

# Math Courses

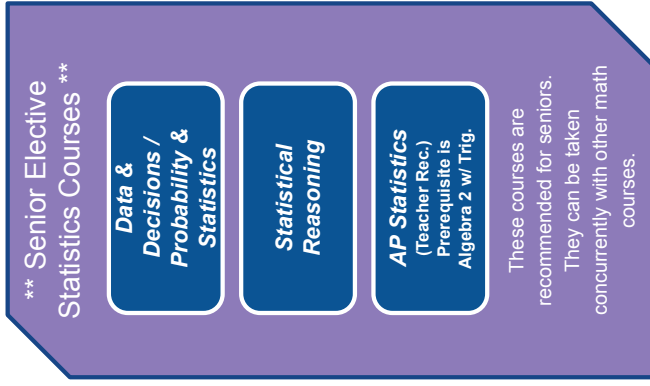
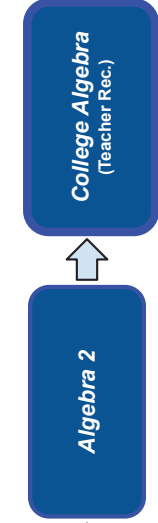
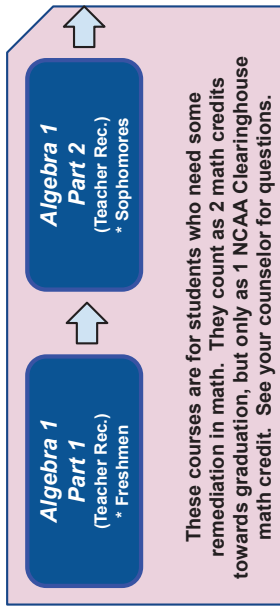
Course Title	9th Grade	10th Grade	11th Grade	12th Grade
Algebra I - Part 1	•			
Algebra I Part 2		•		
Algebra I	•			
Algebra I Honors	•			
Applied Geometry		•	•	•
Topics/Algebra/Geometry/Trig		•	•	•
Geometry	•	•	•	•
Honors Geometry	•	•	•	
Algebra II			•	•
Algebra II with Trigonometry		•	•	•
Honors Algebra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

*Mathematics takes us into the region of absolute necessity, to which not only the actual word, but every possible word, must conform.*

*Bertrand Russell*

# Ponderosa High School MATH Pathways 2020-2021

## Traditional Pathway (Level 1)

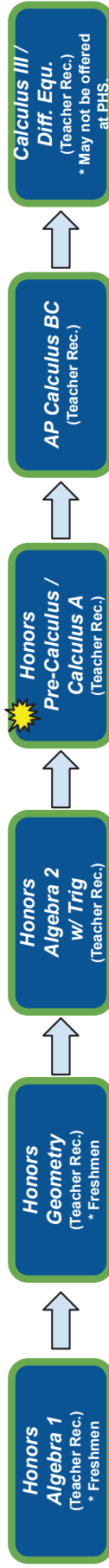


## Traditional Pathway (Level 2)



Students taking courses marked with a star are eligible to receive CU Succeed credit.

## 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, which may be offered off-site or on-line, depending on student registration numbers. Please see your counselor for more information.

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

**Credit:**  
**1**

**TI-83/84 Graphing**  
**Calculator**

**Grade:**  
**9**



**Prerequisites:** 8<sup>th</sup> 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**  
**60385S1 & 60385S2**

**Credit:**  
**1**

**TI-83/84 Graphing**  
**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.

**Algebra I**  
**60400S1 & 60400S2**

**Credit:**  
**1**

**TI-83/84 Graphing**  
**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; 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:**  
**1**

**TI-83/84 Graphing**  
**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.

**Applied Geometry**  
**60525**

**Credit:**  
**0.5**

**Grade:**  
**10-12**

**Prerequisites:** Teacher recommendation only  
**Graduation Req:** Math

The focus of this course is geometric foundations, measurement, and applications. Students taking this course will use a variety of tools and techniques to communicate the reasoning involved in solving problems. This course is teacher recommendation only and is not NCAA approved.

**Topics/Algebra/  
Geometry/Trig**  
**60340**

**Credit:**  
**0.5**

**Grade:**  
**10-12**

**Prerequisites:** Teacher recommendation only  
**Graduation Req:** Math

This course is an extension of algebra and applied geometry, and will include basic concepts of trigonometry. Students will also develop test-taking strategies. This course is teacher recommendation only and is not NCAA approved.

**Geometry**  
**60475S1 & 60475S2**

**Credit:**  
**1**

**TI-83/84 Graphing  
Calculator**

**Grade:**  
**9-12**



**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 Geometry**  
**60450S1 & 60450S2**

**Credit:**  
**1**

**TI-83/84 Graphing  
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.

**Algebra II**  
**60440S1 & 60440S2**

**Credit:**  
**1**

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

**TI-83/84 Graphing  
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.

**Honors Algebra II with  
Trigonometry**  
60550S1 & 60550S2

**Credit:**  
1

**TI-83/84 Graphing  
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 and quadratic functions, exponential, logarithmic, 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.

**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.

**Probability and  
Statistics**  
60775

**Credit:**  
0.5

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

**TI-83/84 Graphing  
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.

**College Algebra**  
60570S1 & 60570S2

**Credit:**  
1

**TI-83/84 Graphing**  
**Calculator**

**Grade:**  
11-12



**Prerequisites:** Algebra II with Trigonometry  
**Graduation Req:** Math

Topics covered in this co-urser for college bound students include, but are limited to: domain, range and graphs of linear, quadratic, exponential polynomial and rational functions and their inverses, geometric and arithmetic progressions, detailed analysis of conics, piecewise functions and binomial, remainder and rational roots theorems.

**Pre-Calculus with**  
**Trigonometry**  
60611S1 & 60611S2

**Credit:**  
1

**TI-83/84 Graphing**  
**Calculator**

**Grade:**  
10-12



**Prerequisites:** Algebra II with Trigonometry  
**Graduation Req:** Math

Topics covered in this course for college bound students include, but are 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, pending instructor approval by CU Succeed)**

**Honors Pre-Calculus**  
**& Calculus A**  
60753 & 60674

**Credit:**  
1

**TI-83/84 Graphing**  
**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 2<sup>nd</sup> semester course must also enroll in Honors Pre-Calculus for 1<sup>st</sup> semester. **(This course may be available for CU Succeed credit with additional tuition, pending instructor approval by CU Succeed)**

**AP Statistics**  
**60801S1 & 60801S2**

**Credit:** 1  
**\$94 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 Calculus AB 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.

**AP Calculus AB**  
**60625S1 & 60625S2**

**Credit:** 1  
**\$94 AP Exam**  
**TI-83/84 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:** 1  
**\$94 AP Exam**  
**TI-83/84 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 AB topic description outline. Major topics covered include differentiation, indefinite and definite integration, and problem solving involving calculus concepts, and sequence and series and their applications. This course is the equivalent of one semester of a college calculus course and leads to the national AP exam in May.

**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. If not enough students from Ponderosa register for this course, then this course is offered at either Chaparral or Legend High School, and students will need to make travel arrangements. **(This course may be available for CU Succeed credit with additional tuition, pending instructor approval by CU Succeed. See school counselor for details.)**