The Woodlands Christian Academy

Advanced Placement Program
Student Parent Handbook

What is the Advanced Placement Program?

Through more than 30 courses, each culminating in a rigorous exam, AP provides willing and academically prepared students with the opportunity to earn college credit and/or advanced placement while still in high school. Taking AP courses also demonstrates to college admission officers that students have sought out the most rigorous course work available to them.

Each AP course is modeled upon a comparable college course, and college and university faculty play a vital role in ensuring that AP courses align with college-level standards. Talented and dedicated AP teachers help AP students in classrooms around the world develop and apply the content knowledge and skills they will need later in college.

Each AP course concludes with a college-level assessment developed and scored by college and university faculty and experienced AP teachers. AP Exams are an essential part of the AP experience, enabling students to demonstrate their mastery of college-level course work. Most four-year colleges and universities in the United States and universities in more than 60 countries recognize AP in the admission process and grant students credit, placement, or both on the basis of successful AP Exam scores.

Performing well on an AP Exam means more than just the successful completion of a course; it is a gateway to success in college. Research consistently shows that students who receive a score of 3 or higher on AP Exams typically experience greater academic success in college and have higher graduation rates than their non-AP peers.[1]

AP Program Facts and Figures

- The AP Program offers 35 courses in 20 subject areas.
- In 2014, 4.2 million AP Exams were administered worldwide. Over 2.3 million students worldwide sat for these exams.
- Over 90 percent of the nation's colleges and universities have an AP policy granting incoming students credit, placement, or both, for qualifying AP Exam grades.

What does an AP class look like?

AP is more than just a class and an exam; it's a community of students and educators who are passionate, curious and committed to learning and to academic excellence. In an AP classroom, the focus is not on memorizing facts and figures. Instead, students engage in intense discussions, solve problems collaboratively, think critically and creatively, approach key topics from multiple perspectives, and learn to write clearly and persuasively — skills needed to succeed at the university level and in today's global society.

[1] Additional AP studies are available at www.collegeboard.org/research

Who should take AP classes?

The College Board suggests that successful AP students possess the following skills:

- Are able to read, understand, and interpret college-level information.
- Can apply critical thinking skills to solve problems.
- Possess excellent written and oral communication skills.
- Have good time-management tools to meet the demands of rigorous coursework.
- Demonstrate good attendance to school.
- Be self-disciplined, highly motivated and persistent
- In addition, TWCA sets minimum pre-requisites for enrolling in certain AP Courses. To be considered for AP course placement, students must maintain and 85 or higher in a pre-AP course the year prior.

What is an appropriate course load for an AP student at TWCA?

Course load should be determined on an individual basis as students have unique ability levels, outside commitments, and motivation to stick with a challenging course for a full year. Consulting with parents, teachers and our college counselor can provide the most insight. Having a student be successful in one AP classes is better than struggling in more.

How are AP scores derived and how do colleges and universities interpret them?

College faculty are involved in every aspect of AP, from course and exam development to scoring and standards alignment. These faculty members ensure that the courses and exams meet colleges' expectations for content taught in comparable college courses. Based upon outcomes research and program evaluation, the American Council on Education (ACE) and the Advanced Placement Program recommend that colleges grant credit and/or placement to students with AP Exam scores of 3 and higher. [2] The AP score of 3 is equivalent to grades of B-, C+, and C in the equivalent college course. TWCA awards high school level credit for passing AP coursework; however, colleges and universities set their own AP credit, advanced standing, and course placement policies based on their unique needs and objectives.

The following five-point scale is used to score the exams:

5 = extremely well qualified
4 = well qualified
3 = qualified
2 = possibly qualified
1 = no recommendation.

2 Visit www.collegeboard.org/apcreditpolicy to view AP credit and placement policies at more than 1,000 colleges and universities.

How are AP grades weighted?

AP semester grades are weighted to reflect the increased levels of rigor, workload, and expectations as compared to traditional high school classes. Please consult the student handbook or school website for GPA equivalencies.

What AP courses are offered at TWCA?

We currently offer 14 AP courses and will continue to add more as our program and student enrollment continues to grow.

AP English Language and Composition
AP English Literature and Composition
AP Spanish Language and Culture
AP U.S. History
AP World History
AP Calculus AB
AP Calculus BC
AP Biology
AP Chemistry
AP Physics 1: Algebra-based
AP Computer Science A
AP Computer Science Principles
AP Studio Art
AP Psychology

When are AP exams taken?

The dates of the AP exams are in May and are set by the College Board. All AP students at TWCA are required to take the AP tests administered at the appointed dates and times. Parents are responsible for paying the test fees.

Prior to the AP exam, a summative assessment will be given in all AP courses and that grade will be applied as a final exam grade for transcript purposes.

The following pages contain course overviews for each AP course offered at TWCA.

AP English Language and Composition Course Overview

Course Description	The AP English Language and Composition course aligns to an introductory college-level rhetoric and writing curriculum, which requires students to develop evidence-based analytic and argumentative essays that proceed through several stages or drafts. Students evaluate, synthesize, and cite research to support their arguments. Throughout the course, students develop a personal style by making appropriate grammatical choices. Additionally, students read and analyze the rhetorical elements and their effects in non-fiction texts, including graphic images as forms of text, from many disciplines and historical periods.
Pre-requisites	There are no prerequisite courses for AP English Language and Composition. Students should be able to read and comprehend college-level texts and apply the conventions of Standard Written English in their writing.
Course Content	The AP English Language and Composition course is designed to help students become skilled readers and writers through engagement with the following course requirements: • Composing in several forms (e.g., narrative, expository, analytical, and argumentative essays) about a variety of subjects • Writing that proceeds through several stages or drafts with revision aided by teacher and peers • Writing informally (e.g., imitation exercises, journal keeping, collaborative writing), which helps students become aware of themselves as writers and the techniques employed by other writers • Writing expository, analytical, and argumentative compositions based on readings representing a variety of prose styles and genres • Reading nonfiction (e.g., essays, journalism, science writing, autobiographies, criticism) selected to give students opportunities to identify and explain an author's use of rhetorical strategies and techniques • Analyzing graphics and visual images both in relation to written texts and as alternative forms of text themselves • Developing research skills and the ability to evaluate, use, and cite primary and secondary sources • Conducting research and writing argument papers in which students present an argument of their own that includes the analysis and synthesis of ideas from an array of sources • Citing sources using a recognized editorial style (e.g., Modern Language Association, The Chicago Manual of Style) • Revising their work to develop o A wide-ranging vocabulary used appropriately and effectively; o A variety of sentence structures, including appropriate use of subordination and coordination; o Logical organization, enhanced by techniques such as repetition, transitions, and emphasis; o A balance of generalization and specific, illustrative detail; and o An effective use of rhetoric, including tone, voice, diction, and sentence structure

AP English Literature and Composition Course Overview

Course Description	The AP English Literature and Composition course aligns to an introductory college-level literary analysis course. The course engages students in the close reading and critical analysis of imaginative literature to deepen their understanding of the ways writers use language to provide both meaning and pleasure. As they read, students consider a work's structure, style, and themes, as well as its use of figurative language, imagery, symbolism, and tone. Writing assignments include expository, analytical, and argumentative essays that require students to analyze and interpret literary works
Pre-requisites	There are no prerequisite courses for AP English Literature and Composition. Students should be able to read and comprehend college-level texts and apply the conventions of Standard Written English in their writing.
Course Content	The course is designed to help students become skilled readers and writers through engagement with the following course requirements: • Reading complex imaginative literature (fiction, drama, and poetry) appropriate for college-level study • Writing an interpretation of a piece of literature that is based on a careful observation of textual details, considering the work's structure, style, and themes; the social and historical values it reflects and embodies; and such elements as the use of figurative language, imagery, symbolism, and tone • Composing in several forms (e.g., narrative, expository, analytical, and argumentative essays) based on students' analyses of literary texts • Writing that proceeds through several stages or drafts, with revision aided by teacher and peers • Writing informally (e.g., response journals, textual annotations, collaborative writing), which helps students better understand the texts they are reading • Revising their work to develop o A wide-ranging vocabulary used appropriately and effectively; o A variety of sentence structures, including appropriate use of subordination and coordination; o Logical organization, enhanced by techniques such as repetition, transitions, and emphasis; o A balance of generalization and specific, illustrative detail; and o An effective use of rhetoric, including tone, voice, diction, and sentence structure.

AP Spanish Language and Culture

Course Description	The AP Spanish Language and Culture course emphasizes communication (understanding and being understood by others) by applying interpersonal, interpretive, and presentational skills in real-life situations. This includes vocabulary usage, language control, communication strategies, and cultural awareness. The AP Spanish Language and Culture course strives not to overemphasize grammatical accuracy at the expense of communication. To best facilitate the study of language and culture, the course is taught almost exclusively in Spanish. The AP Spanish Language and Culture course engages students in an exploration of culture in both contemporary and historical contexts. The course develops students' awareness and appreciation of cultural products (e.g., tools, books, music , laws, conventions, institutions); practices (patterns of social interactions within a culture); and perspectives (values, attitudes, and assumptions
Pre-requisites	Spanish III or equivalent.
Course Content	The AP Spanish Language and Culture course is structured around six themes: • Beauty and Aesthetics • Contemporary Life • Families and Communities • Global Challenges • Personal and Public Identities • Science and Technology Themes facilitate the integration of language, content, and culture and promote the use of the language in a variety of contexts. The themes may be combined, as they are interrelated.

AP US History

Course Description	The AP U.S. History course focuses on the development of historical thinking skills (chronological reasoning, comparing and contextualizing, crafting historical arguments using historical evidence, and interpreting and synthesizing historical narrative) and the development of students' abilities to think conceptually about U.S. history from approximately 1491 to the present. Seven themes of equal importance – American and National Identity; Migration and Settlement; Politics and Power; Work, Exchange, and Technology; America in the World; Geography and the Environment; and Culture and Society – provide areas of historical inquiry for investigation throughout the course. These require students to reason historically about continuity and change over time and make comparisons among various historical developments in different times and places. The course also allows teachers flexibility across nine different periods of U.S. history to teach topics of their choice in depth
Pre-requisites	There are no prerequisites for AP U.S. History. Students should be able to read a college-level textbook and write grammatically correct, complete sentences.
Course Content	The AP U.S. History course is structured around themes and concepts in nine different chronological periods from approximately 1491 to the present: • Period 1: 1491–1607 • Period 2: 1607–1754 • Period 3: 1754–1800 • Period 4: 1800–1848 • Period 5: 1844–1877 • Period 6: 1865–1898 • Period 7: 1890–1945 • Period 8: 1945–1980 • Period 9: 1980–Present Within each period, key concepts organize and prioritize historical developments. Themes allow students to make connections and identify patterns and trends over time. The historical thinking skills provide opportunities for students to learn to think like historians, most notably to analyze evidence about the past and to create persuasive historical arguments. Focusing on these practices enables teachers to create learning opportunities for students that emphasize the conceptual and interpretive nature of history. Analyzing Evidence: Content and Sourcing • Explain the relevance of the author's point of view, author's purpose, audience, format or medium, and/or historical context as well as the interaction among these features, to demonstrate understanding of the significance of a primary source. • Evaluate the usefulness, reliability, and/or limitations of a primary source in answering particular historical questions. Interpretation • Analyze a historian's argument, explain how the argument has been supported through the analysis of relevant historical evidence, and evaluate the argument's effectiveness. • Analyze diverse historical interpretations. Comparison • Compare diverse perspectives represented in primary and secondary sources in order to draw conclusions about one or more historical events. • Compare different historical individuals, events, developments, and /or processes, analyzing both similarities and differences in order to draw historically valid conclusions.

	Comparisons can be made across different time periods, across different geographical locations, and between different historical events or developments within the same time period and/or geographical location. Contextualization • Situate historical events, developments, or processes within the broader regional, national, or global context in which they occurred in order to draw conclusions about their relative significance. Synthesis • Make connections between a given historical issue and related developments in a different historical context, geographical area, period, or era, including the present. • Make connections between different course themes and/or approaches to history (such as political, economic, social, cultural, or intellectual) for a given historical issue. Causation • Explain long and/or short-term causes and/or effects of an historical event, development, or process. • Evaluate the relative significance of different causes and/or effects on historical events or processes, distinguishing between causation and correlation and showing an awareness of historical contingency. Patterns of Continuity and Change Over Time • Identify patterns of continuity and change over time, and explain the significance of such patterns. • Explain how patterns of continuity and change over time relate to larger historical processes or themes. Periodization • Explain ways historical events and processes can be organized into discrete, different, and definable historical periods. • Evaluate whether a particular event or date could or could not be a turning point between different, definable historical periods, when considered in terms of particular historical evidence. • Analyze different and/or competing models of periodization. Argumentation • Articulate a defensible claim about the past in the form of a clear and compelling thesis that evaluates the relative importance of multiple factors and recognizes disparate, diverse, or contradictory evidence or perspectives. • Develop and support a historical argument, including in a written essay, through a close analysis of relevant and diverse historical evidence, framing the argument and evidence around the application of a specific historical thinking skill (e.g., comparison, causation, patterns of continuity and change over time, or periodization). • Evaluate evidence to explain its relevance to a claim or thesis, providing clear and consistent links between the evidence and the argument. • Relate diverse historical evidence in a cohesive way to illustrate contradiction, corroboration, qualification, and other types of historical relationships in developing an argument.

AP World History

Course Description	The AP World History course focuses on developing students' understanding of the world history from approximately 8000 BCE to the present. This college-level course has students investigate the content of world history for significant events, individuals, developments, and processes in six historical periods, and develop and use the same thinking skills and methods (analyzing primary and secondary sources, making historical comparisons, chronological reasoning, and argumentation) employed by historians when they study the past. The course also provides five themes (interaction between humans and the environment; development and interaction of cultures; state building, expansion, and conflict; creation, expansion, and interaction of economic systems; development and transformation of social structures) that students explore throughout the course in order to make connections among historical developments in different times and places encompassing the five major geographical regions of the globe: Africa, the Americas, Asia, Europe, and Oceania.
Pre-requisites	There are no prerequisite courses, although students should be able to read a college-level textbook and write grammatically correct, complete sentences.
Course Content	The AP World History course is structured around themes and concepts in six different chronological periods from approximately 8000 BCE to the present: • Technological and Environmental Transformations (to c. 600 BCE) • Organization and Reorganization of Human Societies (c. 600 BCE to c. 600 CE) • Regional and Transregional Interactions (c. 600 CE to c. 1450) • Global Interactions (c. 1450 to c. 1750) • Industrialization and Global Integration (c. 1750 to c. 1900) • Accelerating Global Change and Realignments (c. 1900 to the Present) Within each period, key concepts organize and prioritize historical developments. Themes allow students to make connections and identify patterns and trends over time.

AP Calculus AB

Course Description	AP Calculus AB and AP Calculus BC focus on students' understanding of calculus concepts and provide experience with methods and applications. Although computational competence is an important outcome, the main emphasis is on a multi-representational approach to calculus, with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. The connections among these representations are important. Teachers and students should regularly use technology to reinforce relationships among functions, to confirm written work, to implement experimentation, and to assist in interpreting results. Through the use of the unifying themes of calculus (e.g., derivatives, integrals, limits, approximation, and applications and modeling) the courses become cohesive rather than a collection of unrelated topics. AP Calculus AB is roughly equivalent to a first semester college calculus course devoted to topics in differential and integral calculus. The AP course covers topics in these areas, including concepts and skills of limits, derivatives, definite integrals, and the Fundamental Theorem of Calculus. The course teaches students to approach calculus concepts and problems when they are represented graphically, numerically, analytically, and verbally, and to make connections amongst these representations. Students learn how to use technology to help solve problems, experiment, interpret results, and support conclusions.
Pre-requisites	Before studying calculus, all students should complete the equivalent of four years of secondary mathematics designed for college-bound students: courses which should prepare them with a strong foundation in reasoning with algebraic symbols and working with algebraic structures. Prospective calculus students should take courses in which they study algebra, geometry, trigonometry, analytic geometry, and elementary functions. These functions include linear, polynomial, rational, exponential, logarithmic, trigonometric, inverse trigonometric, and piece wise defined functions. In particular, before studying calculus, students must be familiar with the properties of functions, the composition of functions, the algebra of functions, and the graphs of functions. Students must also understand the language of functions (domain and range, odd and even, periodic, symmetry, zeros, intercepts, and descriptors such as increasing and decreasing). Students should also know how the sine and cosine functions are defined from the unit circle and know the values of the trigonometric functions at the numbers 0, $\pi/6$, $\pi/4$, $\pi/3$, $\pi/2$, and their multiples. Students who take AP Calculus BC should have basic familiarity with sequences and series, as well as some exposure to polar equations.
Course Content	The course is organized around the foundational concepts of calculus: I. Limits: Students must have a solid, intuitive understanding of limits and be able to compute one-sided limits, limits at infinity, the limit of a sequence, and infinite limits. They should be able to apply limits to understand the behavior of a function near a point and understand how limits are used to determine continuity. II. Derivatives: Students should be able to use different definitions of the derivative, estimate derivatives from tables and graphs, and apply various derivative rules and properties. Students should also be able to solve separable differential equations, understand and be able to apply the Mean Value Theorem, and be familiar with a variety of real-world applications, including related rates, optimization, and growth and decay models. III. Integrals and the Fundamental Theorem of Calculus: Students should be familiar with basic techniques of integration, including basic antiderivatives and substitution, and properties of integrals. Students should also understand area, volume, and motion applications of integrals, as well as the use of the definite integral as an accumulation function. It is critical that students understand the relationship between integration and differentiation as expressed in the Fundamental Theorem of Calculus.

AP Calculus BC

Course Description	AP Calculus AB and AP Calculus BC focus on students' understanding of calculus concepts and provide experience with methods and applications. Although computational competence is an important outcome, the main emphasis is on a multi-representational approach to calculus, with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. The connections among these representations are important. Teachers and students should regularly use technology to reinforce relationships among functions, to confirm written work, to implement experimentation, and to assist in interpreting results. Through the use of the unifying themes of calculus (e.g., derivatives, integrals, limits, approximation, and applications and modeling) the courses become cohesive rather than a collection of unrelated topics. AP Calculus BC is roughly equivalent to both first and second semester college calculus courses. It extends the content learned in AB to different types of equations (polar, parametric, vector-valued) and new topics (such as Euler's method, integration by parts, partial fraction decomposition, and improper integrals), and introduces the topic of sequences and series. The AP course covers topics in differential and integral calculus, including concepts and skills of limits, derivatives, definite integrals, the Fundamental Theorem of Calculus, and series. The course teaches students to approach calculus concepts and problems when they are represented graphically, numerically, analytically, and verbally, and to make connections amongst these representations. Students learn how to use technology to help solve problems, experiment, interpret results, and support conclusions.
Pre-requisites	Before studying calculus, all students should complete the equivalent of four years of secondary mathematics designed for college-bound students: courses which should prepare them with a strong foundation in reasoning with algebraic symbols and working with algebraic structures. Prospective calculus students should take courses in which they study algebra, geometry, trigonometry, analytic geometry, and elementary functions. These functions include linear, polynomial, rational, exponential, logarithmic, trigonometric, inverse trigonometric, and piece wise defined functions. In particular, before studying calculus, students must be familiar with the properties of functions, the composition of functions, the algebra of functions, and the graphs of functions. Students must also understand the language of functions (domain and range, odd and even, periodic, symmetry, zeros, intercepts, and descriptors such as increasing and decreasing). Students should also know how the sine and cosine functions are defined from the unit circle and know the values of the trigonometric functions at the numbers 0, $\pi/6$, $\pi/4$, $\pi/3$, $\pi/2$, and their multiples. Students who take AP Calculus BC should have basic familiarity with sequences and series, as well as some exposure to polar equations.
Course Content	The course is organized around the foundational concepts of calculus: I. Limits: Students must have a solid, intuitive understanding of limits and be able to compute one-sided limits, limits at infinity, the limit of a sequence, and infinite limits. They should be able to apply limits to understand the behavior of a function near a point and understand how limits are used to determine continuity. II. Derivatives: Students should be able to use different definitions of the derivative, estimate derivatives from tables and graphs, and apply various derivative rules and properties. Students should also be able to solve separable differential equations, understand and be able to apply the Mean Value Theorem, and be familiar with a variety of real-world applications, including related rates, optimization, and growth and decay models.

	III. Integrals and the Fundamental Theorem of Calculus: Students should be familiar with basic techniques of integration, including basic antiderivatives and substitution, and properties of integrals. Students should also understand area, volume, and motion applications of integrals, as well as the use of the definite integral as an accumulation function. It is critical that students understand the relationship between integration and differentiation as expressed in the Fundamental Theorem of Calculus. IV. Series: Students should be familiar with various methods for determining convergence and divergence of a series, Maclaurin series for common functions, general Taylor series representations, radius and interval of convergence, and operations on power series. The technique of using power series to approximate an arbitrary function near a specific value allows for an important connection back to the tangent-line problem.

AP Biology

Course Description	AP Biology is an introductory college-level biology course. Students cultivate their understanding of biology through inquiry-based investigations as they explore the following topics: evolution, cellular processes — energy and communication, genetics, information transfer, ecology, and interactions.
Pre-requisites	Students should have successfully completed high school courses in biology and chemistry.
Course Content	The course is based on four Big Ideas, which encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about living organisms and biological systems. The following are Big Ideas: • The process of evolution explains the diversity and unity of life. • Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis. • Living systems store, retrieve, transmit, and respond to information essential to life processes. • Biological systems interact, and these systems and their interactions possess complex properties. **Science Practices** Students establish lines of evidence and use them to develop and refine testable explanations and predictions of natural phenomena. Focusing on these disciplinary practices enables teachers to use the principles of scientific inquiry to promote a more engaging and rigorous experience for AP Biology students. Such practices require that students: • Use representations and models to communicate scientific phenomena and solve scientific problems; • Use mathematics appropriately; • Engage in scientific questioning to extend thinking or to guide investigations within the context of the AP course; • Plan and implement data collection strategies in relation to a particular scientific question; • Perform data analysis and evaluation of evidence; • Work with scientific explanations and theories; and • Connect and relate knowledge across various scales, concepts, and representations in and across domains. **Inquiry-Based Investigations** Twenty-five percent of instructional time is devoted to hands-on laboratory work with an emphasis on inquiry-based investigations. Investigations require students to ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress.

AP Chemistry

Course Description	The AP Chemistry course provides students with a college-level foundation to support future advanced course work in chemistry. Students cultivate their understanding of chemistry through inquiry-based investigations, as they explore topics such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium.
Pre-requisites	Students should have successfully completed a general high school chemistry course and Algebra II.
Course Content	The key concepts and related content that define the AP Chemistry course and exam are organized around underlying principles called the Big Ideas. They encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about the particulate nature of matter underlying the observations students make about the physical world. The following are Big Ideas: • The chemical elements are the building blocks of matter, which can be understood in terms of the arrangements of atoms. • Chemical and physical properties of materials can be explained by the structure and the arrangement of atoms, ions, or molecules and the forces between them. • Changes in matter involve the rearrangement and/or reorganization of atoms and/or the transfer of electrons. • Rates of chemical reactions are determined by details of the molecular collisions. • The laws of thermodynamics describe the essential role of energy and explain and predict the direction of changes in matter. • Bonds or attractions that can be formed can be broken. These two processes are in constant competition, sensitive to initial conditions and external forces or changes. **Science Practices** Students establish lines of evidence and use them to develop and refine testable explanations and predictions of natural phenomena. Focusing on these disciplinary practices enables teachers to use the principles of scientific inquiry to promote a more engaging and rigorous experience for AP Chemistry students. Such practices require that students: • Use representations and models to communicate scientific phenomena and solve scientific problems; • Use mathematics appropriately; • Engage in scientific questioning to extend thinking or to guide investigations within the context of the AP course; • Plan and implement data collection strategies in relation to a particular scientific question; • Perform data analysis and evaluation of evidence; • Work with scientific explanations and theories; and • Connect and relate knowledge across various scales, concepts, and representations in and across domains. This course requires that 25 percent of the instructional time provides students with opportunities to engage in laboratory investigations. This includes a minimum of 16 hands-on labs, at least six of which are inquiry based.

AP Physics

Course Description	AP Physics 1 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of Physics through inquiry-based investigations as they explore topics such as Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory, simple circuits.
Pre-requisites	There are no prerequisite courses. Students should have completed geometry and be concurrently taking Algebra II or an equivalent course. Although the Physics 1 course includes basic use of trigonometric functions, this understanding can be gained either in the concurrent math course or in the AP Physics 1 course itself.
Course Content	Students explore principles of Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory, simple circuits. The course is based on six Big Ideas, which encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about the physical world. The following are Big Ideas: • Objects and systems have properties such as mass and charge. Systems may have internal structure. • Fields existing in space can be used to explain interactions. • The interactions of an object with other objects can be described by forces. • Interactions between systems can result in changes in those systems. • Changes that occur as a result of interactions are constrained by conservation laws. • Waves can transfer energy and momentum from one location to another without the permanent transfer of mass and serve as a mathematical model for the description of other phenomena. **Inquiry-Based Investigations** Twenty-five percent of instructional time is devoted to hands-on laboratory work with an emphasis on inquiry-based investigations. Investigations will require students to ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress.

AP Computer Science A

Course Description	AP Computer Science A is equivalent to a first-semester, college-level course in computer science. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object-oriented and imperative problem solving and design using Java language. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems. The AP Computer Science A course curriculum is compatible with many CS1 courses in colleges and universities.
Pre-requisites	Pre-AP Computer Science is recommended. Otherwise, teacher approval is required with the following in mind: Students should be comfortable with functions and the concepts found in the uses of function notation. It is important that students understand that any significant computer science course builds upon a foundation of mathematical reasoning that should be acquired before attempting such a course.
Course Content	**Lab Requirements** The AP Computer Science A course must include a minimum of 20 hours of hands-on structured lab experiences to engage students in individual or group problem solving. Thus, each AP Computer Science A course includes a substantial laboratory component in which students design solutions to problems, express their solutions precisely (e.g., in the Java programming language), test their solutions, identify and correct errors (when mistakes occur), and compare possible solutions. **Computer Language** The AP Computer Science A course requires that solutions of problems be written in the Java programming language. Because the Java programming language is extensive with far more features than could be covered in a single introductory course, the AP Computer Science A Exam covers a subset of Java. **Goals of AP Computer Science A** Students should be able to • Design, implement, and analyze solutions to problems; • Use and implement commonly used algorithms; • Develop and select appropriate algorithms and data structures to solve new problems; • Write solutions fluently in an object-oriented paradigm; • Write, run, test, and debug solutions in the Java programming language, utilizing standard Java library classes and interfaces from the AP Java subset; • Read and understand programs consisting of several classes and interacting objects; • Read and understand a description of the design and development process leading to such a program; and • Understand the ethical and social implications of computer use.

AP Computer Science Principles

Course Description	The AP Computer Science Principles course is designed to be equivalent to a first- semester introductory college computing course. In this course, students will develop computational thinking skills vital for success across all disciplines, such as using computational tools to analyze and study data and working with large data sets to analyze, visualize, and draw conclusions from trends. The course engages students in the creative aspects of the field by allowing them to develop computational artifacts based on their interests. Students will also develop effective communication and collaboration skills by working individually and collaboratively to solve problems, and will discuss and write about the impacts these solutions could have on their community, society, and the world.
Pre-requisites	It is recommended that a student in the AP Computer Science Principles course should have successfully completed a first year high school algebra course with a strong foundation on basic linear functions and composition of functions, and problem solving strategies that require multiple approaches and collaborative efforts. In addition, students should be able to use a Cartesian (x, y) coordinate system to represents points in a plane. It is important that students and their advisers understand that any significant computer science course builds upon a foundation of mathematical and computational reasoning that will be applied throughout the study of the course.
Course Content	The following are the major areas of study, or big ideas, that are foundational to studying computer science: • Creativity: Computing is a creative activity. Creativity and computing are prominent forces in innovation; the innovations enabled by computing have had and will continue to have far-reaching impact. • Abstraction: Abstraction reduces information and detail to facilitate focus on relevant concepts. It is a process, a strategy, and the result of reducing detail to focus on concepts relevant to understanding and solving problems. • Data and Information: Data and information facilitate the creation of knowledge. Computing enables and empowers new methods of information processing, driving monumental change across many disciplines — from art to business to science. • Algorithms: Algorithms are used to develop and express solutions to computational problems. Algorithms realized in software have affected the world in profound and lasting ways. • Programming: Programming enables problem solving, human expression, and creation of knowledge. Programming and the creation of software has changed our lives. It results in the creation of software, and facilitates the creation of computational artifacts, such as music, images, and visualizations. • The Internet: The Internet pervades modern computing. The Internet and the systems built on it have had a profound impact on society. Computer networks support communication and collaboration. • Global Impact: Computing has global impact. Our methods for communicating, collaborating, problem solving, and doing business have changed and are changing due to innovations enabled by computing.

AP Studio Art

Course Description	The AP Studio Art Program consists of three portfolios — 2-D Design, 3-D Design and Drawing — corresponding to the most common college foundation courses. Students may choose to submit any or all of the Drawing, Two-Dimensional Design, or Three-Dimensional design portfolios. AP Studio Art students create a portfolio of work to demonstrate the artistic skills and ideas they have developed, refined, and applied over the course of the year to produce visual compositions
Pre-requisites	Although there is no prerequisite for AP Studio Art, prior experiences in studio art courses that address conceptual, technical, and critical thinking skills can support student success in the AP Studio Art Program.
Course Content	AP Studio Art students work with diverse media, styles, subjects, and content. Each of the three portfolios consists of three sections: • The Breadth section illustrates a range of ideas and approaches to art making. • The Concentration section shows sustained, deep, and multi-perspective investigation of a student-selected topic. • The Quality section represents the student's most successful works with respect to form and content. Works in this section may be selected from the other two sections. Students' work is informed and guided by observation, research, experimentation, discussion, critical analysis, and reflection, relating individual practices to the art world. Students are asked to document their artistic ideas and practices to demonstrate conceptual and technical development over time. The AP Studio Art Program supports students in becoming inventive artistic scholars who contribute to visual culture through art making. **Disciplinary Practices and Habits of Mind** Each AP Studio Art course and portfolio assessment focuses on students developing these practices and habits of mind through work with 2-dimensional design, 3-dimensional design, and drawing media and approaches, including the following: • Critical analysis • Evidence-based decision-making • Innovative thinking • Articulation of design elements and principles • Systematic investigation of formal and conceptual aspects of art making • Technical competence with materials and processes to communicate ideas • Incorporation of expressive qualities in art making • Demonstration of artistic intention • Creation of a body of work unified by a visual or conceptual theme

AP Psychology

Course Description	The AP Psychology course introduces students to the systematic and scientific study of human behavior and mental processes. While considering the psychologists and studies that have shaped the field, students explore and apply psychological theories, key concepts, and phenomena associated with such topics as the biological bases of behavior, sensation and perception, learning and cognition, motivation, developmental psychology, testing and individual differences, treatment of abnormal behavior, and social psychology. Throughout the course, students employ psychological research methods, including ethical considerations, as they use the scientific method, analyze bias, evaluate claims and evidence, and effectively communicate ideas.
Pre-requisites	There are no prerequisites for AP Psychology. Students should be able to read a college-level textbook and write grammatically correct, complete sentences.
Course Content	The AP Psychology course includes the systematic and scientific study of behavior and mental processes represented by the following topics, concepts, and key contributors to each field: • History and Approaches • Research Methods • Biological Bases of Behavior • Sensation and Perception • States of Consciousness • Learning • Cognition • Motivation and Emotion • Developmental Psychology • Personality • Testing and Individual Differences • Abnormal Behavior • Treatment of Abnormal Behavior • Social Psychology