COURSE CATALOG

2021–2022

Upper School

College Preparatory

Our academic program supports the Schools' mission statement by presenting a rigorous, college-preparatory curriculum that encourages students to think independently, learn collaboratively and communicate effectively.

Our academic program fosters thinkers who learn and understand traditional and emerging disciplines, master skills essential to achievement in college and beyond, and embody vital attitudes and qualities of mind including curiosity, love of learning, and a commitment to what is right and true.

Advanced Placement

These courses are designed to challenge students to pursue their studies in greater depth and at an accelerated pace. Intense independent study, research, analysis, and critical thinking characterize courses at this level. In Advance Placement courses, structured on the standards of the College Entrance Examination Board (CEEB), teachers and students operate on the assumption that many juniors and seniors can complete college level courses in secondary school. Upon completion of these courses, students are expected to take the Advanced Placement examinations. A score of three or better out of five is considered a passing score.

Credit is awarded by colleges and universities according to their individual school policy. To be admitted to AP classes students must be approved by an AP instructor and must meet the requirements specified in individual course descriptions.

Across KFEC's curriculum, we emphasize creative thinking and problem solving over rote memorization, instilling skills and habits of mind essential for success in college and beyond. KFEC students develop as master learners—knowing how to address problems, ask the right questions and use a variety of resources to articulate and test their own answers—prepared for the road ahead

Graduation Requirements

The KFEC require a minimum of 24 credits for graduation, as described in the table below. Because a majority of KFEC students apply to schools in the University of California (UC) system, we aim to ensure that each of our students meets UC admission requirements (see the fourth column of the table) and that all of our courses are UC approved. For students who seek admission to a highly selective college, our recommendations are displayed in the second column of the table. Students are allowed to take Advanced and/or AP courses beginning in the junior year with the exception of mathematics courses which may be taken earlier.

Subject	KFEC Graduation Requirements	For admission to a highly selective college, we recommend	University of California Admission Requirements
a. English*	4 credits	4 credits	4 credits required in English
b. Social Studies*	4 credits	4 credits	2 credits required in History— Including one year of U.S. History AND one credit of world history, cultures, and geography
c. Mathematics*	4 credits	4 credits	3 credits required 4 credits recommended
d. Science*	3 credits	4 credits	2 credits required; 3 credits recommended at least two of: Biology, Chemistry, and Physics
e. World Languages	2 credits	4 credits	2 credits required; 3 credits recommended Two credits of the same language
f. Arts	1 credits	2 credits	1 credit required
g. Electives	6 credits	It depends on the major	1 credit required**

GRADE REPORTS

The official grades of record for graduation credit are recorded on the student's transcript. The following grade scale will be used.

UC GPA:

- California applicants must earn at least a 3.0 GPA and nonresidents must earn a minimum 3.4 GPA in all "a-g" or college-preparatory courses to meet this requirement.
- Convert the grades earned in all "a-g" courses completed between summer after 9th grade through summer after 11th grade to grade points: A=4 points, B=3 points, C=2 points, D=1 points. Pluses and minuses don't count.
- An extra point for advanced course, with a maximum of 8 points between 10th and 11th grades. Grades of D or F in an advanced course do not earn an extra point.

Letter Grade	Numerical Value	Unweighted GPA	Weighted GPA
A+	97-100	4.0	5.0
A	93-96	4.0	5.0
A-	90-92	3.7	4.7
B+	87-89	3.3	4.3
B	83-86	3.0	4.0
B-	80-82	2.7	3.7
C+	77-79	2.3	3.3
C	73-76	2.0	3.0
C-	70-72	1.7	2.7
D+	67-69	1.3	1.3
D	63-66	1.0	1.0
D-	60-62	0.7	0.7
F	Below 60	0	0

Sample Programs of Study

The next two pages illustrate the standard and most challenging course offerings available in each department at each grade level. Some students choose courses only within the standard program, while others select a balance of standard and most challenging offerings. the exception of mathematics courses which may be taken earlier.

9th Grade

Subject	A standard program	Most challenging program
English	English 9	English 9
Social Studies	World History	World History
Mathematics	Algebra 1 / Geometry	Algebra 2
Science	Biology	Biology
World Languages	Spanish 1	Spanish 1
Arts	Arts	Arts

10th Grade

. Subject	A standard program	Most challenging program
English	English 10	English 10
Social Studies	US History	US History
Mathematics	Algebra 2	Pre-Calculus
Science	Chemistry	Physics & Chemistry
World Languages	Spanish 2	Spanish 2
Arts	/	Arts
Electives	Electives	/

11th Grade

Subject	A standard program	Most challenging program
English	English 11	AP English
Social Studies	American Government	AP Level
Mathematics	Pre-calculus	AP Calculus
Science	Physics	AP Level
World Languages	/	AP Spanish Lang
Electives	Electives	Elective

12th Grade

Subject	A standard program	Most challenging program
English	English 12	AP English
Social Studies	/	AP Level
Mathematics	AP Calculus AB	AP Level
Science	/	AP Level
World Languages	/	AP Spanish Lit
Electives	Electives	Electives

2021-2022 COURSE LISTINGS

Mathematics & Computer Science	Prerequisites	Work Load	9th	10th	11th	12th
Algebra I		1	x			
Geometry	Algebra I	1	x			
Algebra II	Geometry	1	x	x		
Pre-Calculus	Algebra II	1		x	x	x
Calculus	Algebra II	1			x	x
Statistics	Algebra II	1			x	x
AP Calculus AB	Algebra II	1			x	x
AP Calculus BC	Algebra II	1			x	x
AP Statistics	Algebra II	1			x	x
Computer Science	Algebra II	1		x	x	x
AP Computer Science A	Algebra II	1		x	x	x

English	Prerequisites	Work Load	9th	10th	11th	12th
English 9		1	x			
English 10	English 9	1		x		
English 11	English 10	1			x	
English 12	English 11	1			x	x
AP English Language and Composition	English 10	1			x	x
AP English Literature and Composition	English 11	1			x	x

Science	Prerequisites	Work Load	9th	10th	11th	12th
Biology		1	x			
Chemistry		1	x			
Physics		1	x	x		
Engineering	Algebra II	1		x	x	x
Environmental Science	Biology	1			x	x
Earth Science		1			x	x
AP Biology	Biology	1			x	x
AP Chemistry	Chemistry	1			x	x
AP Physics 1	Physics	1			x	x
AP Physics 2	Physics	1		x	x	x
AP Physics c	Physics	1			x	x
AP Environmental Science	Chemistry /Biology	1		x	x	x

Social Studies	Prerequisites	Work Load	9th	10th	11th	12th
World Geography		1	x			
World History		1	x			
American History		1	x	x		
American Government		1		x	x	x
Human Geography		1			x	x
AP World History	World History	1			x	x
AP Human Geography	Human Geography	1			x	x
AP United States History	United States History	1			x	x
AP United States Government & Politics	United States Government	1			x	x
AP Comparative Government & Politics	US History/US government	1		x	x	x

Social Studies	Prerequisites	Work Load	9th	10th	11th	12th
Economics		1				
Psychology		1				
AP Psychology	Psychology	1			x	x
AP Macroeconomics	Economics	1		x	x	x
AP Microeconomics	Economics	1		x	x	x
World Geography		1	x			
World History		1	x			
American History		1	x	x		
American Government		1		x	x	x
Human Geography		1			x	x
Economics		1				
Psychology		1				
AP World History	World History	1			x	x
AP European History	World History					
AP Human Geography	Human Geography	1			x	x
AP United States History	United States History	1			x	x
AP United States Government & Politics	United States Government	1			x	x
AP Comparative Government & Politics	US History/US government	1		x	x	x
AP Psychology	Psychology	1			x	x
AP Macroeconomics	Economics	1		x	x	x
AP Microeconomics	Economics	1		x	x	x

Arts	Prerequisites	Work Load	9th	10th	11th	12th
Graphic Arts		1	x	x	x	x
Music Theory		1	x	x	x	x
Studio Art 2-D Design		1	x	x	x	x
Studio Art 3-D Design		1	x	x	x	x
Photography		1	x	x	x	x
AP Studio Art 2-D Design		1		x	x	x
AP Studio Art 3-D Design		1			x	x
AP Music Theory		1		x	x	x
Art History		1	x	x	x	x
AP Art History		1			x	x

World Language	Prerequisites	Work Load	9th	10th	11th	12th
French 1		1	x	x		
French 2	French 1	1	x	x	x	
French 3	French 2	1	x	x	x	x
French 4	French 3	1		x	x	x
Spanish 1		1	x	x		
Spanish 2	Spanish 1	1	x	x	x	
Spanish 3	Spanish 2	1			x	x
Spanish 4	Spanish 3	1	x	x	x	x
AP French language	French 4	1			x	x
AP Spanish Language	Spanish 4	1			x	x
AP Spanish Literature	Spanish 4	1			x	x

MATHEMATICS

The mathematics department uses a problem-based curriculum to engage students in the development of both a knowledge base and a skill set that allows them to apply that knowledge in new and challenging situations.

This happens in a student-centered classroom setting where they have the opportunity to experience mathematics symbolically, numerically, graphically and verbally.

Students develop the ability to articulate their understanding of mathematics by regularly presenting and defending their solutions, a skill that serves them across disciplines at school.

We believe that through the process of solving problems, students are encouraged to develop the skills of investigation, conjecture, predicting, analysis, and verification, which provide the best foundation for the mastery of mathematics and its application across the curriculum.

ALGEBRA I

This course provides a thorough study of variables and variation, requiring students to use order of operations, like terms, and mathematical properties to simplify expressions as well as to develop equations. Thinking about ratios, proportions, and percentage leads naturally to the study of direct and inverse variation, rates of change, and slope.

A problem-based learning approach is used to introduce new topics; students focus on word problems and the ability to critically read and analyze challenging problems in which mathematical skills and concepts are introduced and developed in context rather than strictly from simple drill and practice. Topics covered include: equations and graphs that are linear and quadratic, distinguishing linear versus nonlinear data, inequalities, the basic rules of exponents, factoring, unit conversions, and other traditional Algebra I topics.

GEOMETRY

This course is a traditional study of Euclidean geometry, with significant modeling using the Smart Board. Students continue to learn how to construct logical proofs, and utilize elements of discovery in learning about the geometric world. Topics to be studied include lines, angles, polygons, parallelism, perpendicularity, similarity, introductory right triangle trigonometry, circles, area, volume, and coordinate geometry.

ALGEBRA II

This course begins with a quick review of the concepts and techniques developed in the first-year algebra course. The students then expand their understanding of algebra, both in breadth and in depth. Topics previously studied are revisited from a function perspective. Graphing calculators allow the student to explore graphically the behavior developed analytically.

The following functions are studied in Algebra II: absolute value, linear, quadratic, higher-order polynomial, exponential, logarithmic, radical, and rational. Complex numbers, conic sections, sequences and series, and linear programming are also introduced in this course.

PRE-CALCULUS

The intent of this course is the deepening of the students' general understanding of functions using both analytical and graphical approaches. This course places special emphasis on the study of trigonometric functions and includes a comprehensive survey of trigonometry.

Trigonometric functions also serve as the introduction to two new types of functions, parametric and polar.

Successful completion of this course should sufficiently prepare a student to take calculus in the following school year. Topics include: real and complex numbers, polynomial equations, functions and their graphs, logarithmic functions and their graphs with applications, trigonometric functions and their graphs and applications, systems of equations and inequalities, sequences and series, and conic sections.

CALCULUS

This course is an introduction to the study of calculus. It begins with a review of pre-calculus topics and proceeds with a study of limits. The concept of function continuity, already introduced at an intuitive level in pre-calculus, is clearly defined and explored.

The course focus then moves to the derivative and its applications. Elements of integral calculus are then explored as time permits. Successful completion of this course should more than adequately prepare the student for a first-year course in college calculus.

Topics include: functions and their graphs, limits, derivatives, rate of change applications, maxima-minima applications, indefinite and definite integrals, area under and between curves, volumes of solids of revolutions, arc length, surface area of solids of revolution, derivatives and integrals of transcendental functions and their inverses and techniques of integration.

AP CALCULUS AB

This course follows the syllabus prescribed by the College Board. That syllabus presupposes a solid grasp of both the concepts and the mechanics of the algebra and pre-calculus sequence. AB Calculus begins with the study of limits. Later topics of study include the continuity of functions, derivatives and their applications, antiderivatives, definite integrals and their applications, separable differential equations, and miscellaneous techniques of integration. Students are expected to take the Advanced Placement examination in May.

AP CALCULUS BC

This course follows the syllabus prescribed by the College Board. BC Calculus covers all of AB Calculus, along with some additional material. The additional topics include vectors, polar coordinates, advanced differential equations, more applications and techniques of integration, as well as sequences and series.

BC Calculus students are likewise expected to take the Advanced Placement Examination in May. Topics include: limits and derivatives and applications, the integral with applications, transcendental functions and their inverses, techniques of integration, numerical integration, limits involving indeterminate forms, improper integrals, an introduction to differential equations including direction fields and Euler's method, infinite series, the calculus of polar and parametric equation, and an introduction to the calculus of vectors.

AP STATISTICS

This course will acquaint students with the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students will frequently work on projects involving the gathering and analysis of realistic data.

The concepts and methods presented in this course have obvious applicable value. Students are expected to take the Advanced Placement Statistics examination in May . Our text is broken into 4 sections: Organizing Data: Looking for patterns and departures from patterns; Producing Data: Samples, experiments, and simulations; Probability: Foundations of inference; Inference: Conclusions with confidence

English

As a college preparatory school, we aim to read challenging and appropriate works and design meaningful curricular experiences that will increase a student's critical thinking, stimulate intellectual curiosity, foster open-mindedness toward diverse perspectives, assist in developing personal integrity, and bring about a sense of awareness of a larger community in the world.

Reading, discussing, and writing about classic and contemporary texts of literary merit assist our students well in such discovery.

The English Department encourages students to recognize elements of literature, appreciate the complexity and coherence of good writing, develop a personal voice in their own writing, grapple with language in its myriad forms and meanings, and read works that challenge their perspectives and philosophies.

ENGLISH 9

This writing-intensive course will explore important social themes, including the journey as metaphor, through a study of short stories, poems, plays, novels, articles, films, and other visual media. Students will learn how to apply their knowledge of literary, rhetorical, and visual techniques to the analysis of a wide variety of written and oral modes of communication and to use these techniques in their own essays and projects.

Mini-lessons will be used to reinforce discrete skills involved in vocabulary acquisition, oral communication, and the writing process (brainstorming, organization, drafting, revision, editing). Products will include formal literary analyses, personal narratives, debates, student-led discussions, and oral presentations of research. Previously studied works include authors such as Salinger, Cisneros, Steinbeck, Homer, Sophocles, and Shakespeare.

ENGLISH 10

This course encompasses a survey of the literature of world cultures, including short stories, poetry, drama, and novels, and continues the development of writing skills and techniques. Previously studied works include authors such as Golding, Satrapi, Sophocles, Achebe, and Kafka. Students review previously introduced language skills and pursue new ones through essays that thematically integrate two or more works of literature. In addition, students develop topics in both analytical and creative compositions, giving particular attention to the refinement of the thesis statement. Students are expected to use in-text citations that are relevant, thoughtfully analyzed, and successfully integrated into the text.

ENGLISH 11

This course surveys literature of the United States and complements the junior American history course. Previously studied works include authors such as Gaines, Hawthorne, Twain, Fitzgerald, and a wide range of American short stories, poetry, and essays. Written assignments consist of narrative and expository writing, formal literary analysis, term projects, and creative writing.

ENGLISH 12

This course explores the concept of “the educated conscience” through the lenses of classical, post-colonial, and contemporary world literature. Focusing on aspects of conscience, character, and community, students will explore how a skillful use of language is essential not only to gain self- knowledge but also to participate effectively in a larger community. Selected texts will serve to reinforce previously introduced language concepts and assist the student in refining critical thinking, reading, and oral communication and written composition skills.

Each student enrolled in Senior English will be required to engage in a year-long study that combines research of a personal nature, culminating in a final “senior statement” that reveals each student’s declaration of the essential elements that comprise his or her own “educated conscience.” In essence, after study and reflection, students will explore how their own character will improve a community beyond themselves. Previously studied works include authors such as Hosseini, Hesse, Orwell, and Shakespeare.

AP ENGLISH LANGUAGE & COMPOSITION

AP English focuses on the development of an individual writing voice through narratives and blended essays that mix narrative, expository, and analytical writing. We will emphasize a conversational voice, the way that a student would talk intelligently but naturally during a class discussion.

Students recognize the arc between writer and reader and how the two meet in the middle. Their own writing reflects the depth and dualities that they have wrestled with in the reading, the best reflecting what John Trimble calls “a fierce attachment to an idea.” In May, students take the Advanced Placement exam in English Language and Composition.

AP Language and Composition focuses on the close reading of a variety of texts in order to deepen the students’ understanding of the ways writers use language to achieve purpose and affect their audiences. Students discuss their readings in class and write about what they have read. Students also write research-based position papers on a wide-range of controversial topics.

AP ENGLISH LITERATURE & COMPOSITION

This senior-level course explores the concepts of “the educated conscience”; gender, class, and race; and cultural identity and difference through the lenses of classical, post-colonial, and contemporary world literature, including selections from British and American literature.

Selected texts—primarily works written from the sixteenth century to today—will serve to reinforce previously introduced language concepts and assist the student in refining critical oral communication and written composition skills. AP English Literature and Composition students will engage in a careful reading and critical analysis of imaginative literature, including the novel (social fictions), drama (public spectacle and interior spaces), and poetry (an imaginative awareness of experience).

Past works studied include Toni Morrison’s Beloved, Conrad’s Heart of Darkness, Shakespeare’s Hamlet, and selected poems representative of various literary movements.

Writing includes frequent timed essays as well as longer pieces that require a close reading of the text and outside criticism. In May, students take the Advanced Placement exam in English Literature and Composition.

SOCIAL STUDIES

The Social Studies Department has two primary goals: the acquisition of factual knowledge and the understanding of historical, social, political, and economic concepts. Subject mastery goals reflect an attempt to foster an understanding of the past and establish its relationship to the present.

The development of critical thinking skills is central to all of our courses. Additionally, the curriculum is designed to provide students with a working knowledge of how political, social, economic, and cultural systems fit into contemporary world affairs.

WORLD GEOGRAPHY

This course explores how physical features of the earth, population settlement patterns, human activities, customs, and traditions contribute to defining a place, culture, and people. The course also examines how these elements affect the social, political, and economic character of nations and regions.

WORLD HISTORY

This course covers the major developments since the Renaissance. Rather than focusing only on Western Europe, the global nature of the text and the many outside readings allow students to see how events, trends, and ideas from all parts of the world interact and affect people wherever they live. Emphasis is also placed on current events.

A variety of media is used to enhance discussions on cultural developments. Since much of the second semester is devoted to the 20th century, students receive a thorough grounding in events that directly shape their lives, and they have the opportunity to discuss pertinent issues in class.

AP WORLD HISTORY: MODERN

The purpose of the AP World History course is for students to develop a greater understanding of the development, evolution, and expansion of globalization. This understanding is developed through factual knowledge and development of advanced analytical skills. This course focuses on the nature of global changes, their causes and consequences, and comparisons among the societies of the world.

It emphasizes relevant knowledge in union with interpretation of primary and secondary sources that analyze leading interpretive issues and types of historical evidence. The course focuses on cultural, political, economic, and technological information that, along with geography, allows the student to explore the entire human experience. Research and writing will be an integral component of the course, with a major project in the spring and numerous AP practice essays throughout the year. This class is available to selected sophomore students and will culminate in their AP World History examination in May.

UNITED STATES HISTORY

This course is a survey of the major social, cultural, political, and economic developments in the United States from colonial times to the present. A brief introduction to the founding of the U.S. is included. Special attention is devoted to the development of the United States government and Constitution, political history, military involvements, economic factors, and the perception of America held both by its own citizens itself and the greater world.

America's rise to the status of a world power in the Twentieth Century is analyzed, along with the attendant changes in its foreign and domestic policies. The course is designed to ground the students in U.S. history and prepare them for college-level coursework. Students are expected to be familiar with the essential facts of American history and to have developed a critical understanding of the people and events shaping the American character.

AP UNITED STATES HISTORY

This course is a survey of American history from colonial times to the modern era with emphasis on the political, economic, and diplomatic events of United States history, as well as the social and cultural evolution of the American people. The course also aims to familiarize students with the critical thinking skills and research methods of the historian through comparison and analysis of both prim1a7ry and secondary source materials. Several outside projects are required, and students are planning to take the AP Exam at the end of the course.

UNITED STATES GOVERNMENT

This course is designed to teach students how the federal government works and to prepare them to be engaged, informed citizens. Students will learn the philosophy of the Founding Fathers regarding the purpose of government and the rights of individuals and how the Constitution embodies that philosophy. Students will gain an understanding of how the size and powers of the national government have changed and grown over two centuries.

The class will examine the structure and functions of the three branches of government. Students will also examine the electoral system, political parties, modern politics, and the mechanisms by which public policy is created and altered.

AP U.S. GOVERNMENT AND POLITICS

This course is a college-level introduction to American government designed to replicate in scope and depth an introductory college course in political science. The course also prepares students for the AP test. Students will learn the philosophy of the Founding Fathers regarding the purpose of government and the rights of individuals and how the Constitution embodies that philosophy. Students will gain an understanding of how the size and powers of the national government have changed and grown over two centuries.

The class will examine the structure and functions of the three branches of government. Students will also examine the electoral system, political parties, modern politics, and the mechanisms by which public policy is created and altered. Particular focus will be given to individual rights and freedoms as defined and interpreted by the Supreme Court.

AP COMPARATIVE GOVERNMENT AND POLITICS

This college level course, designed to prepare students for the Advanced Placement exam focuses on government and politics in other countries and provides a theoretical framework to compare political systems around the world. At the conclusion of the course, students should be able to describe common types of governments and cultures in the world, compare and analyze their governments and societies, and describe their interaction in a global world. The main countries of focus are the United Kingdom, Russia, China, Mexico, Nigeria, and Iran.

ECONOMICS

This course introduces the tools and concepts of economic analysis. A study of microeconomics and macroeconomics is included with an emphasis on developing the vocabulary necessary for discussing, reading, and understanding basic economic and political issues. The application of economic concepts and vocabulary to national and international issues is encouraged through student- led discussions of political and economic topics.

AP MICROECONOMICS

The purpose of the AP Microeconomics course is to provide an in-depth study into the smaller, finer workings of the economy. In particular, students focus on the cost-benefit analysis of thinking, using supply and demand graphs to envision and manipulate a variety of markets (perfectly competitive, oligopolies, monopolistically competitive, and monopolies), and to see how consumers and producers interact in markets. In addition, students see the impact of government on these specific markets.

AP MACROECONOMICS

This course will offer an in-depth examination of macroeconomic principles and their applications. Emphasis will be placed on fiscal and monetary policy, as well as international trade and finance. The course will prepare students to take the Advanced Placement exam in macroeconomics.

AP EUROPEAN HISTORY

This course covers the period from the late Middle Ages to the present. The political, social, economic, intellectual, and artistic developments of Europe during this period provide the framework for the course. In addition to a text, secondary and primary source materials are used to study these developments. Throughout the year a series of take-home essays, DBQ essays, and objective tests are assigned. Students are planning to take the AP exam in May.

AP HUMAN GEOGRAPHY

This is a dynamic and engaging class that covers the key concepts and topics that are part of living in a global community. It combines, current events, global trends, politics, history, economics, culture and industry. Students are expected to have a desire to be Global citizens and be committed to keeping themselves informed on what is going on in the world. The broad spectrum of material covered means that this course would be useful for any number of university or career choices.

PSYCHOLOGY

Many inter-personal conflicts are caused either because we don't understand the thoughts or emotions that motivate others, or we don't fully understand our own emotions and motivations. This introductory course in psychology is designed to equip students with an understanding of human psychology to aid them in their life-long journey toward a greater understanding of themselves and how to find happiness in their personal relationships with others.

Topics covered will include research methodology, dreaming and states of consciousness, learning and memory, types of intelligence, psychological development and challenges in childhood, personality development and personality types, and abnormal psychology.

AP PSYCHOLOGY

Building upon and expanding on the concepts presented in Introduction to Psychology, this AP Course is designed to provide a college-level understanding in the study of behavior and mental processes.

Students will review and gain additional knowledge regarding historical and contemporary approaches to psychology, psychological methodology, states of consciousness, learning and memory, developmental psychology, personality development, and abnormal psychology. New topics discussed in this course include the biology of behavior, sensation and perception, motivation and emotion, psychological treatments and social psychology.

SCIENCE

Science courses in the ninth through 12th grades offer a traditional college preparatory curriculum. This curriculum fulfills our students' need for the basic science education necessary for all adults to be productive, responsible, and informed citizens in today's world. It also prepares those students who wish to continue their study of science in college.

A variety of science elective courses broadens understanding and allows students to pursue deeper interests. AP classes are offered for students who wish to pursue their studies at a higher level.

BIOLOGY

This course is an inquiry-based study of the characteristics and organization of living things. Topics include cell structures and functions, cellular processes, an introduction to inorganic and organic chemistry, human nutrition and digestion, environmental principles, evolution, and the molecular genetics of multicellular organisms. Lab exercises, experimental design, graphing, and lab reports are important components of this class.

AP BIOLOGY

This is a college-level course fostering an in-depth level of understanding. The course helps the student develop a conceptual framework for modern biology by addressing four “Big Ideas” evolution drives the diversity of life; biological systems use free energy and molecules to grow, reproduce, and maintain homeostasis; living systems store, transmit, and respond to information; and biological systems interact with each other.

Students will develop advanced inquiry skills during laboratory investigations and gain an appreciation for current social and ethical issues at various points in the course. Several outside projects are required, and students take two mock AP exams in preparation for the required AP exam at the end of the course.

CHEMISTRY

This course investigates matter and change, measurements, problem-solving, atomic structure, nuclear chemistry, periodic law, chemical bonding, writing formulas, nomenclature, equations, stoichiometry, gas laws, solutions, acids and bases, and organic chemistry. Labs and activities are held as appropriate to the topic being studied, and formal lab reports will be written.

AP CHEMISTRY

This course is a college-level course. The first semester is a review of the topics covered in Honors Chemistry. The students are expected to have the maturity to handle large amounts of material in a more independent manner. Homework is given daily but not checked daily. Instead, weekly quizzes are given over the same material. Testing is done once a month on average and plays heavily on the overall grade.

The students spend one double period a week in the lab and are expected to perform the experiments with minimum help from the instructor. They are also expected to complete one problem set of equations from old AP exams each week. Second semester is spent performing in- depth studies of thermodynamics, chemical equilibrium, kinetics, electrochemistry, nuclear chemistry, and some organic chemistry.

PHYSICS

This course is a classical physics course that introduces students to a quantitative method of looking at the physical world. Topics covered include motion, mechanics, Newton's Laws, forces, energy, momentum, light, reflection, simple harmonic motion, fluids, waves, sound, and thermodynamics.

Technology along with problem solving using math (algebra + basic trigonometry) are incorporated to gain well-rounded knowledge of physics concepts. Hands-on lab activities will be conducted to demonstrate topics learned in class and develop data analysis and interpretation skills.

AP PHYSICS I

In this course students will explore the first semester of college physics. The main principles of study will be Newtonian mechanics (including rotational motion); work energy and power; mechanical waves and sound; and simple circuits. This course will encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about the physical world.

Students will establish lines of evidence and use them to develop and refine testable explanations and predictions of natural phenomena. Twenty-five percent of instructional time will be devoted to hands-on laboratory work with an emphasis on inquiry-based investigations.

AP PHYSICS II

In this course students will explore the second semester of college physics. The main principles covered are fluids, thermodynamics, electricity, magnetism, optics, and topics in modern physics. Students will focus on disciplinary practices, which promote a more engaging and rigorous experience.

The students will use representations and models to solve problems, plan and implement data collection strategies, and engage in scientific questioning to extend thinking. Twenty-five percent of instructional time will be devoted to hands-on laboratory work with an emphasis on inquiry-based investigations.

AP PHYSICS C: ELECTRICITY AND MAGNETISM

Explore concepts such as electrostatics, conductors, capacitors and dielectrics, electric circuits, magnetic fields, and electromagnetism. You'll do hands-on laboratory work and in-class activities to investigate phenomena and use calculus to solve problems.

AP PHYSICS C: MECHANICS

Explore concepts such as kinematics; Newton's laws of motion, work, energy, and power; systems of particles and linear momentum; rotation; oscillations; and gravitation. You'll do hands-on laboratory work and in-class activities to investigate phenomena and use calculus to solve problems.

ENGINEERING

This course will cover the engineering concepts, engineering problem-solving and design that are common to the study of the major fields of engineering: chemical, civil, mechanical, and electrical. While mathematics is central to the study of engineering, only basic algebra will be needed to understand the material.

Topics covered in the course will be basic mechanics of forces and dynamics of simple systems, mechanics of materials, heat and fluid flow concepts, simple engineering calculation methods, fundamentals of electricity and magnetism, and a review of chemical principles.

ENVIRONMENTAL SCIENCE

This course examines environmental issues that are of global and national concern. Included are discussions on human population growth, energy resource use, global climate change, and effects on biodiversity. Both sides to issues are presented along with the economic impact of addressing the problem.

A major research paper or project presented to the class on a topic of student interest is required. Participation in field trips is required. Lectures and discussions are supplemented with recent newspaper and magazine articles, videos, DVDs, computer simulations, and laboratory activities.

WORLD & MORDEN LANGUAGES

The aim of the department is to expose students to the classical and modern languages in the liberal arts tradition of a college preparatory school. The programs in the department are directed towards language learning and acquisition skills and the observation and appreciation of cultures.

Students at all levels practice communication skills through authentic media, including regular use of a language lab. Our students learn how other languages work and see how English is tied into a universal linguistic and cultural phenomenon.

FRENCH I

This beginning course stresses the development of the four language skills: listening, speaking, reading, and writing. Students concentrate on learning the foundations of the French language, including vocabulary, idiomatic expressions, and grammar structures. Students are introduced to the culture of France and French-speaking countries.

FRENCH II

French II continues to develop the four language skills: listening, speaking, reading, and writing. The focus is on the increasing acquisition of thematic vocabulary, grammar structures, and verb tenses. Students continue to study French culture with an emphasis on Paris through the use of authentic materials.

FRENCH III

French III emphasizes interpersonal exchanges and the use of more complex sentence structures, tenses, and vocabulary. Students continue to study French society and culture through a variety of authentic sources. The honors class covers the French III curriculum at an accelerated pace with additional readings, vocabulary, and grammar. The study of grammar is detailed and in-depth. Students are expected to write and speak French on a regular basis.

FRENCH IV

French IV includes an in-depth review and study of French structures, grammar, and vocabulary. A major focus is placed on improving listening, speaking, reading, and writing skills through study and discussions of different aspects of French culture and geography.

The honors course is a preparatory course for AP French, which focuses on grammar and vocabulary in the context of the four language skills: listening, speaking, reading, and writing. To this end, we use authentic materials from literature and media from France and French-speaking areas of the world. The course is conducted primarily in French.

AP FRENCH LANGUAGE AND CULTURE

This course focuses on increasing proficiency in the four language skills through review of grammar and exposure to authentic documents. The course involves extensive readings and discussion of works around the six integrating themes required from the AP College Board. The class is conducted entirely in French. Students take the AP French Language and Culture examination in May.

SPANISH I

This course is an introduction to the language, culture, and geography of Spanish- speaking countries. Emphasis is placed on the fundamentals of listening, speaking, reading, and writing. Skills are developed through multiple resources. Students learn basic vocabulary and grammar, such as the concept of agreement, pronoun usage, and the present and preterit tenses.

SPANISH II

Spanish II covers grammatical concepts such as pronoun placement and verb tenses and mood. Students continue to build on their vocabulary. They enhance their speaking and listening skills through the use of the language lab; small group projects further help develop speaking abilities. Continued study of customs and the arts throughout the Spanish-speaking world allows students to perfect their reading and writing skills. The honors course covers the Spanish II curriculum in depth and is designed to further develop students' communicative skills by providing them with a strong grammatical base and an expanded vocabulary. Increased emphasis is given to writing and reading, including cultural material, folk tales, and legends.

SPANISH III

This course focuses on more complex grammar and vocabulary. Students learn about Spanish and Latin American culture by reading short stories and articles. Speaking and listening skills are further developed through audio activities and oral presentations. Writing skills are developed through short compositions and dictations on a variety of topics. Class is conducted in Spanish.

The honors course covers the Spanish III curriculum at an accelerated pace with additional grammar, vocabulary, and readings. The study of grammar is detailed and in-depth. Students are required to write dialogs and compositions and to give oral presentations in Spanish on a regular basis. Exposure to authentic language use is advanced through videos, podcasts, and a variety of newspapers and online articles in Spanish.

SPANISH IV

Spanish IV continues the development of the four basic skills of reading, writing, listening, and speaking, with a focus on writing and speaking through the use of a variety of texts and oral presentations. Grammar is reviewed, and students write compositions and dictations on different topics. Videos and audio activities are used to enhance listening skills.

As an extension of the Spanish IV curriculum, the honors course covers authentic literary texts of various genres that provide the context through which a review of grammar is conducted and the acquisition of new vocabulary is attained. A major focus is placed on increasing the proficiency of the four language skills through discussion, giving oral presentations, listening to authentic material, and writing essays. Both Spanish IV courses are conducted in Spanish.

AP SPANISH LANGUAGE AND CULTURE

This course requires a higher degree of proficiency in speaking, writing, listening, and reading. The written skills are reinforced through letter compositions and by writing essays which integrate audio and written DBQS. Formal and informal speaking skills are further developed through discussion, listening to authentic material from media sources, and analyzing Latin American and Spanish cultural products. This class is conducted in Spanish. Students take the Spanish Language and Culture AP examination in May.

ARTS

In accordance with the Mission Statement, the Arts Department provides an environment for an increased understanding of self, artistic and creative talents, and our relationship to other people and the world.

Students are required to take one credits of Fine to meet graduation requirements.

FOUNDATIONS OF ART

This course is a prerequisite for all students interested in taking more than one year of Visual Arts. Students interested in pursuing an Advanced Placement Studio Portfolio in their junior or senior year will need to enroll in this course. It is a studio art course divided into four one-quarter rotations.

In this exciting art and design course, students will experience a variety of three-dimensional and two-dimensional studio processes. These processes may include ceramics, photography/digital, printmaking, drawing, painting, two-dimensional design, and other methods to be determined.

Traditional studio materials, digital cameras, scanners, printers, and Adobe Photoshop software will be used in creating artwork. Critiquing skills will be developed. Works created in this course might be considered for an Advanced Placement portfolio.

STUDIO ART II

In the fall semester, this intermediate-level studio course will focus on the continuation of the development of observational and technical drawing and painting skills. Students will utilize a variety of media and techniques.

In the second semester, students will be introduced to the computer as a tool in developing drawings, paintings, and two-dimensional designs. Students will utilize various programs such as Adobe Photoshop, Illustrator, and Google SketchUp. Critiquing skills will be developed throughout the year.

STUDIO ART III

In the first semester, students in this advanced-level studio class will create art that explores color theory, painting, mixed media, and printmaking. Students will create works relating to major movements in art of the 19th and 20th centuries. In the second semester, students will create art that explores drawing, painting, and printmaking. Students will broaden their visual vocabulary of styles and techniques. Critiquing skills will be developed throughout the year.

AP 2-D ART AND DESIGN

This is an Advanced Placement studio class in which students will prepare portfolios of their best original artworks with the requirements outlined by the AP College Board. This course is an advanced-level directed studies studio in which students design and execute their own projects based on a theme of their choice.

Students will prepare a portfolio of artworks with requirements outlined by the Advanced Placement College Board. The portfolio will consist of digital images of the student's own artwork.

The portfolio may be used for college applications, and scholarship applications as well as the College Board AP Studio Art exam. Seniors will plan and execute an exhibition that will take place in the Jennifer and John Eagle Gallery.

AP 3-D ART AND DESIGN

In this advanced level course, students design and execute their own sculpture projects based on the theme of their choice.

Students will prepare a portfolio of artworks with requirements outlined by the College Board's Advanced Placement course description for 3D Design. The portfolio will consist of digital images of the student's own artwork.

Copies of these digital images may be used for college and scholarship applications, as well as the College Board AP Studio Art exam. Seniors will plan and execute a public exhibition including a digital presentation, artist talk, and a reception.

AP ART HISTORY

This course studies 250 artistic pieces pre-selected by the College Board from Ancient Art to Contemporary Art in the 21st Century.

Art from Western (European, American) and Non- Western (Asian, African, Latin American & Oceanic) cultures will be explored in depth. This course emphasizes a deep conceptual understanding of art historical concepts. Students develop an understanding of global artistic traditions and expand their visual and contextual analysis skills through examining works of art from diverse cultures while considering issues of patronage, gender, politics, religion, and ethnicity. This course is designed to prepare the student for the AP Art History test in May.