AP Precalculus

Innovation Academy

2024-2025 School Year

Ms. Callahan callahana@fultonschools.org

Mr. Clayton claytonr5@fultonschools.org

Mr. Hartley hartleyt@fultonschools.org

AP Course Overview

- College Board encourages students to take AP courses in topics they are HIGHLY interested in
  - They, along with Innovation, discourage taking AP courses to just "add to your resume"
- Check the Reported Workloads for each course to ensure you can maintain the amount of time needed for success
- Read the Essential Skills: do you have the skills needed to perform well in the class or are you just signing up because it is an AP course?

AP PreCalculus

Student Reported Workload	Teacher Report Workload
2.7 Hours Per Week	**4-5 Hours Per Week**

Pre-requisites	Students should have a solid foundation in Algebra, Geometry, and Advanced Algebra **80+ Advanced Algebra** ***(We highly encourage students NOT to take Advanced Algebra over the summer before taking AP Precalculus. Those students have not been prepared for the rigor required in AP Precalculus.)***
Course Summary	AP PreCalculus covers topics designed to prepare students for college-level math coursework, including polynomial, rational, exponential, logarithmic, trigonometric, polar and parametric functions as well as vectors, matrices and conic sections.
Essential Skills	Knowledge of functions (domain, range, excluded values), Algebraic skills (factoring, solving various types of equations), right triangle trigonometry, exponential and logarithmic functions, critical thinking skills in math.

Topics:

UNIT 1 Polynomial and Rational Functions

6–8 weeks | **30–40% AP Exam Weighting**

- 2 3 — 1.1 Change in Tandem
- 2 3 — 1.2 Rates of Change
- 3 — 1.3 Rates of Change in Linear and Quadratic Functions
- 2 3 — 1.4 Polynomial Functions and Rates of Change
- 1 2 — 1.5 Polynomial Functions and Complex Zeros
- 3 — 1.6 Polynomial Functions and End Behavior
- 1 3 — 1.7 Rational Functions and End Behavior
- 1 — 1.8 Rational Functions and Zeros
- 2 — 1.9 Rational Functions and Vertical Asymptotes
- 3 — 1.10 Rational Functions and Holes
- 1 3 — 1.11 Equivalent Representations of Polynomial and Rational Expressions
- 1 3 — 1.12 Transformations of Functions
- 2 3 — 1.13 Function Model Selection and Assumption Articulation
- 1 3 — 1.14 Function Model Construction and Application

UNIT 2 Exponential and Logarithmic Functions

6–9 weeks | **27–40% AP Exam Weighting**

- 1 3 — 2.1 Change in Arithmetic and Geometric Sequences
- 1 3 — 2.2 Change in Linear and Exponential Functions
- 3 — 2.3 Exponential Functions
- 1 3 — 2.4 Exponential Function Manipulation
- 1 3 — 2.5 Exponential Function Context and Data Modeling
- 2 3 — 2.6 Competing Function Model Validation
- 1 2 — 2.7 Composition of Functions
- 1 2 — 2.8 Inverse Functions
- 1 — 2.9 Logarithmic Expressions
- 1 2 — 2.10 Inverses of Exponential Functions
- 3 — 2.11 Logarithmic Functions
- 1 3 — 2.12 Logarithmic Function Manipulation
- 1 — 2.13 Exponential and Logarithmic Equations and Inequalities
- 1 3 — 2.14 Logarithmic Function Context and Data Modeling
- 2 3 — 2.15 Semi-log Plots

UNIT 3 Trigonometric and Polar Functions

7–10 weeks | **30–35% AP Exam Weighting**

- 2 3 — 3.1 Periodic Phenomena
- 2 3 — 3.2 Sine, Cosine, and Tangent
- 2 3 — 3.3 Sine and Cosine Function Values
- 2 3 — 3.4 Sine and Cosine Function Graphs
- 2 3 — 3.5 Sinusoidal Functions
- 1 2 — 3.6 Sinusoidal Function Transformations
- 1 3 — 3.7 Sinusoidal Function Context and Data Modeling
- 2 3 — 3.8 The Tangent Function
- 1 2 — 3.9 Inverse Trigonometric Functions
- 1 2 3 — 3.10 Trigonometric Equations and Inequalities
- 2 3 — 3.11 The Secant, Cosecant, and Cotangent Functions
- 1 3 — 3.12 Equivalent Representations of Trigonometric Functions
- 1 2 — 3.13 Trigonometry and Polar Coordinates
- 2 3 — 3.14 Polar Function Graphs
- 3 — 3.15 Rates of Change in Polar Functions

UNIT 4 Functions Involving Parameters, Vectors, and Matrices

7 weeks | **0% AP Exam Weighting**

- 1 2 — 4.1 Parametric Functions
- 3 — 4.2 Parametric Functions Modeling Planar Motion
- 3 — 4.3 Parametric Functions and Rates of Change
- 1 — 4.4 Parametrically Defined Circles and Lines
- 2 3 — 4.5 Implicitly Defined Functions
- 1 2 — 4.6 Conic Sections
- 1 2 — 4.7 Parametrization of Implicitly Defined Functions
- 2 3 — 4.8 Vectors
- 3 — 4.9 Vector-Valued Functions
- 1 3 — 4.10 Matrices
- 1 3 — 4.11 The Inverse and Determinant of a Matrix
- 1 — 4.12 Linear Transformations and Matrices
- 1 2 3 — 4.13 Matrices as Functions
- 1 3 — 4.14 Matrices Modeling Contexts

What are the options for courses after AP Precalculus?

Students can take any of these classes after AP Precalculus:

- AP Calculus AB
- AP Calculus BC
- Linear Algebra with Computer Applications
- AP Statistics
- Dual Enrollment

Students who wish to take the GT Year 1 must first take AP Calculus BC and will have to apply to the program.

AP Precalculus

Innovation Academy

Ms. Callahan callahana@fultonschools.org

Mr. Clayton claytonr5@fultonschools.org

Mr. Hartley hartleyt@fultonschools.org