calculus with Trigonometry, or AP Calculus AB

**Graduation Req:** Math

Students study the topics listed in The College Board AP Statistics topic description outline. The purpose of this course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to broad conceptual themes such as: exploring data, sampling and experimentation design, anticipating patterns, and statistical inference. Students are expected to take the AP Exam for college credit.

**Calculus III & Differential Equations**  
60660 & 60661

**Credit:** 1  
**Tuition if taken for college credit**

**Grade:**  
12



**Prerequisites:** AP Calculus BC or AP Calculus AB with teacher recommendation

**Graduation Req:** Math

Calculus III is a semester-long course that represents the continuation of the calculus sequence. It is a systematic approach to the understanding of multivariable calculus. Topics include: vectors and vector valued functions, functions of several variables, multiple integrals, and vector analysis. Differential Equations is a semester-long course that further represents the continuation of the calculus sequence. Differential equations are widely used as a tool for modeling diverse phenomena ranging from population growth to elementary particles. Topics include first order equations, linear equations with constant coefficients, higher order equations, Laplace transforms, and systems of equations and applications. This course is offered at either Chaparral or Legend High School, and students will need to make travel arrangements. (Students may be able to earn college through the CU Succeed Gold Program. See school counselor for details.)

**Data and Decisions**  
60305

**Credit:** 0.5

**Grade:**  
12



**Prerequisites:** Geometry

**Graduation Req:** Math

The purpose of this course is to explore the meaning of statistics encountered in everyday life. The emphasis will be on understanding and interpreting, rather than computing, through exploration of real-life situations that involve statistical concepts. This course is designed for Seniors.

**Geometry**  
60475S1 & 60475S2

**Credit:** 1  
**TI-83/84 Graphing Calculator**

**Grade:**  
10-12



**Prerequisites:** Algebra I

**Graduation Req:** Math

This course is concerned with spatial relationships of two and three-dimensional figures. It is the study of mathematics by logical deduction, the construction of geometric figures, and applications to problem solving. Also included are topics from algebra, introduction to trigonometry and statistics.

## Honors Algebra II with Trigonometry

60550S1 & 60550S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
9-12



**Prerequisites:** Honors Geometry or teacher recommendation

**Graduation Req:** Math

This is a rigorous course for highly motivated students. It is a comprehensive study of functions, including linear functions, quadratic functions, exponential functions, logarithmic functions, rational and irrational algebraic functions, piecewise, periodic, and higher-degree functions. It also includes complex numbers, sequences, series, and probability. The students will explore concepts using a TI-83/84 graphing calculator.

## Honors Geometry

60450S1 & 60450S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
9-11



**Prerequisites:** Algebra I and teacher recommendation

**Graduation Req:** Math

This is an accelerated Geometry course for students who want a challenging, fast-paced math course that will prepare them for math classes on the honors track. In addition to the topics in Geometry, Geometry Honors emphasizes the proof of geometric and algebraic properties, the construction of geometric figures with a compass, solving problems algebraically using geometric properties, and emphasizes real-world applications to geometric concepts.

## Honors Pre-Calculus & Calculus A

60753 & 60674

**Credit:** TI-83/84 Graphing  
1 Calculator &  
Textbook

**Grade:**  
10-12



**Prerequisites:** Honors Algebra II with Trigonometry

**Graduation Req:** Math

In the semester-long Honors Pre-Calculus class students continue the study of each function family and their applications to the real world using graphing calculators in this highly rigorous semester-long course in preparation for Calculus A the following semester. The study of trigonometry continues with graphing and analysis of trigonometric functions, identifying transformations, and practical applications of sinusoids. In the semester-long Calculus A, students begin studying the topics listed in The College Board AP Calculus AB topic description outline. Topics covered include limits, differentiation, indefinite and definite integration and problem solving involving calculus concepts. Students enrolling in this 2nd semester course must also enroll in Honors PreCalculus for 1st semester. **(College credit may be available through CU Succeed pending approval).**

## Pre-Calculus with Trigonometry

60611S1 & 60611S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
10-12



**Prerequisites:** Algebra II with Trigonometry

**Graduation Req:** Math

Topics covered in this course for college bound students include, but are not limited to: domain, range and graphs of polynomial, trigonometric, and rational functions and their inverses, geometric and arithmetic progressions, detailed analysis of conics, theorems (binomial, remainder and rational roots), piecewise functions. Trigonometric topics include: trigonometric and circular functions and graphs, right triangle trigonometry, laws of sine and cosine, trigonometric identities, complex numbers, and polar and parametric equations. This course may be available for CU Succeed credit with additional tuition.

## Probability and Statistics

60775

**Credit:** TI-83/84 Graphing  
0.5 Calculator

**Grade:**  
12



**Prerequisites:** Geometry

**Graduation Req:** Math

Students will study topics in probability and statistics, including experimental design and presentation and interpretation of data.

## Statistical Reasoning

60803S1 & 60803S2

**Credit:** TI-83/84 Graphing  
1 Calculator

**Grade:**  
12



**Prerequisites:** Algebra II/Trig or teacher recommendation

**Graduation Req:** Math

This course will use the relevant topics and data sets of sports and other real life situations to cover many introductory college-level statistics course topics, including designing studies, exploratory data analysis, regression, probability distributions, normal and binomial distributions, and hypothesis testing. The purpose of this course is to provide students with a class that introduces them to statistical reasoning in a context that is rich with examples likely to spark their interest. This course may be available for CU Succeed credit with additional tuition fees.