



**Upper School
Program of Studies
2021-2022**

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Graduation Requirements

The Pembroke Hill curriculum is comprehensive in scope, encompassing a full complement of courses in Computer Science, English, the Fine Arts, Language, Mathematics, Physical Education, Science, and Social Studies. It has been carefully planned so as to foster full and sequential skill development. We believe that this curriculum will ensure that our academic program provides excellent preparation for college, while remaining flexible enough to meet the individual needs of our students.

Pembroke Hill students are required to complete successfully 20 units of academic courses and 1.5 units of Physical Education. Please note that a “unit” in this instance means a full year, or two semesters. In particular, students will be required to complete:

4 years of English, must be enrolled in English each semester.

3 years of Mathematics, must enroll in a year- long Mathematics course each year through the junior year with a minimum completion of Algebra II.

3 years of Social Studies, must complete The World to 1500, The World Since 1500, and American Civilization History.

3 years of Science, Biology is required in 9th grade and Chemistry is required in 10th grade.

3 years of Language, must complete two consecutive levels of the same language. The third unit may be completed by starting a new language.

2 years of Fine Arts, must complete two 1/2-unit courses: a Visual Arts Entry Level Course and either Theatre Arts, Debate I, Acting I or Exploration in Music. The remaining 1 unit may be completed in either Performing or Visual arts offerings.

2 years of electives

1.5 years of Physical Education, must earn 1.5 units through our athletic program and/or our Physical Education program.

Community Service, all upper school students must complete a minimum of **60 hours of community service** by the last day of senior exams in the upper school in order to be eligible for a diploma.

Program Options

The Program of Studies has been prepared to assist students and their parents in planning an academic program for the upper school. Selections should be made after considering the goals of each student and after consulting with academic advisors and administrators at the school.

Graduation requirements are intended to serve as a minimum standard for a student. All students are required to take five courses each semester, but no sophomore, junior or senior may take more than six classes without advisor and administrative approval. Physical Education does not count toward the five-course requirement. Assuming a normal load, students will graduate with the minimum of 20 units of academic credit; however, most students will exceed the minimum requirement. Students who wish to carry a different academic load may petition the principal for approval.

Personal and career interests should be considered when deciding how many advanced courses to take in each department. We would expect our most capable students, who are interested in applying to highly selective colleges, to take a broad distribution of subjects at the Advanced Placement level. Four-year planning should be done with advisors, taking into consideration academic and extracurricular goals.

Schedule Change Policy

We have found it nearly impossible to schedule students in their courses and, at the same time, attempt to honor student and family requests for a particular teacher. Therefore, we will not accept requests for a specific teacher unless there is a compelling reason. During the advising and course planning process, an advisor, teacher, or parent can make a request in writing for special consideration. This request should include the compelling reason for special review and be signed by the parents and the advisor.

If scheduling has already occurred, requests for change will be divided into categories:

- (1) **Mandatory:** *scheduling error, graduation requirement. These will be changed as soon as possible.*
- (2) **Desirable:** *administrative or teacher change to maintain class balance, gender balance, etc.*
- (3) **Discretionary.** [Note: *A request to move from a smaller class to a larger class will not be honored.*

If a problem occurs after the first day of classes, a request for change can be made if parents, advisor, college advisor (if a senior), and the appropriate department chair agree that there is a compelling reason. Changes will be considered only during the first days of each semester for semester-long courses, and during the first days of the school year for year-long courses.

No student may enroll in any course after the first mid-quarter of the semester, nor may any student withdraw from a course after the completion of one quarter.

Advanced Placement and Accelerated Courses

Each department has established criteria for student enrollment in Advanced Placement sections. Students enrolled in A.P. sections are expected to take the A.P. examination unless exempt upon appeal to the teacher, the department chair, and the principal.

* Juniors enrolled in A.P. courses are expected to have a second semester final evaluation. Seniors will follow the senior exam policy.

Students are assigned to sections in English, language, and mathematics courses by the faculty and department chair. Students should consult with their language and mathematics teachers to determine the appropriate section in which to enroll.

*A.P. exams cost approximately \$90 per exam. Parents will be billed through the business office.

Independent Study for Credit

Independent study is an option available to students, not as a substitute for courses offered, but as an opportunity to pursue an interest in-depth or to study an aspect of a discipline not available through the existing curriculum. Students interested in independent study must obtain the cooperation of the teacher or teachers with whom they wish to work and submit a written proposal to the Academic Dean. The proposal must include:

- a) a clear statement of goals;
- b) a detailed explanation of ways to meet those goals;
- c) the signatures of the college counselor, the department chair and the teacher or teachers supervising the project;
- d) the time to be allocated to the project and;
- e) the credit desired, if any.

The Upper School Academic Dean, the chair of the appropriate department, and the cooperating teacher(s) will constitute an *ad hoc* committee that must approve the proposal. Final approval for independent study credit must be granted by the principal.

Independent Study, Non-Credit

Non-credit independent study projects can be short or long term (from one week during Jan-term to a full year) and take a variety of forms: A student may pursue a special interest in-depth, work in the community, shadow a professional, teach a mini- course, or pursue any number of other possible interests.

Students must be sponsored by a faculty member and submit their project proposal to the head of the Independent Study Committee for approval. Projects culminate with a reflection paper and oral presentation. Exemplary independent study projects are recognized at the year-end Awards Assembly.

Community Service & Engagement

Pembroke Hill students are imbued with the responsibility to do good for the *benefit of all*. To this end, we envision community service as *engagement*- engagement with the community at large and within the Pembroke Hill School. Engagement is premised upon relationships that are both mutually beneficial and long-term. It is our goal to cultivate meaningful opportunities that ground classroom knowledge with real- world issues, believing that exposure results in greater awareness and compassion.

From our Early Years program, nested in a Reggio Emilia approach, to Upper School community engagement, experiential opportunities are woven into the fabric of engagement both inside and outside of school, reflecting the foundational inspiration of John Dewey’s experiential, hands-on approach. This approach, too, extends contemporary models of service learning where “students use academic knowledge and skills to address genuine community needs.”

In the spirit of engagement, students are encouraged to actively *engage in direct* experiences with *interpersonal contact*, to serve those *in need* and to *step outside* of their comfort zones of familiarity. Our graduates complete at least 60 hours of service over four years, of which 40 hours must be outside of Pembroke Hill. For transfer students, at least 15 hours of service is required per year. Most of this work will take place with a nonprofit organization. There are many worthwhile volunteer and service needs but not all qualify for credit under the Pembroke Hill vision of community engagement. Hours will not be awarded for meeting time, fundraising, or religious practice (eg, acolyte). Hours earned in pursuit of another goal (eg, Scouts) do not simultaneously count towards the Pembroke Hill requirement.

Service hours will be tabulated each semester and will be reported on semester report cards. We employ a digital service hour tracking platform, x2VOL, and it is the student’s responsibility to enter and update their service hours in a timely manner. Hours may be submitted up to one year (June 1 to May 31). Recognition for the President’s Volunteer Service Award will occur every May; therefore, hours must be submitted with ample time in order to receive this recognition.

**The Pembroke Hill School
Graduation Requirement Worksheet**

Student's Name _____

Advisor's Name _____

Subject	Grade 9	Grade 10	Grade 11	Grade 12
English (4 years required)	English 9	English 10	American Civilization English	AP English 12
Mathematics (3 years required)* *4 units strongly recommended or required by many colleges/universities				
Social Studies (3 years required)	World to 1500	World Since 1500	American Civilization History	
Science (3 years required)* *Physics or AP Physics 1 is strongly recommended as the 3 rd unit	Biology or Accelerated Biology	Chemistry or Chemistry Accelerated		
Foreign Language (3 years required—2 of which must be consecutive levels of the same language)				
Fine Arts (2 years required, including one semester of Visual Art Entry Level Course and one semester Performing Arts Entry Level Course. The remaining 2 semesters may be completed by taking any combination of Performing and/or Visual arts offerings)				
Electives (4 semester courses required. May come from any department where student has exceeded graduation requirement)				
Physical Education (1.5 years)*	Concepts of Physical Fitness (0.75 units)	Lifetime Physical Fitness* *If student did not participate in PHS Athletics/P.E. Independent Study in Grade 9		
Notes:				

ADDITIONAL UPPER SCHOOL CURRICULUM AND SCHEDULING INFORMATION

- Students need **21.5 total units** to graduate from Pembroke Hill (20 academic units and 1.5 units of Physical Education). Please note that a “unit” is a full year, or two semesters.
- In addition to the academic requirements spelled out on the reverse, students must complete **60 community service hours** in order to graduate (5 hours must be completed each year regardless of a student’s accumulated hour total)
- Students must be enrolled in a minimum of 5 courses, and a maximum of 7 courses, each semester. NOTE: Independent Study courses taken for credit and Global Online Academy (GOA) classes each count toward this total.
- No sophomore, junior or senior may take more than 6 courses per semester without advisor and administrative approval.
- **Physical Education** – P.E. does not occupy a “class period,” per se, in a ninth grader’s daily schedule. All 9th graders are enrolled in “Concepts of Physical Fitness” and they receive 0.75 P.E. credits for the successful completion of this class (consisting of regular lectures delivered during Meetings Period and two 30-minute workouts per week—completed during study hall and/or after school). Students must then satisfy the remaining 0.75 units of the P.E. requirement by playing a PHS sport(s) or by enrolling in “Lifetime Personal Fitness” for 3 additional quarters.

Four-Year Choir or Four-Year Band Students – A four year commitment to Choir or Concert band is recommended for the most rewarding experience. Students committing to the four year experience are not required to take a Foundation Performing Arts class (Theatrical Arts/Music Exploration, Debate I, Acting I or Dance). Four-year choir and four-year band students need only complete one additional semester course in the Visual Arts to satisfy their Fine Arts graduation requirement. If a student chooses to drop Choir or Concert Band within the first two years, they will be required to complete a Foundation Performing Arts course.

*A student is welcome to join Choir or Concert band after their freshman year, with the approval of the Choir/Band Director.

The Library

The Kemper Library provides materials that enrich and support the curriculum. Through small groups and individual instruction, students are introduced to the many resources available to them, including specialized reference works, a variety of online databases, scholarly journals, the book and film collection, and the collections of other libraries in the community and beyond.

The library program strives to equip students with skills that enable them to become independent researchers, competent in locating and using a variety of information sources. Throughout their four years in upper school, students develop and practice research skills in conjunction with a variety of classroom assignments across the curriculum. They are coached and guided in how to map out effective, logical strategies for gathering information relevant to their research topics that include learning how information is organized and successfully retrieved in the library.

Literature appreciation is an important component of the library program. The Summer Reading List, on the Pembroke Hill website, offers titles recommended by the faculty in addition to the required work of literature for each grade level. As opportunities become available, students have the chance to meet and listen to visiting authors read and discuss their literary works.

Our school motto, Freedom with Responsibility, embodies the uniqueness of a school library environment where students experience more freedom and autonomy in responsibly self-directing their academic studies.

Computer Science and Technology

In today's world, computer science and technology touch every aspect of our lives. Programming, software development and engineering have long since moved out of the lab and into every field from medicine, banking and exploration to commerce, entertainment, and sports, to name only a few. With that in mind, the Pembroke Hill Computer Science and Technology program seeks to prepare graduates for any path they might take in their study of this discipline, from building and maintaining systems, to writing apps and shaping user experience, to creating robots to solve problems.

There is no computer science requirement for graduation.

AP Computer Science

(Full Year)

Prerequisite: Intro to Java, Python, or Bioinformatics

AP Computer Science is designed around the AP Computer Science A exam and 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, approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes object-oriented and imperative problem solving and design using the Java language. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems.

Engineering through Robotics

(Fall or Spring)

Counts toward one semester of Science graduation requirement.

Robotics combines principles of physics with mechanical engineering, electrical engineering, and computer programming to create physically embodied, artificially intelligent agents that can take actions that have effects on the physical world. This hands-on course will introduce students to the basic elements of robots, including DC motors, wheels, gear assemblies, servos, circuit boards, batteries, and software. Topics will include planar and spatial kinematics, motion panning, mechanism design, control design, actuators, and sensors. Students will be graded on classwork, quizzes, tests and group projects.

Introduction to Python: Bioinformatics

(Fall or Spring)

Counts toward one semester of Science graduation requirement.

Bioinformatics introduces students to the fundamentals of computer programming by using Python to analyze and interpret biological data. Programming topics include variables, data types, conditional statements, control flow, algorithms, classes, lists, and dictionaries. These skills will be applied to real-world, concrete, scientific scenarios such as unit conversion, taxonomy, bacterial growth and decay, chaos theory, genetics, genomics, proteomics and physiology. Students will be evaluated on classwork, programming challenges, projects, tests and class participation. Students who complete this course will meet the prerequisite for enrollment in AP Computer Science A.

3D Design & Printing

(Fall or Spring)

With applications in art, design, engineering, manufacturing, and medicine, 3D printing will be a relevant subject for many years to come. In this course, students will explore the implications of 3D printing as one of the most exciting innovations in recent decades, will learn how to use OnShape, a web-based 3D modelling software, to design and create 3D printing projects, and become familiar with the mechanics of actually printing each of their projects in PLA plastic on our Josef Prusa printers.

English

In Upper School English classes, our students continue to develop the skills to read closely and to defend plausible interpretations of a text. Using literature as the vehicle, we teach students to be critical thinkers. At each grade level, students experience complex texts across all genres, including poetry, drama, fiction, and nonfiction. Students hone their skills in literary analysis through Socratic-like discussions that invite students to excavate details, identify incongruities, and theorize motives. Often using these discussions as a springboard, students will write eight-to-ten essays per year, both in class and out of class. Since there are no miracles when it comes to writing, teachers spend significant time working with students on grammar, punctuation, diction, sentence construction, and paragraph organization.

In the first three years, students take year-long English courses. With each year, they are challenged with more nuanced and sophisticated works of literature that require them to formulate analytical arguments of increasing levels of complexity. Teachers incorporate some type of research that includes outside sources, such as literary criticism. As a result, students move beyond the classroom discussions to enter the broader intellectual conversation. Another frequent requirement at any level involves public speaking. Whether short, impromptu speeches, seminar discussions, or thirty-minute senior Capstone presentations, students practice their oral presentation skills in front of their peers. Seniors choose an elective for their first semester then take the Capstone class during the second. Similar to undergraduate courses, first semester senior electives consist of more focused topics such as a genre, a thematic idea, or a specific literary era. For the Capstone semester, seniors propose an individualized research project that serves as the culmination of their four years of research, writing, and oral presentation skills for the department.

English 9

The ninth-grade year is a critical one: it is a year of transition and a year of beginning. The groundwork laid in middle school—in grammar, mechanics, vocabulary, writing, discussion skills, reading and research—is reinforced. The Hacker Manual is introduced freshman year to reinforce skills for proper style, grammar, and MLA citation and is used as a guide for all four years in the Upper School. Students experiment with a variety of styles and forms in analytical writing, beginning with the paragraph level and building toward full-length papers in the first semester. Teachers then challenge students to write in more sophisticated ways, edging away from the formulaic constructions of the five-paragraph essay. In order to prepare students for the concentrated emphasis on literary analysis in the Upper School, the ninth graders develop the vocabulary and techniques of argumentation. From the outset, teachers will cover the basic components of claims, reasons, evidence, and underlying assumptions that constitute clear and effective persuasive writing. From there, students make the natural progression to literary argumentation while exploring a variety of works and genres, both classic and contemporary.

English 10

In tenth grade, students continue to move from the concrete details of plot summary to the abstract interpretations of theme, character, symbol, and metaphor. Through exploration of different literary theories and modes of interpretation, students construct and deconstruct different philosophies of art, society, and nature. Students also are introduced to literary criticism as a genre and are challenged to engage with scholars' arguments about the works they read and to respond with their own original arguments. Via the study of a variety of genres and critical perspectives, students encounter classic and contemporary texts through lenses as varied as Freudian theory, gender criticism, formalism, and a variety of philosophical perspectives.

American Civilization (English 11)

Although not necessarily taught chronologically, the junior year in English touches on the development of the American voice in literature from American Indians and colonists and reaching into the twenty-first century. The course explores themes in literature and culture through a variety of genres and classic and contemporary texts, with an emphasis on the multitude of voices, philosophies, artistic styles, and people who have contributed to U.S. society. The course builds on the skills emphasized in the ninth and tenth grade years, further developing the student's ability to engage in close reading and to formulate analytic arguments in writing. Junior year has a special emphasis on understanding and employing rhetorical devices, engaging more critically with different schools of thought, and providing opportunities for growth as a researcher and public speaker. Students may choose to take the AP Language and Composition exam at the end of junior year.

AP English 12

The senior year is the culmination of all that Pembroke Hill students have learned in the previous three years of English courses. The literature is complex, the discussions are nuanced, and the writing assignments are more layered, often including secondary sources and literary criticism. First-semester courses offer seniors a choice of one four classes that focus on a genre, format, or theme that prepares students for undergraduate English courses with a more intensive study of a specific topic in literature. As with undergraduate courses, seniors will have a different teacher for the second semester through the Capstone research project. The Capstone is a semester-long project in which students are guided through a multi-step process to research, write, and present a topic of personal interest that may not be covered in the traditional curriculum. Because the rigor of the senior coursework is comparable to AP curriculum, all seniors will be classified as taking AP English and may choose to take the Literature and Composition exam at the end of the year.

Senior English Courses Fall Semester of 2021

Word and Image

Students in this semester-long section of AP English will study the history and contemporary prominence of the graphic novel. What vocabulary, concepts, stylistics and theoretical content are unique and vital to this medium? How do authors and artists manage the aesthetic layout of the page along with the written word to do more than either could do on their own? Along with reading a core selection of seminal comics and graphic novels from various genres, students will investigate historical and theoretical content about the development of graphic literature. While no artistic talent or prerequisites are required, students who take the course should be open and enthusiastic about making their own images and graphic content. The class will culminate with a creative project that will find students writing their own content and making zines.

World Building through Words

Most of us associate the concept of world building exclusively with science fiction and fantasy, where people expect paradigms to shift and spaces to morph, but this class explores how we are always in the process of building our world. The words we choose and use matter—literally. They make things: dreams, ideas, laws...so let's see what we can build with some intention and invention. All genres are fair game in this course, but there will be an emphasis on poetry and condensed forms of fiction, both in terms of what we read and create. The semester will work toward building a world of your own words, so where will you take us?

Literature and Film: Even Better Than the Real Thing?

What is the purpose of fiction and film? Using this question as the starting point, the class will explore both genres, individually and side by side. Those in the Realist camp have argued that well-told stories are intended to reveal the world as it exists, so that we can understand ourselves and others better. On the other end of the continuum in film, Formalists focus on the creator's vision, which may have little to do with reality. In this class, we will look at both approaches to constructing narratives through reading fiction and comparing those stories to ones in film. As we investigate both theories, the seniors will give birth to their own story by drafting a short, original screenplay. If time allows, one of the student's screenplays will be chosen and transformed into a short film and posted for the world to watch.

Reflections on American Culture and Identity

For this course we will closely examine literature written by authors who have immigrated to the United States. We will focus not only on the immigration experience itself, but on immigration as part of the fabric of American identity. What does it mean to be an American when considering power, culture, and privilege? We will examine rhetorical devices used to house these conversations and examine our place in this discussion. We will also focus on personal essays, poetry, stage productions, short stories, critical literary analysis, and written creative expression.

Spring Semester of 2021-2022

Capstone Course

The last semester of the senior year is devoted to the Senior Capstone Project. During this semester, the Senior Capstone Project is an opportunity for each student to explore in depth a topic of interest in a traditional research format, with an experiential element as well. The English Department looks to the Senior Capstone Project as a means for every student to work within multiple disciplines using a variety of research methods, including a field expert and personal experience, to explore an essential question and provide an actionable proposal that often has stakeholders in the local community. Students will read and take notes from peer-reviewed journals; they will identify trends and contradictions through collaboration with faculty and peers; and they will explore areas of academic interest to pursue further in the future. The two final requirements for this course are as follows: a formal essay and an oral presentation on their Senior Capstone Project to faculty, students, and parents.

Fine Arts

Both Performing Arts and Visual Art departments offer entry-level courses. The Performing Arts Department offers Music/Theatre Arts Exploration, Acting I, Creative Movement & Dance, Debate I. The Visual Arts Department offers Ceramics I, Drawing I, Photography, and Visual Art. Each semester course fulfills the 1/2 credit introductory requirement in each area. All sections are offered fall and spring and may be taken in whichever order is preferred. The only exception to this is Debate I, which meets only in the fall to allow students to participate in the debate season. These courses are available to upperclassmen but are highly recommended for freshmen and sophomores.

Upon completion of the entry-level course in the respective arts area, students will have the opportunity to enroll in specialized courses in that area. Exceptions to this sequence will be explained in the Performing Arts and Visual Art sections. Students may take a specialized course a second time with teacher approval and a grade of B+ or better. No one may repeat a visual or performing arts class for a third time. Independent work for advanced students may be allowed with departmental approval.

Those students who have a passion for the Fine Arts and have the dedication to develop their artistic talents will find faculty excited to partner with them in their pursuits. The Fine Arts department has a wide variety of options with robust curriculum to challenge students throughout the 4 years at Pembroke Hill.

Performing Arts

The philosophy of the Performing Arts branch of the Fine Arts Department is: To promote a lifelong appreciation and support of the arts through the development of skills, knowledge, and experiences. To develop self-esteem through artistic expression and aesthetic awareness in the performer and the non-performer alike. To meet students at their individual artistic levels, whether beginning or advanced. Collaborative ensemble work is equally developed. Academic course work in areas of music, theatre, and speech/debate is offered to widen a student's understanding and appreciation of the performing arts.

Entry Level Foundations Courses:

Theatre Arts/Music Exploration

Acting I

Creative Movement/Dance

Debate I

Upon completion of any of these courses, students can enroll in our more specialized offerings.

Theatre Arts/Music Exploration (Entry Level Course) (Fall or Spring)

This course serves as an introduction to the theatrical arts and music, disciplines to be explored on their own and as natural complements. The music component explores the evolution of music over time, transforming the subjective to the objective for a lifetime of listening. Bring your ears and an open mind! The theatre arts portion covers theatre as a collaborative and expressive art form. Basic techniques of script analysis, character development, dramaturgy and design will be introduced, in addition to the verbal and non-verbal communication skills necessary for any public platform.

Acting I (Entry Level Course) (Fall)

This course is designed to introduce the fundamentals of acting through ensemble, scene partner and solo work. A focus on storytelling, character development and collaboration yield greater presence and expressive communication. The course includes creative lecture, discussion, exercise, improvisation, script analysis, scene and monologue work.

Dance and Creative Movement (Entry Level Course) (Fall)

This course is designed to explore the physical techniques of dance and creative movement as a performing art. Students will work in a studio, warming up and building technique across a range of dance styles. Choreography will be taught by instructor, guest instructors and fellow students. Improvisational, character movement and non-verbal communication will also be explored. Academic writing and research will accompany the course. **course credit may be applied to Performing Arts OR Physical Education, but not both.*

Debate I (Entry Level Course) (Fall)

This course will serve as an introduction to the basic elements of competitive speech and debate. Students will have the opportunity to study Public Forum, Policy, and Lincoln- Douglas styles of debate. Additionally, students will be exposed to foundation elements of Extemporaneous Speaking, Student Congress, and other individual events--including acting events. Specific attention will be paid to universal debate theory, argument construction, flow- sheeting, presentation techniques, audience adaptation, and research methodologies. Students will be required to participate in a minimum of three interscholastic tournaments during the semester.

Upper School Choral & Band Performing Groups:

The Pembroke Hill Choirs have a long tradition of excellence. These groups have the opportunity to perform three concerts, as well as Handel's *Messiah*, each year. Participation in festivals, contests, and special trips are also part of the choir year.

Four-Year Choir or Four-Year Band Students – Students who intend to remain enrolled in Choir or Concert Band for their entire Upper School careers are allowed to skip the Foundation Performing Arts classes (Exploration in Music, Debate I or Theatre Arts). Four-year choir and four-year band students need only complete one additional semester course in the Visual Arts to satisfy their Fine Arts graduation requirement. Any student who chooses to drop Choir or Concert Band prior to completing the four-year sequence, however, is then required to complete a Foundation Performing Arts course.

The Pembroke Hill Varsity Treble Choir (Full Year)

Enjoy making music as a team in the PHS Varsity Treble Choir! Freshman through seniors of this group will have opportunities for positions of leadership within the context of the choral ensemble. The PHS Varsity Treble Choir will explore and perform choral music of all different genres, styles, and difficulties throughout the year. Emphasis will be placed on music reading, blend of voices, *a cappella* singing, being part of an ensemble, and paying attention to fine detail in music. While repertoire written for soprano and alto voices will be focused on, this group will join the Varsity Bass Choir at various points throughout the year for performance of SATB selections. Excellence in both the rehearsal and performance processes will define the goals of the ensemble. For questions about the Varsity Treble Choir, please contact Jackson Thomas (Upper School Choral Director) at jthomas@pembrokehill.org.

The Pembroke Hill Varsity Bass Choir (Full Year)

Enjoy making music as a team in the PHS Varsity Bass Choir! Freshman through seniors of this group will have opportunities for positions of leadership within the context of the choral ensemble. The PHS Varsity Bass Choir will explore and perform choral music of all different genres, styles, and difficulties throughout the year. Emphasis will be placed on music reading, blend of voices, *a cappella* singing, being part of an ensemble, and paying attention to fine detail in music. While repertoire written for tenor and bass voices will be focused on, this group will join the Varsity Treble Choir at various points throughout the year for performance of SATB selections. Excellence in both the rehearsal and performance processes will define the goals of the ensemble. For questions about the Varsity Treble Choir, please contact Jackson Thomas (Upper School Choral Director) at jcthomas@pembrokehill.org.

The Pembroke Hill Madrigal Singers (Full Year)

Prerequisite: Formal audition with Director of Choirs and acceptance into the ensemble.

Madrigal Singers is a select choir of SATB voices offered by **audition only**. Membership will be comprised of sophomores, juniors, and seniors. Independent preparation and personal commitment to the ensemble are required as Madrigal Singers serves composers, performers, and listeners by presenting choral performances of the highest quality possible. The following vocal/musical skills for ensemble singing will be stressed: proper vocal production, blend and balance, sight-reading proficiency, ear training, expansion of range, technical facility, a cappella singing, and dynamic nuances. Various languages and genres will be incorporated in the repertoire, designed to challenge and perfect the musicianship of every member. Excellence in both the rehearsal and performance processes will define the goals of the ensemble. Homework (practicing) will vary with the individual.

The Pembroke Hill Concert Band (Full Year)

The Pembroke Hill Upper School Concert Band is available to all students grades 9-12, who play woodwind, brass, or percussion instruments and are seeking music performance opportunities. This year-long elective provides a creative and educational environment for upper school instrumental music students to develop successful sight-reading, ensemble, and music performance skills. Performing experiences include Concert Band, Jazz Ensemble, Pep Band, and Chamber Music Club.

Upper school band students will develop their musicianship through regular rehearsals and performances scheduled throughout the school year. In addition to two required concert performances (winter and spring), the ensemble will travel, perform, clinic, and listen to other ensembles in the Kansas City Metropolitan area.

Performing Arts Semester Course Offerings:

Music History (Fall)

Prerequisite: Exploration in Music or Departmental Approval

This course is an in-depth study of styles, forms, and composers of music. Students will discover the chronology of music from Gregorian chant up to the beginning of the Twentieth Century. We will explore the evolution of music, as well as many aspects of music that have remained the same for hundreds of years. Students will gain knowledge of the major composers, pieces, and events that have shaped the music we know today. This course is offered every year in the Fall.

Music Appreciation (Fall)

Prerequisite: Exploration in Music or Departmental Approval

Do you like chant? How about Bach? Mozart? Beethoven? What about Pearl Jam? Did you know that

they all used the same things to write their music? Do you want to find out what those things are? This course has everything from Palestrina to Presley, Bach to the Beatles, Mozart to Dave Matthews. If you feel like learning the ABC's of what makes music what it is, bring your ears and an open mind and find out! This course is offered every other year in rotation with Music Theory I.

Music Technology (Spring)

Prerequisite: Exploration in Music or departmental approval

This semester long course is intended to provide students a platform for expressing their musical creativity and interests. Students will learn how to write, arrange, compose, loop, and manipulate sound using their Surface Pros or MacBooks. Assignments and units will be project based and most work will take place during class time. Whether you're an advanced musician, someone interested in the technical side of music, or simply interested in exploring the world of music writing, this class is for you.

Acting I (Fall)

This course is designed to introduce the fundamentals of acting through ensemble, scene partner and solo work. A focus on storytelling, character development and collaboration yield greater presence and expressive communication. The course includes creative lecture, discussion, exercise, improvisation, script analysis, scene and monologue work.

Acting II: Advanced Scene Study (Spring)

Prerequisite: Acting I or Instructor Approval

This course is designed to build upon the knowledge and skills established in Acting I and help students develop an individual approach to acting. Specific attention will be paid to movement, research, and period styles from a variety of historical contexts from Commedia Dell'Arte and Shakespeare to contemporary genres.

Theatre Lab (Fall)

Prerequisite: Theatre Arts, Acting I or Instructor Approval

In this student-driven course, creativity, writing, experimentation and collaboration are the focus. Students will co-write, direct, design and perform. They will explore various styles and techniques of ensemble work that culminates in an end-of-semester production for the Pembroke community.

Elements of Theatrical Design (Fall or Spring)

Prerequisite: Theatre Arts

This course is designed to build a fundamental understanding and application of theatre's technical elements. Students will have the opportunity to delve deeper into areas of interest including set/scenic design, lighting, sound, stage management and costume design. They will have opportunities to explore a creative process from concept to pitch, to development and production. During this course, students have the opportunity to apply their developing skills as collaborators on the upper school musical and spring play.

Movie Making (Spring)

The class is designed for students interested in digital storytelling, cinematography, producing, acting, and the editing of short films. Students will learn the basics of filmmaking, working in groups to develop their own original short films and are expected to act and crew in numerous on-camera exercises for their fellow classmates.

Musical Theatre Lab (Fall)

Prerequisite: Theatre Arts, Acting or Departmental Approval

This course is for the student curious about the many facets of Musical Theatre: it's history as an American art form; the classics of Gershwin, Rodgers & Hammerstein to Pacey and Paul of today. Students will work on their craft, warming up voice and body in every class. They will build group and solo numbers as triple threats: actor/ singer/ dancers. They will have the opportunity to meet professionals in the community and build a repertoire of audition material and audition skills. The course will culminate in a cabaret-style showcase of the students' work.

Debate II (Full Year)

Prerequisite: Debate I

This course will build upon the knowledge and skills developed in Debate I. Intermediate debate theory and practices will be addressed, in addition to Intermediate presentation and research techniques. Specific attention will be paid to intermediate theory and techniques of Extemporaneous Speaking, Original Oratory, and Student Congress, in addition to other individual events. Students will be expected to prepare both a debate event and at least one individual event for tournament competition. Students will be required to participate in a minimum of five interscholastic tournaments between October and February.

Advanced Debate (Full Year)

Prerequisite: Debate II

This course will build upon the knowledge and skills developed in Debate II. Advanced debate theory and practices will be addressed, in addition to advanced audience adaptation techniques, extensive original research, and advanced argument construction. Specific attention will be paid to advanced theory and techniques of Extemporaneous Speaking, Original Oratory, Student Congress, and Public Forum. Students will be expected to prepare both a debate event and at least two individual events for tournament competition. Students will be required to participate in a minimum of six interscholastic tournaments between October and February.

Visual Arts

The intent of the Visual Art program is to develop visual thinkers and to encourage creative problem solving through idea generation; ideas are implemented using structured and sequential learning. The art curriculum is designed to develop unique mental capabilities, which foster flexible, divergent, original, fluent, and imaginative thinking. Students are engaged in making art, looking at and reflecting on art through analysis as well as learning about the cultural, social, and historic context of art.

Students of any interest or ability level will gain aesthetic awareness and develop perceptual and analytical skills. Students expand their ability to express themselves through a variety of visual media and practice discussing the formal and conceptual elements of art.

Visual Art Semester Course Offerings

Ceramics I or II (Entry Level Course) (Fall or Spring)

This semester course introduces students to a variety of clay-building techniques. Students will apply methods—including coil, pinch, slab, and wheel-thrown—appropriate for solving particular design problems. Concerns of both sculptural and functional forms will be investigated. This course emphasizes applying principles of design essential to three-dimensional art. A variety of finishing and glazing techniques will be explored. The historical evolution of ceramics is studied as a framework for developing designs and processes. Students who complete the course with a grade of B+ or better may take the class a second time.

Drawing I or II (Entry Level Course) (Fall or Spring)

Drawing is approached as a skill based on perception and hand-eye coordination. Students will gain basic knowledge of wet and dry media. They will successfully execute contour line drawing, gesture drawing, and value drawing techniques. Student work will explore the challenges of drawing with a variety of media and subject matter. They will understand the visual perceptions: Line quality, Value, Composition, and Space. Students will differentiate among representational, abstract, and conceptual approaches to art. They will also develop the ability to recognize major periods, artists, and works of art, and the ability to analyze and critique a work of art using the formal language native to visual art. Students with a grade of B+ or better may enroll in Drawing II for more advanced drawing experiences. It is expected that work produced in Drawing II will be more self-directed, larger in scale, and of more sophisticated technique.

Photography (Entry Level Course) (Fall or Spring)

This semester course is a complete introduction to the 35 mm of photography. SLR camera techniques, black and white film developing, and print processing are covered in depth. Some digital photography and processing are also included. Projects are designed to emphasize creativity, composition, and technical processes.

Students do not need to provide their own camera for the course but are welcome to use their own if desired. Students will sign out cameras and other equipment for use with each assigned project, with the understanding that it must be cared for and used properly. Students must also furnish film, print

paper, and other minor materials available at the PHS bookstore. Students must provide their own transportation for travel to shooting locations in various parts of the city after school and on weekends; signed transportation forms must be updated for participation in class field trips.

Visual Art (Entry Level Course) (Fall or Spring)

In this non-media specific studio art course, students will learn to see and think like artists, developing technical skills in a range of materials and engaging with the language of art. They will develop visual thinking and creative problem-solving skills in diverse art forms. Students will gain understanding of 2- and 3-dimensional approaches through application of elements of art and principles of design. The student's intentional use of content, composition, and craft will be included in assessments as will their demonstrated commitment to the work of the class. Students will develop perceptual skills crucial to visual art and methods of peer and self-evaluation, including methods of visual analysis. Media, techniques, and assignments may vary between sections based on collective student interest and instructor preference.

Advanced Photography (Fall or Spring)

The Advanced Photography course aims to expand upon skills and understanding of the photographic medium learned in Photography I, with an emphasis on students developing a personal, artistic voice through their imagery. Students will pursue advanced techniques and ideas as they work to solve more complex visual problems in photography and will learn more about the art as communication through both the creation of photographs and participation in group critiques. Students will explore aspects of the black and white darkroom, digital camera, and digital darkroom as well as alternative photographic processes. Students who complete the course with a grade of B+ or better may take the course a second time. *A grade of B+ or better in the Photography I course is a prerequisite for enrolling in Advanced Photography.*

Graphic Design (Fall or Spring)

This semester course will introduce students to the tools and practices of graphic design with an emphasis on digital methods of creation. In addition to defining the basic principles and elements of graphic design, students will also develop proficiency with software programs such as Adobe Illustrator and Photoshop. Students will use descriptive vocabulary to identify and examine concepts relating to color theory, typography, composition, project benchmarks, and the design process. Early work will focus on the acquisition of basic skills and the development of proficiency with digital tools. Throughout the course, students will re-examine famous images to uncover principles of effective graphic design. As the semester progresses, students will transition to more independent, project-based learning.

Making Comics I or II (Spring)

How do words and pictures interact to make the symbolic system that we call sequential art, graphic literature, cartoons, or comics? In this course, students will explore this question as they develop their abilities as writers and observers through planned and spontaneous drawing and storytelling. Focus will be on developing the student's drawing, story generation, and 2D design skills as well as mastering the conventions and concerns of the comics medium. Both autobiography and fiction will be explored as content. Activities and assignments will consist of drawing, designing, journaling, and writing, leading to the production of a multi-page original comic. Discussion of comics history and analysis of graphic literature will inform the student's creative work. With a grade of B+ or better, students may enroll in Making Comics II in which they will build on their skills produced work that is more self-directed, longer, and of more sophisticated technique.

Painting I or II (Fall or Spring)

Students will develop perceptual and creative thinking skills through the universal language of painting. Acrylic, oil, and watercolor media may be used in the exploration of still life, landscape, figure, portrait, and non-objective subject matter. Use of the brush and color theory will be stressed as students learn to mix color and value with wet media. Students will develop skills and knowledge of composition by applying the concepts of design and elements of art to their own pieces. Students will experience priming and preparing canvas and paper, experiment with handling the media, and advance through development of various techniques toward personal expression. The study and analysis of historic forms of expression in painting will enrich the students' awareness and provide stimulus for specific painting problems. Students will be responsible for purchasing and cleaning their own brushes. With a grade of B+ or better, students may enroll in Painting II for more advanced painting experiences. It is expected that work produced in Painting II is more self-directed, larger in scale, and of more sophisticated technique.

Silversmithing I or II (Fall or Spring)

Design and fabrication skills necessary for working in sterling silver, copper, and brass will be covered in this course through exploration of techniques such as soldering, constructing, casting, stone setting, forging, enameling or cloisonné. Major emphasis will be on the aesthetics of design and an individual, creative approach with completed drawings to be submitted for each project. Through observation of the works of contemporary metalsmiths as well as those of ancient cultures, students will learn to recognize the unique qualities of metal and its possibilities for their own designs. Students will be responsible for purchasing their own metals and saw blades.

Students who receive a grade of B+ or better in Silversmithing may enroll in the course a second time for Silversmithing II credit.

Visual Art Year-long Course Offerings

AP Art History (Full Year)

Enrollment for qualified sophomores requires instructor approval.

The AP Art History course welcomes students into the global art world to engage with its forms and content as they research, discuss, read, and write about art, artists, art making, and responses to and interpretations of art. By investigating specific course content of 250 works of art characterized by diverse artistic traditions from prehistory to the present, the students develop an in-depth, holistic understanding of the history of art from a global perspective. Students learn and apply skills of visual, contextual, and comparative analysis to engage with a variety of art forms, developing understanding of individual works and interconnections across history.

AP Art History may be taken to satisfy the Visual Art graduation requirement (i.e., it can replace an Entry Level Visual Art course.), unless the student wishes to take other studio-based art classes. Alternatively, AP Art History may be taken for Social Studies credit. Please note, however, that students will not receive graduation credit in both Social Studies and Visual Art for this course; the student must choose one departmental designation or the other.

AP Art & Design Portfolio (Full Year)

Enrollment for qualified sophomores requires instructor approval.

The AP Art and Design course consists of three different options for students to complete the AP

Portfolio Exams—AP 2-D Art and Design, AP 3-D Art and Design, and AP Drawing—corresponding to college and university foundations courses. Students may choose to submit any of the AP Portfolio Exams. Students create a portfolio of work to demonstrate inquiry through art and design and development of materials, processes, and ideas over the course of a year. Portfolios include works of art and design, process documentation, and written information about the work presented. Students will observe, discuss, and analyze works of art and design as they learn to evaluate their own and others work. In May, students submit portfolios for evaluation based on specific criteria, which include skillful synthesis of materials, processes, and ideas and sustained investigation through practice, experimentation, and revision, guided by questions.

- *The Two-Dimensional Design Portfolio* demonstrates proficiency in 2-D design through implementation of principles of art and design. Possibilities for media might include, but are not limited to, digital imaging, photography, graphic design, typography, collage, fabric design, fashion design, illustration, printmaking, etc.
- *The Three-Dimensional Design Portfolio* addresses a broad interpretation of sculptural or design issues that investigate depth and space articulated through implementation of principles of art and design. Processes to use include additive, subtractive, and/or fabrication processes such as ceramics, sculpture, silversmithing, fashion, product design, installation, architecture, and 3D digital design.
- *The Drawing Portfolio* is designed to address a broad interpretation of drawing issues. These may include drawing, painting, printmaking, and studies for sculpture, as well as abstract and observational works. Students will investigate techniques that explore mark-making, surface development, and rendering of form.

Yearbook Design (Full Year)

Staff positions will be assigned based on previous experience.

Students will work on the conception, management, and production of the *Pinnacle*. The *Pinnacle* is produced each year by a collaborative staff whose primary goal is to produce an accurate, thorough, consistent, journalistically- sound, and well-designed record of the lives, emotions, and activities of the school year. Students must be willing to devote time beyond the classroom including occasional after-school hours. Editor positions will be determined by the student's previous experience, interest, performance, and work ethic.

The students will learn methods of pre-press design and supporting computer software. They will become proficient in using Adobe: InDesign, Photoshop, and Illustrator, as well as skills that will enhance students' photography, layout design, and writing abilities.

Working as a group for a common goal is an integral part of the course. Students must be willing to share ideas and work within an administrative class framework. Staff will report to section editors; section editors will report to the editor-in-chief, and the editor-in-chief will report to the yearbook sponsor. To meet printing deadlines, organization and streamlining time management is a necessity. The course goal is to produce a school-wide publication that records a year of life at PHS using contemporary trends in graphic design and photography.

Language

All students are required to take **three** years of a language in the upper school, at least two consecutive levels of the same language. Students are encouraged to continue the study of their language of choice for the duration of their high school career. The French, Latin, Mandarin Chinese, and Spanish sequences continue through the Advanced Placement level. Students may study more than one language at a time, and they may begin a new language sequence in any grade.

All language students must learn and perform the following skills in the target language: writing, spelling, reading, listening comprehension, and demonstrating an understanding of the target culture. In addition, French, Spanish, and Mandarin Chinese students must display speaking proficiency in the target language.

Independent Study Credit

Independent study proposals may be presented to the Language Department by students wanting to continue the study of a language beyond the current offerings of our curriculum. Proposals will be accepted following the guidelines of the school.

French - Level I (Full Year)

This is a beginning course for students with little or no previous study of French. Basic grammar concepts and vocabulary will be taught; speaking practice and communicative activities, such as brief dialogues and narratives, will be emphasized. Listening, reading, and writing skills will be developed throughout the year as well. Exposure to francophone cultures and customs is an integral part of the course.

French – Level II (Full Year) *Prerequisite: French I*

This course continues the development of the four major communicative skills begun in Level I: listening comprehension, speaking, reading, and writing. Students will further develop these skills in order to continue to communicate in meaningful and creative ways through written and oral work. The study of francophone practices, products and perspectives is an integral part of this course. Additional reading selections include *Le petit Nicolas*.

French – Level III (Full Year) *Prerequisite: French II*

The major objectives of this class are to reinforce and expand all skills (listening, reading, speaking, and writing) previously learned and to develop the student's confidence and ability to express themselves in French using all modes of communication. Students will communicate on a variety of topics using increasingly advanced tenses, vocabulary, and structures. Reading selections include *Le Petit Prince* and short stories.

French – Level IV (Full Year) *Prerequisite: French III and teacher recommendation*

In this course, the students will move beyond the intermediate level and further develop their oral and written expression, as well as their listening and reading skills. Grammar study and essay writing will reflect more complex structures, and students will begin to acquire thematic vocabulary organized

around the six themes required for the AP exam. In-depth discussions on current events, values and ideas from francophone cultures will be used to develop oral fluency in French. A variety of literary readings and short films are also used to supplement the cultural aspects of this course and to improve reading and listening comprehension.

French Conversation (Full Year)

Prerequisite: French III and teacher recommendation

This is an elective class at the advanced level for students interested in continuing the study of French, but not intending to prepare for the Advanced Placement test. The course content will vary every year so that a student can enroll in the class more than once.

The focus of the course will be on practical and functional use of the language. Theme-based activities and presentations will provide opportunities for students to use French to solve practical problems, communicate basic needs and feelings, discuss current events, and to describe concrete situations. Speaking is the primary mode of communication for this class, although listening, writing, and reading skills are also practiced and reinforced. Topics will be chosen to reflect the francophone values, ideas, customs, and traditions, and to provoke cross-cultural comparisons. Field trips, guest speakers, films, cooking, and cultural presentations by the students will enrich the curriculum.

AP French (Full Year)

Prerequisite: B in French IV and teacher recommendation

This is an advanced level course specifically designed for students intending to take the French Language and Culture Advanced Placement Exam.

In this course, students will develop and improve their proficiency in the three modes of communication required for the AP exam: interpersonal, interpretive, and presentational. Selections from authentic print, audio, and audiovisual resources from around the francophone world will be used to address the global themes of the exam.

Students will interpret print and audio selections which involve concrete and abstract topics, covering all areas of the overarching themes. They will be expected to speak spontaneously and display cultural knowledge while demonstrating a high level of facility with the language. They will be required to write clear, argumentative essays on a wide range of subjects.

Students will work to expand all skills and use increasingly advanced vocabulary, structures, and grammar, typical of the skills required for the AP Exam. Students will take practice tests containing material directly applicable to the AP Exam throughout the year.

Latin I (Full Year)

Latin I introduces students to the language and cultural history of the Romans, whose civilization largely influenced our society and government. No prior knowledge of Latin is required for this course. Students will study Latin vocabulary and basic grammar with the goal of accurately translating Latin into English. Students will also review English grammar and vocabulary through the study of words derived from Latin. Culture units will focus on life in the first century of the Roman Empire in Pompeii, Alexandria, Egypt, and Roman Britain. In addition, students will study Greco-Roman mythology, including the pantheon of gods and major heroes.

Latin II (Full Year)

Prerequisite: Latin I

Latin II builds on the foundations established in Latin I with the eventual goal of reading proficiency. Each chapter of the book presents new grammar concepts and vocabulary. Students will continue to study the Latin root words of English derivatives to build a strong vocabulary in both languages. History and culture units will focus on the Roman Empire, including provincial administration, the military, and political life in Rome.

Latin III (Full Year)

Prerequisite: Latin II

After completing The Cambridge Latin Course sequence during the first part of the year, students will transition to reading ‘unabridged’ Latin prose and poetry. The readings will offer an introduction to both poetry and prose through excerpts from Ovid, Catullus, Horace, Pliny the Younger, Cicero and Vergil. Through these readings, students will explore themes about Roman writers, governmental structure, trials, mythology, and early legends. They will further their understanding through secondary reading sources, presentations, and individual projects. There will be frequent review of Latin grammar and sight translations to check comprehension, as well as continued work with Latin vocabulary and English derivatives.

Latin IV (Full Year)

Prerequisite: Latin III and teacher recommendation

Latin IV will focus on the culture and history of the late Republic and early Empire through poetry and prose. With history as a backdrop, students will read the works of various authors such as Catullus, Horace, and Cicero. They will learn many of the conventions of Latin poetry, including poetic devices and the scansion of various lyric meters. Students will continue to perfect their Latin translation skills in preparation for AP Latin, by reviewing Latin grammar, sight reading in class, and by writing essays in English over passages of Latin literature.

Latin V/AP (Full Year)

Prerequisite: Successful completion of Latin IV and teacher recommendation. For AP Latin, students also need a B in Latin IV.

Students may take Latin V as an AP or non-AP option with the recommendation of their teacher. The focus of the class will be on how prose and poetry writers of the first century B.C. reflect the politics and culture of their time. Students will read sections from Vergil’s *Aeneid* in Latin as well as selected portions of Caesar’s *de Bello Gallico*. In addition, the class will study other portions of these author’s works in English and related topics such as the Roman military and the transition from Republic to Empire. Latin grammar, sight-reading, vocabulary, and English derivatives will continue to be essential components of the curriculum.

Those taking the class for AP credit will contract to complete additional work in preparation for Exam. This will include extra readings in both Latin and English, practice writing analytical essays, and additional review sessions.

Mandarin Chinese – Level I (Full Year)

This is a beginning course for students with little or no previous study of Chinese. Students will learn the strategy for constructing Chinese characters and will practice writing and pronunciation. By the end of this level, students are expected to produce brief conversations and read and write short paragraphs. Students will learn about Chinese people, popular cultural idioms, festivals, and places. The study of current events in China as they relate to America is an integral part of the class.

Mandarin Chinese – Level II (Full Year)

Prerequisite: Mandarin Chinese – Level I

This course continues the development of the four major communicative skills begun in Level I: listening, speaking, reading, and writing. Students will expand their vocabulary and be able to comprehend and participate in more extensive conversations, as well as read and write lengthier passages. In addition, the students will explore Chinese ancient dynasties and their significance in history, along with current events related to economic development and social issues in China.

Mandarin Chinese – Level III (Full Year)

Prerequisite: Mandarin Chinese – Level II

In the third year of Chinese, students will continue to develop the skills acquired in Chinese II in the areas of speaking, writing, listening, and reading comprehension. Students will expand their vocabulary and be able to comprehend and participate in more extensive conversations. They will also read and write more complex sentences and passages and be able to express themselves with more variety and fluency. In addition, the students will gain an appreciation of Chinese painting, opera, and architecture, as well as continue the study of current events.

Mandarin Chinese – Level IV (Full Year)

Prerequisite: Mandarin Chinese – Level III and teacher recommendation

The objective of this course is to develop the students' oral and written expression as well as their reading comprehension. The vocabulary and sentence structures introduced at this level are designed to complement and enhance what they have learned in previous years. The students will learn new vocabulary covering many themes (ex. Chinese recreational activities, geography, engineering projects). They will also explore Confucianism, Taoism, Buddhism, and the legendary myths which have profoundly influenced the culture and way of life in China and other Asian countries. The study of current events related to China and America is an essential part of the curriculum.

Mandarin Chinese – Level V/AP (Full Year)

Prerequisite: Successful completion of Chinese IV and teacher recommendation. For AP Chinese, students also need a B in Chinese IV.

Students may take Chinese V as an AP or non-AP option with the recommendation of their teacher. The objective of this course is to prepare the students to communicate effectively and to overcome cultural barriers with confidence while fostering the students' passion and enthusiasm for the Chinese language and culture. At this level, the students continue to expand their vocabulary and understanding of more complicated sentence structures. They will improve writing skills and speaking fluency while discussing topics in depth. They will gain further knowledge about varied aspects of Chinese culture, for example, customs, consumerism, poetry, and ancient sayings. Supplementary materials will include chapter books, current events, advertising, blogs, and videos.

**Those taking the class for AP credit will contract to complete additional work in preparation for the AP Exam. This will include extra reading, writing, speaking, and additional review sessions.*

Spanish – Level I (Full Year)

The objective of this beginning course is to introduce the students to the basic principles of Spanish. The students will develop the following skills throughout the year: listening, speaking, reading, and writing. By the end of the year, they will be expected to comprehend and participate in brief dialogues and narratives, read and analyze simple narrative passages, as well as write dialogues and paragraphs. In addition, the students will be introduced to the Hispanic culture in an effort to develop an appreciation of the different traditions and values of the Hispanic community.

Spanish – Level II (Full Year)

Prerequisite: Spanish I

In the second year of Spanish, students will continue to develop the skills acquired in Spanish I in the areas of speaking, writing, listening, and reading comprehension. Students will be expected to listen to and comprehend a more lengthy conversation or narrative, to participate in more extensive conversations, to read and analyze more complex narrative passages, and to write longer assignments. Students will expand the vocabulary learned in Spanish I, as well as review and build on the grammar concepts from the previous year. Hispanic culture will remain a topic of discussion in an effort to further the students' understanding of the Hispanic lifestyle.

Spanish – Level III (Full Year)

Prerequisite: Spanish II

In Spanish III, students review and expand the vocabulary and grammar concepts acquired in Spanish II. Upon completion of the course, students will have encountered the majority of the tenses in the Spanish language, both in the indicative and subjunctive moods. Students will continue to practice the language skills of reading and listening comprehension, speaking, and writing, but will do so at a more advanced level. They will also explore several aspects of the Hispanic culture more in-depth through cultural readings, videos, and research projects.

Spanish- Level IV (Full Year)

Prerequisite: Spanish III

The objective of this course is to continue the development of the students' oral and written expression as well as their aural and reading comprehension beyond the intermediate level. The students' text will introduce various themes, each of which is accompanied by relevant vocabulary, grammar, and authentic readings and short films. Each theme also includes a cultural component that focuses on the people, places of interest, history, and traditions of Spanish-speaking countries. Upon completion of this course students may enroll in semester electives.

Spanish- Level IV Accelerated (Full Year)

Prerequisite: Spanish III and teacher recommendation

The objective of this course is to improve the students' oral and written expression as well as their aural and reading comprehension beyond the intermediate level. The students' text will introduce them to various themes, each of which is accompanied by relevant vocabulary, grammar, and authentic readings and short films. Each theme also includes a cultural component that focuses on the people, places of interest, history, and traditions of Spanish-speaking countries. In this course, the material will be covered more in-depth and performance tasks will be more advanced than in the Spanish IV class. The students will be expected to analyze texts, engage in more extensive discussions, and write short analytical or comparative essays. Students who intend to take the AP Spanish Language and Culture class may enroll in AP Spanish immediately following completion of this class (a minimum grade requirement of a "B"). Students who choose not to take the AP Spanish class may enroll in Hispanic Literature Studies (a minimum grade requirement of a "B") or semester electives.

AP Spanish Language and Culture (Full Year)

Prerequisite: B in Spanish IV Accelerated and teacher recommendation

The overall goal of this course is to prepare students to perform at a high level of proficiency in the skill areas of speaking, reading, writing, and listening. In preparation for the AP exam in May, students will participate in activities and complete sample tests that are directly modeled after the College Board's exam. Students will engage in an in-depth exploration of culture based on the themes they are required to prepare for the exam.

Students will expand their vocabulary as they are exposed to a variety of authentic texts and literary works. Students are expected to use Spanish at all times while incorporating advanced grammar structures, which will be reviewed throughout the year.

Spanish Electives (Fall and/or Spring)

Prerequisite: Spanish IV, Spanish IV Accelerated

This is an elective class for students interested in continuing the study of Spanish beyond level IV. This course is available for students to take in lieu of, or after, AP Spanish. The course content will vary each semester so that a student can take the class more than once (maximum of four semesters).

Although many different regions and nations of the Spanish-speaking world share a common language, they each have their own cultures and traditions that make them distinctly different. The goal in this course is to familiarize students with cultural elements of these regions and nations and to develop a respect for the common Spanish heritage. Students will also review grammar topics and vocabulary as needed in order to improve in all skill areas.

Hispanic Literature Studies (Full Year; May Not Be Repeated)

Prerequisite: AP Spanish Language and Culture, or "B" in Spanish IV Accelerated, and teacher recommendation

The objective of this course is to provide advanced Spanish students the opportunity to further develop their skills in the language through the study of Hispanic literature, which may include short stories, novels, plays, or poetry. Exposure to authentic literary works by Hispanic authors will benefit those students who enjoy literature and want to continue to improve their skills in Spanish. Relevant, thematic vocabulary and cultural topics will be generated from the works studied, and grammar concepts will be reviewed as needed. This course will be taught entirely in Spanish.

Mathematics

The normal sequence of math courses for a Pembroke Hill Upper School student is Geometry, Algebra II, Pre-Calculus, and Calculus; the progression for students in the accelerated program is Algebra II Accelerated, Pre-Calculus Accelerated, AP Calculus, and AP Statistics. We also offer semester electives for students to enhance their math education such as Multivariable Calculus, Differential Equations, Number Theory, and Probability and Counting. Every student must be enrolled in, and pass, a year-long math course, three of the four upper school years. It is highly recommended students complete four years of math.

Placement in sections is made individually each year after consideration of a student's past performance in math, standardized test scores (for new students), attitudes and interests, level of mathematical maturity, and current teacher's recommendation. It may happen that a student will move between the accelerated and non-accelerated levels over the course of four years. Skipping courses or substituting abbreviated summer work or on-line courses for an academic year course is not allowed.

Beginning in their freshman year, students are required to have a TI-84+ graphing calculator for use in every math course. The graphing feature of this calculator enables students to gain an understanding of many mathematical concepts and will be used extensively in every course.

Transition to Geometry

This course reviews the fundamental principles of Algebra I and introduces students to the beginning concepts of Geometry. Topics covered include simplifying and evaluating expressions, relationships and functions, linear equations and inequalities, systems of linear equations, exponential and radical expressions and equations, rational expressions and equations, and beginning concepts of plane geometry.

Geometry

This course covers all the basic topics of plane geometry: lines, planes, angles and triangles, circles and spheres, areas of circles and sectors, polygonal regions and their areas, and coordinate geometry. An appreciation of the difference between congruence and similarity is stressed. In addition, students study the volumes of solids and are introduced to right triangle trigonometry. Topics are introduced through postulates, theorems, properties, and definitions. It is a major aim of the course that every student should be able to recognize and write logical proofs and, in the process, develop the skill of logical argument.

Geometry Accelerated

This course covers all the basic topics of plane geometry: line, plane, angles and triangles, circles and spheres, areas of circles and sectors, polygonal regions and their areas and coordinate geometry. An appreciation of the difference between congruence and similarity is stressed. In addition, students study the volumes of solids and are introduced to right triangle trigonometry. Topics are introduced through postulates, theorems, properties, and definitions. It is a major aim of the course that every student should be able to recognize and write logical proofs and, in the process, develop the skill of logical argument. In this course the concepts of geometry are covered in more depth than in the regular geometry class. Students in the accelerated geometry class apply geometric concepts but also analyze, synthesize, and evaluate their validity.

Algebra II

This is the second formalized course involving generalization and the development of abstract ideas. Topics covered include equations and inequalities, systems, polynomials, logarithms, exponents, radicals, and rational expressions. Emphasis is placed on techniques of problem solving and the acquisition of mathematical reasoning skills, as well as connecting the verbal, numerical, analytical, and graphical representations of mathematical concepts.

Algebra II Accelerated

This is the second formalized course involving generalization and the development of abstract ideas. Topics covered include equations and inequalities, systems, polynomials, logarithms, exponents, radicals, rational expressions, conic sections, trigonometry, probability, statistics, and mathematical modeling. Emphasis is placed on techniques of problem solving, the acquisition of mathematical reasoning skills, and application of concepts to real world problems, as well as connecting the verbal, numerical, analytical, and graphical representations of mathematical concepts.

Pre-Calculus

This course is designed to prepare students for Calculus. During the first semester and beginning of second semester, emphasis is placed on reviewing Algebra II skills, and the mastery of trigonometry. The second half of the second semester is devoted to rational, exponential, and logarithmic functions, conic sections, sequences, series, and probability. After completing this course, students should have all the pre-calculus topics mastered and be well prepared to begin the study of Calculus.

Pre-Calculus Accelerated

This is the first course in the two-year Advanced Placement Calculus sequence. Emphasis is placed on trigonometry, vectors, partial fractions, sequences, series, probability, conics, and parametric/polar coordinates, and equations. This course culminates in a brief introduction to calculus including differentiation and integration.

Calculus

This is a first course in Calculus as it applies to business and economics. Topics covered include differentiation and integration of algebraic, exponential, and logarithmic functions. Emphasis will be placed on measuring rates of change and accumulation. An interpretation of solutions given a particular context is stressed.

AP Calculus AB

This is the second course in the two-year Advanced Placement Calculus sequence and is thus a continuation of the Pre-Calculus Accelerated course. The Advanced Placement course outline of topics is covered. The course includes a review of limits as well as differentiation and integration of elementary functions. The concepts of slope and area are introduced as the motivation for derivatives and integrals. A clear understanding of The Fundamental Theorem of Calculus is essential. New functions such as the logarithmic, exponential, and inverse trigonometric are introduced. Students are familiar with some of these functions but will learn their application to derivatives and anti-derivatives. Students must be able to do their evaluations with and without the use of a calculator. The AP Calculus AB curriculum can be found at collegeboard.org for further detail.

AP Calculus BC

Calculus BC is a first formalized course in calculus covering topics traditionally included in first and second level college calculus classes. These topics include limits, derivatives, applications of derivatives, integration, applications of integration, advanced integration techniques, the calculus of polar and parametric functions, and sequences and series. While BC Calculus is not a proof-based calculus course, students will spend time examining the reasoning behind the mathematical processes and work at writing clear and concise justifications for their problem-solving techniques. This course is closely aligned to the syllabus and AP Classroom material available from collegeboard.org.

AP Statistics

Statistics is the science of collecting, organizing, and interpreting numerical facts. This course is divided into four major themes: exploratory analysis, planning a study, probability, and statistical inference. Students electing this course take the Advanced Placement Exam in the spring. Prerequisite: Pre-Calculus and at least a B in the student's last math class. The AP Statistics curriculum can be found at collegeboard.org for further detail.

Mathematics Semester Electives

Introduction to Probability and Counting (Spring)

(Prerequisite is successful completion of Algebra I and/or instructor recommendation)

This course focuses on problem solving to explore the mathematics of basic probability and counting. Problem sets will be completed by students each week over different topics of probability and counting. Interesting facts and powerful problem-solving approaches will be presented throughout the course to aid the student. Topics may include, but are not limited to basic counting techniques, using corrections to counting techniques with restrictions, combinations, permutations, basic probability techniques, geometric probability, Pascal's triangle, expected value, and the binomial theorem. Completion of the course will help prepare students for mathematical contests such as AMC and Math League, as well as standardized tests like the SAT and ACT. Students enrolling in this course should have mastery of basic algebra.

Introduction to Number Theory (Fall)

(Prerequisite is successful completion of Algebra I and/or instructor recommendation)

This course covers fundamental principles of number theory, including primes and composites, divisors and multiples, divisibility, remainders, modular arithmetic, and number bases. Topics will include Integers, Primes & Composites; Divisibility Relationships; Prime Factorization and Relationships; Counting Divisors; Divisor Counts and Products, Special Numbers, Units Digits; Base Numbers; Base Number Arithmetic; Introduction to Diophantine Equations; Repeating Decimals; Modular Arithmetic -- Residues, Congruence, Addition, Subtraction, Multiplication and Divisibility; Linear Congruence; Systems of Linear Congruence; and various Challenging Problems in Number Theory. This course is appropriate for students who have mastered basic algebra through solving linear equations and manipulating multi-variable expressions. Students who are already proficient with modular arithmetic and basic Diophantine equations do not need this course.

Differential Equations (Spring)

*(Prerequisite is successful completion of **Multivariable Calculus** and/or instructor recommendation)*

This course serves as an introduction to ordinary differential equations of first order and higher order linear equations. Topics are applicable to many physical sciences and engineering and may include, but are not limited to analytical methods of solving Ordinary Differential Equations of first and higher orders, development of transform methods (Laplace) to solve differential equations and to study their solutions, the modeling of dynamic processes as differential equations: mixture problems, mechanical systems, RLC circuits, population growth, and predator-prey populations, use of the symbolic computational system like Mathematica, direction fields (flows), phase portraits, and an introduction to qualitative differential equations, development of quantitative methods to numerically approximate the solutions to differential equations including Runge-Kutta methods and multi-step approximations, and other topics such as systems of differential equations, as time permits.

Multivariable Calculus III (Fall)

*(Prerequisite is successful completion of **Calculus BC** and/or instructor recommendation)*

In this course the student will extend the ideas of calculus in two and three dimensions. The concepts of 1- variable calculus arise in studying the motion of a particle along a line. For a particle moving through space, not just along a line, the position, velocity, and acceleration at each moment are described by *vectors*, not just by single real numbers. Force and angular velocity are also modeled mathematically as vectors. Students begin by studying the algebra of vectors (linear algebra), which allows us to describe the relationships between vector quantities in physics and also forms the basis of analytic geometry in 3-dimensional space and learn how to generalize the concepts of derivative and integral to vector-valued functions. The graph of a function of 2 variables is a surface in space. At a point of such a graph, one has a tangent plane, not just a tangent line. Students will not only learn how to describe the tangent plane in terms of ideas of calculus, but also learn how the concepts of derivative and integral generalize to functions of several variables. In the last part of the course, students learn the 2-dimensional version of the Fundamental Theorem of Calculus, Green's Theorem. This is the mathematics behind the physical notions of work and potential energy, and is a big step toward understanding electric and magnetic fields.

The Pembroke Hill School
MATHEMATICS CURRICULUM FOR THE MIDDLE AND UPPER SCHOOL

Some typical programs

7 th	8 th	9 th	10 th	11 th	12 th
Algebra 1-7	Algebra 1-8	Geometry or Geometry Acc.	Algebra II Algebra II Acc.	Pre-Calculus Pre-Calculus Acc.	Calculus AP Calculus (AB/BC) AP Statistics
Algebra I Acc.	Geometry Acc.	Algebra II Acc.	Pre-Calculus Acc.	AP Calculus (AB/BC)	AP Statistics or Semester Electives
		Transition to Geometry	Geometry	Algebra II	Pre-Calculus

1. It is school policy that every Pembroke Hill student be enrolled in a year-long math course through the junior year. Successful completion of Algebra II is required for graduation. Workshops, summer courses, or online courses cannot be substituted for a year-long course offered in the Upper School.
2. If a student receives an advanced placement recommendation from the Middle School Math Department or from the Department Chair in the Upper School (for an incoming high school student), the student may enroll in an advanced sequence of courses.
3. In addition to the traditional year-long math courses, students may enroll in semester elective courses.

Physical Education

The Physical Education Department will endeavor to give students appropriate knowledge and ability in the areas of lifetime fitness, exercise, and nutrition and stress management. Students will be assisted in developing lifelong fitness programs, and they will be encouraged to self-evaluate their fitness programs and modify them continuously as fitness needs change.

Graduation Requirement

All students will be required to earn 1.5 credits of Physical Education for graduation. The credit will be available through the Concepts of Physical Fitness course for .75 credits which is required for all freshmen. The remaining .75 credits needed for graduation may be obtained during a student's 10-12 grade years. The students may choose one of the fitness elective courses, PHS Athletics or apply for Independent Study in order to complete the remaining .75 credit of physical education required for graduation. All Physical Education requirements should try to be completed by the end of the junior year. Students that do not participate in athletics their freshmen year will be required to take one of the fitness elective courses their sophomore year.

Concepts of Physical Fitness Course

All freshmen will be required to take the Concepts of Physical Fitness course. Students will earn .75 credits upon completion of the Concepts of Physical Fitness course.

Course Objective: This course will provide the knowledge and foundation necessary to establish a personal lifetime fitness program. It will be based on seminar sessions and physical activity to ensure a firm foundation for developing lifetime fitness.

Expectations:

Students participating in a PHS-sponsored sport or an approved Independent Study will be responsible for:

1. Completing the designated work during scheduled seminar times.
2. Attending lectures during the scheduled seminar times.
3. Attending sports practice each week.
4. Writing a personal workout program.

Students not participating in a PHS-sponsored sport or approved Independent Study are responsible for:

1. Completing the designated work during scheduled seminar times.
2. Attending lectures during the scheduled seminar times.
3. Two half-hour workout sessions per week in the PHS facility using a heart rate monitor to ensure students are working out in their optimal heart rate zone.
4. Writing a personal workout program.

Other Physical Education Course options – These Courses are only available to 10th-12th grade students

The remaining .75 credits (.50 per semester) of the physical education credit may come in the form of one of the following: PHS athletics, Independent Study, or the one of the fitness elective courses below through the PHS Physical Education Department. All sophomores not participating in athletics will be required to enroll in one of the fitness elective courses below.

Lifetime Personal Fitness Course (Fall and Spring)

Course Objective: This course will build upon and utilize the information taught in the Concepts of Physical Fitness course. Students will develop and use their own personal fitness programs developed in the

Concepts of Physical Fitness course. They will monitor and assess their progress for strength, cardio-respiratory endurance, and over-all fitness level. They will then revise their personal fitness program as needed to reach their potential for optimal health.

Expectations:

1. Log three half-hour workout sessions per week in the PHS facility using a heart rate monitor to ensure students are working out in their optimal heart rate zone.
2. Utilize their personal fitness program designed in the Concepts of Physical Fitness course.
3. Write a research paper on their lifetime personal fitness program.

Strength and Conditioning Course (Fall and Spring)

Course Description: This course is designed to familiarize students with an approach to athletic conditioning and strength training. This class will promote knowledge in developing, tracking, and learning about resistance training as it relates to athletics. Students will develop a weight-training program based on personal fitness goals. Students will be instructed in basic principles of strength training & conditioning for personal fitness and development. The course focus is on strength training which includes instruction in lifts & principles of strength training and conditioning. Students will be provided a quality workout opportunity based on the strength training principles taught. Topics, which may be explored, include systematic strength training, plyometric (explosion) training, speed & agility training, physiology of exercise, and other training methods. Tests and measurements of fitness, strength, & conditioning, as a means of evaluating progress, will be part of this course.

Learning Objectives: By the end of this course the student will be able to:

1. Develop a personal fitness program that relates to athletic conditioning and strength training.
2. Understand how to increase muscular strength, power, endurance and hypertrophy through a weight-training program.
3. Focus on how to lift weight using proper form, control, safety and full range of motion by combining multi-joint and single joint exercises.
4. Name and describe various weight lifting exercises as they relate to anatomical muscles groups.
5. Understand how other components of weight training, such as cardiovascular endurance, nutrition, flexibility, and body composition all relate to a fitness goal.

Dance and Creative Movement (Fall)

Prerequisite: Theatre Arts, Acting or Departmental Approval

This course is designed to explore the physical techniques of dance and creative movement as a performing art. Students will work in a studio daily, warming up and building technique across a range of dance styles. Choreography will be taught by instructor, guest instructors and fellow students. Improvisational, character movement and non-verbal communication will also be explored. Academic writing and research will accompany the course. The semester will culminate in a student-lead showcase of performance pieces. ****course credit may be applied to Performing Arts OR Physical Education, but Not both.***

Independent Study

Requirements for Independent Study:

1. Selected activity is unavailable within the physical education/athletic department curriculum.
2. Selected activity must be a minimum of four (4) days a week excluding Saturdays and Sundays.
3. Selected activity must be a minimum of one (1) hour of participation each of the four (4) days.
4. A certified instructor in the specified activity must give instruction for the selected activity.
(A letter of recommendation must be attached to the application.)

Requirements for Elite Independent Study:

1. Selected activity should be a minimum of five (5) days a week excluding Saturdays and Sundays.
2. Selected activity needs to be a minimum of two (2) hours of participation each of the five (5) days.
3. Instruction for the selected activity must be given by a certified instructor in that activity and proof of the certification of the instructor **MUST BE ATTACHED**, in order for the application to be considered.
4. Athlete must be considered “Elite” status and provide proof of “Elite” status (national competition, national travel, national ranking, etc...). **A letter of recommendation must be attached to the application.**

Applications for Independent Study are due a minimum of ONE WEEK before the beginning of EACH Semester in which credit is being

ATHLETIC PROGRAM

General Information

Practice Sessions

Practice sessions are Monday through Friday, some Saturdays and a few Sundays, but there will be no required practices on Sundays. Other than weekend and non-school days, practices are usually held immediately after school and last 2 to 2 ½ hours.

Seasons

Fall

Practices begin around the second week in August and may continue into the third week of November depending on state playoffs.

Boys

Cross Country
Football
Soccer
Tennis Golf Volleyball

Girls

Cheerleading
Cross Country
Field Hockey
Swimming and Diving

Winter

Practices begin around the first week of November and may continue into the third week of March depending upon state playoffs.

Boys

Basketball
Wrestling
Swimming and Diving Dance

Girls

Basketball
Cheerleading
Wrestling

Spring

Practices begin around the last week of February or first week of March and may continue until the first week of June depending on state playoffs.

Boys

Baseball
Golf
Lacrosse
Tennis
Track & Field

Girls

Soccer
Track & Field
Lacrosse

Science

Three years of science are required for graduation.

Students are required to take Biology in ninth grade and Chemistry in tenth. The third unit may be taken in junior or senior year. Courses that may be elected to fulfill the minimum three-unit requirement include Physics, AP Physics 1, AP Biology, AP Chemistry, AP Environmental Science, and semester science electives. Though three years of science is the minimum requirement, it is recommended that students take a science course each year. Laboratory work is an integral part of every course, wherein students gain extensive hands-on experience and work in groups to reinforce and expand scientific concepts. Students considering a competitive college or science-based career, such as medicine or engineering, should take Biology, Chemistry, Physics and at least one Advanced Placement science course in the upper school as thorough preparation for the college curriculum. A suggested science course sequence follows these course descriptions.

Biology (Full Year)

Required Course, 9th grade

The Biology course is designed to give students a comprehensive introduction to the study of life sciences. Topics included are biochemistry, cell structure and function, genetics, evolution, energy dynamics, and ecology. Frequent classroom activities and laboratory work reinforces conceptual understanding and develops analytical skills. Students will be evaluated on formal assessments, homework, papers and projects, laboratory work and class participation.

*Placement into Biology or Biology Accelerated will be at the recommendation of the student's current science teacher.

Biology Accelerated (Full Year)

Required Course, 9th grade

The Accelerated Biology course covers the similar general topics as Biology but examines each area at a greater level of depth and detail, and proceeds at a faster pace. This course is designed to give students a comprehensive introduction to the study of life sciences. Topics included are biochemistry, cell structure and function, genetics, evolution, anatomy and physiology, and ecology. Frequent classroom activities and laboratory work reinforces conceptual understanding and develop analytical skills. Students will be evaluated on homework, laboratory reports, tests, class participation, and various papers and projects. Accelerated Biology is the appropriate course for students who have shown a demonstrated interest and ability in science coursework, have taken a science course with a laboratory component at the middle school level, and have strong math and independent reading abilities. Students should also possess well-developed study habits and organizational skills.

* Placement into Biology or Biology Accelerated will be at the recommendation of the student's current science teacher.

Chemistry (Full Year)

Required Course, 10th grade Prerequisites: Biology

Chemistry serves as a general introduction to chemistry and a solid foundation for more advanced work in science. A balance is sought between descriptive material, designed to stimulate interest and appreciation for the subject, and more quantitative (computational) material, which stresses the mastery of key concepts. Chemistry will cover a curriculum similar to Chemistry Accelerated, differing mostly in pace and mathematical complexity. Extensive student laboratory work is designed to reinforce concepts and develop the student's skills in laboratory analysis and use of appropriate materials.

Chemistry Accelerated (Full Year)

Required Course, 10th grade

Prerequisites: Biology and departmental recommendation

Chemistry Accelerated is an introductory chemistry course, which offers a more extensive curriculum at a faster pace than Chemistry. This course will emphasize problem-solving, quantitative understanding of natural phenomena, and nuanced conceptual understanding of abstract topics. Frequent demonstrations and labs will be used to reinforce concepts and develop laboratory skills for future scientific learning. Students who successfully complete Chemistry Accelerated should be well prepared to enroll in AP Chemistry in future years.

Physics (Full Year)

Prerequisites: Algebra II and Chemistry

The introductory algebra-based physics course is intended for students seeking a basic, broad-based background in physics with particular emphasis placed on qualitative reasoning skills, the ability to conceptualize a variety of natural phenomena. This hands-on course also utilizes frequent demonstrations and laboratories to develop the quantitative skills in measurement, graphical analysis, and problem solving necessary to prepare students for a college level course or for advancement to AP Physics. This course is designed to provide a survey of topics in the areas of mechanics, electricity and magnetism, waves and sound, optics, and a brief introduction to modern physics. Students who successfully complete Physics may opt to enroll in AP Physics upon completion of the course.

AP Physics 1 (Full Year)

Prerequisites: Algebra II and Chemistry; 11th or 12th grade only

Students must have at least a B+ average in BOTH Chemistry and the math course taken the year prior, or written permission from the course teacher or department chair. Students enrolled in

Physics in 11th grade may take this course in 12th grade for AP credit.

This introductory algebra-based physics course is designed to provide students with deep conceptual understanding of the physics typical of first semester college courses. Topics in the course include Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory, simple circuits. By College Board requirement, 25% of class time will be spent doing work related to laboratory investigations, with the emphasis on student-designed inquiry. Students are required to take the AP Physics 1 exam at the end of the course.

AP Biology (Full Year)

Prerequisite: Biology and Chemistry completed with at least a "B+" average, or permission from course instructor

AP Biology is designed to be the equivalent of a first-year college biology course. Its goal is to provide students with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of biology. Laboratory experiments are integrated wherever possible in support of the subject areas which include biochemistry, cell biology, molecular genetics and biotechnology, evolution, taxonomy, energy dynamics, ecology, and animal behavior. The course includes review in the spring in preparation for the AP Biology exam. Taking the AP exam in the spring is a course requirement.

AP Chemistry (Full Year)

Prerequisites: Algebra II, B+ or above, and one year of Chemistry, B+ or above, or permission from course instructor

AP Chemistry is a course for those who wish to investigate major concepts in chemistry more thoroughly in preparation for a scientifically based career. Class discussion and problem-solving, using a college-level text as the focus of effort, are the prime activities in the class. Laboratory work, as recommended by Advanced Placement guidelines, is incorporated as appropriate. At the end of the course, all students will take the AP Exam, and, if successful, may test out of the first year of chemistry at many colleges.

AP Environmental Science (Full Year)

Prerequisites: Biology and Chemistry with at least a B+ average, or permission from course instructor

AP Environmental science examines the relationships between living things and their environments and prepares students for the AP Environmental Science exam. Students will learn through a wide variety of media, including textbook, labs (both indoor and outdoor), videos, online activities and projects. Some environmental service will be required. Topics include sustainability; biomes and climate regions of the earth; basic earth science, weather and climate; biogeochemical cycles; ecology; soil science; endangered species and loss of biodiversity; growth and control of populations; water use and water pollution; air pollution; climate change and ozone depletion; waste disposal and environmental toxicity; and energy resources.

AP Physics C Mechanics and Electricity & Magnetism (Full Year)

Prerequisites: AP Physics 1 and Calculus

Students must have at least a B+ average in AP Physics 1, or written permission from the course teacher. Prior enrollment or current enrollment in BC Calculus is highly recommended.

This advanced, calculus-based physics course is provided as an option for students who plan to go into college physics or engineering or who want the challenge of the application of differential and integral calculus to physics problem solving. During AP Physics C Mechanics in first semester, students will study concepts in kinematics; Newton's laws of motion, work, energy and power; systems of angular and linear momentum; circular motion and rotation; oscillations; and gravitation. During AP Physics C Electricity and Magnetism in the second semester, students will explore concepts in electrostatics, electric circuits, conductors, capacitors, dielectrics, magnetic fields, and electromagnetism. By College Board requirement, 20% of class time will be spent doing work related to laboratory investigations, with the emphasis on student-designed inquiry. Students are required to take both the AP Physics C Mechanics and the AP Physics C Electricity & Magnetism exams at the end of the course.

AP Physics 2

(Full Year)

Prerequisites: One year of physics: either AP Physics 1 or Regular Physics with a B+ average. Concurrent enrollment or completion of pre-calculus.

AP Physics 2 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of physics through classroom study, in-class activity, and hands-on, inquiry-based laboratory work as they explore concepts like systems, fields, force interactions, change, conservation, waves, and probability. By College Board requirement, 20% of class time will be spent doing work related to laboratory investigations, with the emphasis on student-designed inquiry. Students are required to take the AP Physics 2 exam at the end of the course.

Science Semester Electives

Engineering and Applied Physics through Robotics (Fall)

Prerequisites: none

Robotics combines principles of physics with mechanical engineering, electrical engineering, and computer programming to create physically embodied, artificially intelligent agents that can take actions that have effects on the physical world. This hands-on course will introduce students to the basic elements of robots, including DC motors, wheels, gear assemblies, servos, circuit boards, batteries, and software. Topics will include planar and spatial kinematics, motion panning, mechanism design, control design, actuators, and sensors. Students will be graded on classwork, quizzes, tests and group projects.

Human Physiology (Fall)

Prerequisite: Biology and Chemistry

The Anatomy and Physiology Fall semester course examines the basic biological concepts of structure and function of the human body, with a survey of several body systems. Lab work will include a significant amount of dissection, with an intensive multi-week dissection of one selected mammal model. After an introductory unit, students will fully investigate each of these body systems through lab work, textbook and article reading, collaborative projects, videos, and classroom discussions. This course will also include the study of diseases and disorders and strategies for maintaining and improving health.

Science and Society (Fall)

Prerequisites: Biology and Chemistry

This seminar style course will examine the science behind interesting and important topics relevant in society, both at a local and global scale. Topics investigated may include, but are not limited to climate change, overpopulation (humans and wildlife), food insecurities, addiction, sex and gender, environmental justice, infectious diseases, and the rising obesity epidemic. This course will include a project-based learning component and multiple classes off campus. Learning objectives and assessment will include utilization of scientific content and process skills, with a focus on critical thinking, problem solving, and application of knowledge.

Introduction to Python: Bioinformatics (Fall or Spring)

Counts toward one semester of Science graduation requirement.

Bioinformatics introduces students to the fundamentals of computer programming by using Python to analyze and interpret biological data. Programming topics include variables, data types, conditional statements, control flow, algorithms, classes, lists, and dictionaries. These skills will be applied to real-world, concrete, scientific scenarios such as unit conversion, taxonomy, bacterial growth and decay, chaos theory, genetics, genomics, proteomics and physiology. Students will be evaluated on classwork, programming challenges, projects, tests and class participation. Students who complete this course will meet the prerequisite for enrollment in AP Computer Science A.

Neuroscience

(Spring)

Prerequisite: Biology and Chemistry

One of the most challenging and interesting problems in biology is understanding the brain, including how we think, feel, remember, and learn. Neuroscience is the study of the nervous system, the brain and its constitutive parts and the way in which these structures mediate behavior. Students will learn fundamental information about the cellular biology and properties of neurons and the brain. Additionally, neuroscience is relevant to many of the societal institutions that affect our lives, including business, law, education, medicine, and the military. This seminar style course offers an in-depth focus on neuroscience through the lens of societal issues of importance to all Americans.

Human Physiology

(Spring)

Prerequisite: Biology and Chemistry

The Anatomy and Physiology spring semester course will focus on the structure and function of the human body systems that are not covered during the fall semester. This laboratory based class will include several anatomical organ dissections, as well as various physiology labs. After a brief introductory unit, students will fully investigate each of these body systems through lab work, textbook reading, research projects, videos, and classroom discussions. The course will also include the study of diseases and disorders of each system and strategies for maintaining and improving health. Students are **not** required to take the fall semester course as a prerequisite.

Independent Laboratory Research

(Fall or Spring)

Prerequisites: Biology and Chemistry, completion of required science credits, approval of science faculty review committee in semester prior to enrollment, and administrative approval

This class is in place for those students interested in continuing a previous research project for credit. It is possible for a student to earn a half credit in science by fulfilling the following requirements. *However, this one-half unit may not count toward the first three credits for graduation.* To be eligible, a student must have initiated significant research on the topic prior to submission of the proposal to the Science Chair. The final approval for credit includes consideration of time spent per week (based on the student log and notebook), quality of the research project, submission of a final paper, and entry of the project into at least one approved competition.

Science Course Sequence

9th grade

Biology or Biology Accelerated*

10th grade:

Chemistry or Chemistry Accelerated*

11th grade (students may take more than one):

Physics

AP Physics 1 AP Chemistry AP Biology

AP Environmental Science Semester Science Electives

12th grade (students may take more than one):

Physics

AP Physics 1 AP Physics C AP Chemistry AP Biology

AP Environmental Science Semester Science Electives

* *Engineering and Applied Physics through Robotics and Bioinformatics: Using Computer Programming for Biological Analysis* may be taken during the freshman or sophomore year.

Examples of a few different pathways through the science department.

9th	10th	11th	12th
Biology	Chemistry	Semester electives	Physics
Biology	Chemistry Accelerated Applied Engineering through Robotics	AP Physics 1	Science electives
Biology Accelerated	Chemistry	Physics and AP science	AP Science and/or Science Electives
Biology Accelerated	Chemistry Accelerated	AP Physics 1 and science electives	Two AP Science courses

Social Studies

Every student is required to complete a sequence of three full-year courses. The sequence consists of 1) “The World to 1500,” 2) “The World Since 1500,” and 3) a survey of United States history as part of the American Civilization program.

Advanced Placement options exist in eleventh-grade American history, and in four senior electives: psychology, economics, American government, and art history.

The World to 1500 (Full Year)

“The World to 1500” surveys the development of the world’s major civilizations up to 1500 C E. Beginning with the ancient river valley civilizations, we move on to explore the histories of China, India, Meso-America, Europe, and select African cultures. Different instructors may emphasize various aspects of a culture or its history, but our common commitment is to the students’ learning to appreciate humanity’s rich diversity of social customs and forms of belief (Islam, Hindu, etc.) The course will conclude with an analysis of the emerging world economy of the sixteenth century.

The World Since 1500 (Full Year)

Beginning where “The World to 1500” ends, this course focuses on the developing interactions among different human societies. Spotlighting the increasingly intense international contact and exchanges among Asian, European, African, Middle Eastern, and American peoples, the course will look specifically at issues of economic growth and expansion, environmental challenge, technological change, and the organizational development of various political systems. By the end of the course, students should have a good understanding of how the world has changed and will continue to be affected by cultural, political, and economic interactions.

American Civilization (History) (Full Year)

This college-level course is a study of American history from colonial times to the 1990s. The class covers political, economic, social, and diplomatic history. The course is required of all juniors, who concurrently enroll in American Civilization English. Students wishing to take the AP exam and receive AP designation for the course must sign a contract and attend outside review sessions. A summer reading book will be assigned for this class.

Social Studies Twelfth Grade Electives

AP Economics (Full Year)

Prerequisite: Grades of B or higher in both math and history during the junior year

Designed for students who want to understand the economic workings of our society and of the individual business firm, this rigorous course also prepares students for two spring AP exams: Microeconomics and Macroeconomics. The fall semester will focus upon micro topics including supply and demand, price determination, consumer theory, price elasticity, marginal costs and revenues, profit maximizing issues, and forms of industry competition. The spring semester will cover introductory topics including scarcity and opportunity costs, as well as macro topics such as aggregate supply and demand, national output and income, inflation and unemployment, money and central banking, fiscal and monetary policy, and trade and exchange rate issues.

AP American Government (Full Year)

Prerequisite: A year-end average of B+ or higher in US History

The fall semester provides an introduction to the American political process and to the federal government. Areas of emphasis include: public opinion, interest groups, political parties, the Congress, the Presidency, and the Supreme Court. Contemporary policy issues will also be examined. The second semester will focus on public policy, foreign and domestic, as well as campaigns, elections, the media, civil rights, and civil liberties. Students who wish to take AP Government must have taken the AP US History exam and earned a grade of B+ or higher for the year. Students who do not meet the requirement (or who did not receive a score of 3 or higher on the AP US History Exam) may request placement in the course with the approval of their US History instructor and the AP Government instructor.

AP Art History (Full Year)

Enrollment for qualified sophomores and juniors requires Department Chair approval.

The AP Art History course welcomes students into the global art world to engage with its forms and content as they research, discuss, read, and write about art, artists, art making, and responses to and interpretations of art. By investigating specific course content of 250 works of art characterized by diverse artistic traditions from prehistory to the present, the students develop an in-depth, holistic understanding of the history of art from a global perspective. Students learn and apply skills of visual, contextual, and comparative analysis to engage with a variety of art forms, developing understanding of individual works and interconnections across history.

AP Art History may be taken to satisfy the Visual Art graduation requirement (i.e., it can replace an Entry Level Visual Art course.), unless the student wishes to take other studio-based art classes. Alternatively, AP Art History may be taken for Social Studies credit. Please note, however, that students will not receive graduation credit in both Social Studies and Visual Art for this course; the student must choose one departmental designation or the other.

Anthropology & the World Around Us (Fall Semester)

What makes us uniquely human? How do you define culture?

This introductory course will explore topics about humanity and culture through the lens of anthropology and its four fields: archaeology (and forensics), biological anthropology, linguistics, and cultural anthropology. The course will employ contemporary and historic perspectives to understand material culture (art & trash), systems of stratification, language variation, belief, social, political and economic institutions, globalization and migration by focusing on and using Kansas City as site.

Purpose Wayfinding Leadership Elective (Spring Semester)

This elective will guide students through a curriculum designed to examine introspective questions of purpose and meaning. The purpose curriculum will explore twenty-six “big life question” topics to help students uncover what they find personally meaningful as well as how to impact the world around them. By examining their value systems and support structures, students explore their purpose and place in a wider world. The curriculum is designed for 10th-12th graders as part of a broader meaning making sequence currently in use at Brown, Stanford and UC-Berkeley. www.projectwayfinder.com/ Open to 10th, 11th & 12th grade students.

Understanding the Geopolitical World: The United States, The Middle East, Russia, and China (Spring semester elective)

This is a continuation of the fall course which is designed to help students understand the challenges the United States in the changing realities of the new world. With the growth of Communist China, the belligerence of Russia, and the continuing turmoil in the Middle East, this course will help students navigate America’s past, present, and future involvement in these issues. This course will not only study the latest research on these topics, but we will create our own analysis by deciphering intelligence data. Not only will we discuss the impact on American national security but also how it has or will shape our domestic policy as well.

Global Online Academy

Students interested in signing up for GOA classes can access the course catalog here: <http://www.globalonlineacademy.org/student-program/courses/> and should see Mr. Burke to sign up.

