



Upper School Program of Studies 2019-2020

The Pembroke Hill School

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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: Visual Arts and either Theatre Arts, Debate 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

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 Requirements 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 Biology Accelerated	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 Foundation and one semester of the following: Theatre Arts, Debate I or Exploration in Music. 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)* *See Reverse	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		

OVER

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.
- **Art Focus Students**
 - Performing Arts – Students who choose a Performing Arts focus may forego the introductory Performing Arts Foundation classes (Exploration in Music, Debate I or Theatre Arts). Students may declare a focus in one of four areas: acting, choral music, instrumental music, or debate. These students will meet with a Performing Arts teacher in their chosen area to map out their four-year focus commitment. Students who fail to meet this commitment, however, will be required to complete an introductory Performing Arts Foundation course.
 - Visual Art – Students who choose a Visual Art focus are allowed to bypass the Visual Art introductory course and enroll in Drawing I as the first step. The commitment that the student agrees to is a 4-year focus in the Visual Arts; he/she agrees to take at least one visual art class each year and, furthermore, the student agrees to take AP Studio Art in his/her junior and/or senior year. If the Visual Art Focus student does not enroll in the AP Studio Art course, or if it is dropped before completion, the student must fulfill the Visual Art introductory course requirement.
- **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 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 this in mind, the Pembroke Hill Computer Science and Technology seeks to prepare graduates for any approach 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.

The Computer Science and Technology department allows students to focus on any of three areas: Programming, Engineering and Design.

- Programming-focused courses include Web Design & App Development, Introduction to Python, Introduction to Java, and Advanced Placement Computer Science.
- Engineering-focused courses include 3D Printing & Design, Computer Architecture & Server Design, and Introduction to Robotics.
- Design-focused courses include 3D Printing & Design, Computer Graphics, and Web Design & App Development.

There is no computer science requirement for graduation.

AP Computer Science

(Full Year)

This course is designed around the AP Computer Science A exam. This course 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. This course is taught on a bi-yearly basis.

Computer Boot Camp

(Fall)

This course is a survey of computer hardware and software. Students will begin by learning about the individual components of personal computers and their functions. Using this knowledge and provided components, students will assemble their own systems. Students will then learn about file creation and management through the command line, which they will use to create simple apps. From there, students will conduct a survey of basic web design with HTML and CSS, and programming with JavaScript. Students will create a series of simple web-based games and apps which they will post to a class page. By the end of the semester, students will be able to build a computer, create simple software applications, and share them with the world.

Introduction to Python

(Fall or Spring)

Python is a robust and powerful programming language that is free and easy to use. Python is also considered a user-friendly computer language that serves as a gentle introduction to programming for future studies in computer science. Students will learn the basics of the object-oriented Python programming language and start coding. Students will be confronted with mathematical problems that can be solved through programming, as well as explore aspects of programming that appeal to their specific interests. Throughout the course students will gain a proficiency in basic programming and problem solving skills. Both beginning and advanced programmers are welcome (no previous programming skills are required). This course can be used as the prerequisite for AP Computer Science.

Introduction to Java

(Fall or Spring)

This one-semester course introduces students to Java programming with emphasis on the object-oriented paradigm for both conventional and website applications. Java is the language used for the AP Computer Science exam. Students will construct simple to complex programs as they strive to achieve the most efficient method of problem solving while creating a strong programming base for other languages or the AP class. This course can be used as the prerequisite for AP Computer Science.

Introduction to Robotics

(Fall)

How would you build a device that can repeatedly toss a frisbee through a goal with perfect accuracy? Or drive around and pick up and stack a series of crates on itself? What about a machine that can lift itself off the ground? Each year, Pembroke Hill's robotics team, The Legion, solves these problems and more as it competes in the FIRST Robotics competition in Spring. This involves designing, building, testing, and ultimately fielding an actual robot in competition against other local schools. This course will cover the basics of building robots for the FIRST competition. Students will learn about construction, electronics, motors, simple machines and much more in a hands-on environment. We will examine the success and failures of previous strategies and devise new ones for new challenges. Participation on the robotics team is not required to join this class, but students who have taken the course will be qualified to join the team without training.

3D Printing & Design

(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 the last two decades, and will learn how to use 3D modeling software to design and create 3D printing projects. These projects will actually be printed on one of our MakerBot Printers in PLA and ABS plastic.

Graphic Design

(Fall or Spring)

Tired of “borrowing” images from a Google search rather than making your own? Would you prefer to create a meme or GIF rather than just forward someone else's? Ever wonder how you might covert your doodles into digital images or animations? In Computer Graphics, we will learn the basics of several programs in the Adobe Creative suite, including but not limited to Photoshop, Illustrator, and basic animation techniques. Topics will include digital image editing, using scalable vector graphics to create original graphics, simple animations and even some CSS-focused web design. There is no pre-requisite for this class.

English

In Upper School English classes, our students continue to develop the ability to read closely and to defend plausible interpretations of the text. Using literature as the vehicle, we teach students to be critical human beings. At each grade level, we expose the students to complex texts across all genres, including poetry, drama, fiction, and nonfiction. Another cornerstone of the English class is leading students through the writing process of literary analysis. But before students begin that process, teachers engage them in Socratic-like discussions to excavate details, identify incongruities, and theorize motives. Often using these discussions as a springboard, students will write up to ten essays per year, both in class and out of class. Since there are no miracles when it comes to writing, teachers stress the hard work of revision for grammar, style, and ideas as they provide their students with individualized feedback. While the pen and paper essay has mostly disappeared, the process of drafting a coherent persuasive essay has not. Teachers still spend significant time teaching grammar, punctuation, diction, sentence construction, and paragraph organization.

In the first three years, students take year-long English courses. With each year, students are challenged by more nuanced and sophisticated works of literature that require them to formulate analytical arguments of increasing levels of complexity. Within each grade level, teachers incorporate some type of research essay that includes outside sources, such as literary criticism. As a result, students move beyond the classroom discussions to enter the broader intellectual conversation. Another requirement at each level involves public speaking. From short, impromptu speeches to the thirty-minute senior capstone presentation, students practice their oral presentation skills in front of their peers. In the final year of English, seniors choose from a selection of topics in the first semester while all seniors take the capstone class during the second. These courses during first semester, similar to undergraduate courses, consist of more focused topics on, for example, a genre-like short story or a thematic idea such as Existentialism or The Other. For the capstone semester, seniors propose an individualized research project that serves as their culminating research and writing 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 begun in middle school – in grammar, mechanics, vocabulary, writing, reading and research – is reinforced. Attention to grammar and punctuation is maintained with the consistent use of the Hacker Manual on every major writing assignment. Students will be expected to experiment with a variety of styles and forms in analytical writing, as well as personal essays, and move beyond the paragraph level to that of the full-length paper. In literature, students study the basic genres of fiction and are introduced to non-fiction as they learn the fundamental skills of literary and rhetorical analysis, including a unit on poetry. In order to prepare students for the concentrated emphasis on literary analysis in the upper school, the ninth grade year is dedicated to developing 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 such works as *The Absolute True Diaries of a Part-Time Indian*, *Catcher in the Rye*, *The Merchant of Venice*, *The Odyssey*, *The Glass Menagerie* and others.

English 10

Tenth grade continues the work begun in ninth to move students from the concrete details of plot summary to the abstract interpretations of theme, character, symbol, and metaphor. Teachers present students with increasingly more complex works and challenge them to write in more sophisticated ways, edging away from the formulaic constructions of the five-paragraph essay. For example, students are asked to produce a variety of arguments that stress coherence and develop a particular tone through their diction while incorporating

textual evidence within their own interpretations. During the fourth quarter, students write a research paper that accesses literary criticism and other secondary sources and are encouraged to enter the larger conversation about a text. The core of the tenth grade reading list centers on four distinct lenses that are chosen by the tenth grade teachers. Each of the topics receives consideration in terms of the works read and the essay prompts assigned. For example, the first quarter may be dedicated to the topic of psychology and literature, focusing on the concepts of Freudian theory that are reflected in characters' motives and struggles. The rest of the year may include works such as *Othello* or *Macbeth*, *The Raisin in the Sun*, *The Metamorphosis*, *The Elegance of the Hedgehog* and *Frankenstein* with other quarter perspectives such as philosophy and lit, gender and lit, and social class and lit.

American Civilization (English 11)

Although not necessarily taught chronologically, the junior year in English does touch on the development of the American voice in literature beginning with the Puritans and reaching into the twenty-first century. In the process, the course explores the Romanticism of Hawthorne and Poe, the Transcendentalism of Emerson, the Realism of Crane and Twain, the modernism of Fitzgerald and Hemingway, and contemporary masterpieces by Morrison and others. Additionally, the course explores larger themes that run concurrently throughout American history and American literature, such as the tension between authority and rebellion and the importance of expansion to the American psyche. The course builds on the skills emphasized in the ninth and tenth grade years, further developing a student's ability to engage in close reading and to formulate analytic arguments in writing. There is a special emphasis on understanding and employing rhetorical devices, increasing awareness of experience with different critical schools of thought, as well as providing opportunities for growth as a public speaker. In conjunction with the history department, juniors are engaged in four interdisciplinary projects, one each quarter. The AmCiv projects can involve a key text, but they also tap resources in Kansas City such as a locally produced film/documentary, an exhibition at a museum, an outside speaker, or a historical landmark. After juniors encounter the object of study for the quarter, both English and history teachers take the next few days to examine it from their particular discipline, revealing that overlapping perspectives are crucial to understanding and exploring ideas.

AP English 12

The English department has fashioned the senior year to be the culmination of all that Pembroke Hill students have accomplished in the previous three years of English courses. With that in mind, the literature read is more complex, the discussions are more nuanced, and the writing assignments are more layered, often including secondary sources and literary criticism. As seniors sign up for their fourth and final year of English, they have a limited choice in the topics of the class. The semester-long class will be taught by one senior English teacher and focuses on a topic, genre, format or theme that lends itself to a more intensive study of literature in preparation for undergraduate English courses. Seniors will have a different teacher during the second semester to lead them through the capstone research project. The project includes multiple steps that allow students to explore a topic of interest that likely was not covered in the traditional curriculum. Whichever combination of teachers and research topic that a senior experiences, the rigor is comparable and matches the requirements of the AP curriculum. Therefore, all students will be classified as taking AP English 12. Below is a short description of the possible courses offered to seniors.

Senior English Courses Fall Semester of 2019-2020

Social Lives: The Reality and the Fiction

As social beings, the ideas of culture and society are fundamental to how we live our lives, but the reality can be elusive and often misunderstood. This class will call into question what we assume to be normal, natural or self-evident in our culture. We will investigate how society functions or, in many instances, doesn't function. The primary means for our exploration will be realist literature: both fiction and nonfiction. Ethnographic writing, which comes out of anthropology and sociology, provides a means to submerge oneself in a place and its people so that the story being told is both insightful and empathetic to the human condition. Through lectures, seminars, readings and films, the class will delve into this approach, eventually having each student construct his or her own ethnographic study on a small segment of Kansas City. In order to do this, students will necessarily have to go into the field a few times each month to interview, volunteer, and observe.

Creative Writing Workshop

Creative Writing will offer the student an opportunity to explore their own voice through original work in various genres, including the poem, the short story, the stage or screenplay, the book review, and research experience. Students will spend time outside of class reading books of contemporary poetry and short-fiction, and also exemplary stage and screen writing, depending upon their selected focus, in order to support their understanding of craft. In the workshop, students will read one another's work with as much attention and vigor as they give a published writer. The in-class time will primarily be spent in workshop, research and writing time, or exercises directed at writing in the various genres and discussion of the texts.

Creative Nonfiction

The English word "essay" finds its root in the French word *essai*, a term suggesting an experiment, a testing, a weighing out. It is through this effort to understand that the genre of creative nonfiction emerged. While creative nonfiction shares traits with other literary genres (e.g. scenes, dialogue, setting, characterizations, symbols, themes, etc.), it bends toward a distinct set of goals; it is an intimate genre, often bringing readers into the most personal crevices of an author's life, even as it forges larger connections and community.

This course invites you to explore and participate in the craft of creative nonfiction as you study its history and form, compose critical and original pieces, and respond regularly to your peers' work through written and verbal feedback. To accommodate the balance between reading and composition, our class sessions will alternate between reading discussions and workshops. We will interact with a range of subgenres (e.g. metaphorical memoir, lyric essay, literary journalism, stand-up comedy, and oral storytelling), and read leading voices in the field, including those who write about and within the genre. We will delve into some current conversations unfolding around creative nonfiction — What does it mean to tell a "true" story? What are the roles and limitations of memory in this genre? What are the ethical obligations unique to writing creative nonfiction? What are the common criticisms aimed at the genre and where do these originate? Come to class prepared to keep up with a demanding reading and writing load, a willingness to give and receive feedback, and an inclination to engage critically with this unique genre.

Marginalized Voices

It is an unfortunate fact of our world that alongside the existence of a powerful majority, a marginalized minority is frequently found. This group, or rather, groups, are often posited as "the Other", different from that which is dominant and thus the norm. For centuries, the voices of these groups have been suppressed and their stories relegated or ignored. This course will allow us to explore the writings, ideas, and tales of these groups alongside the historical and contemporary contexts surrounding them.

The first half of the semester will act as a kind of introduction to the course, and then students will have more autonomy in the second half of the semester as the course adopts the tutorial approach favored by such schools as Oxford and Cambridge. During this time, students will curate their own reading lists based on a desire to explore the literature of a particular marginalized group. This half of the semester will be structured around weekly meetings in tutor groups where students will need to come prepared for a rigorous discussion and exploration of their topic, and then larger entire class seminars. This course will consider a range of genres, mediums and perspectives, and students simply need to come with curiosity and an open mind.

Spring Semester of 2019-2020

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 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 Theatre Arts, Exploration in Music or Debate I, and the Visual Arts Department offers 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 more specialized courses in that area. Exceptions to this sequence will be explained in the Performing Arts and Visual Art sections.

Students must have maintained a grade of B+ or better and receive teacher approval before being allowed to take any performing or visual arts course for the second time. Also, no one will be allowed to 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 may want to pursue the **Arts Focus Program**.

Performing Arts

The philosophy of the Performing Arts branch of the Fine Arts Department is: 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; to promote a lifelong appreciation and support of the arts through the development of skills, knowledge, and experiences. Emphasis is placed on individual skill development as well as ensemble work. 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.

Arts Focus was created for those students who will advance their talents beyond secondary education or who show substantial talent and dedication to a particular arts area. In the performing arts, students will choose, *as they enter the upper school*, to focus in one of the following areas: **acting, choral music, instrumental music, or debate**. These students will meet with a Performing Arts teacher in their chosen area who will help them map out their four-year focus commitment. This commitment must be made before or during their freshman year. Students who choose this focus option *will not be required to take the entry level offerings unless they do not fulfill the four-year focus commitment*.

Entry Level Foundations Courses:

The Performing Arts Department offers three foundations courses:

Theatre Arts
Exploration in Music
Debate I

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

Theatre Arts (Entry Level Course)(Fall or Spring)

This course serves as an introduction to the Theatrical Arts, in which students will explore the history and significance of theatre as communication practice. Additionally, students will investigate how social and political changes can affect theatre/theatrical expression and identify elements of cultural preservation in theatre. Basic techniques of script analysis, character development, directing, and design will also be introduced as we work through significant periods in theatre history.

Exploration in Music (Entry Level Course) (Fall or Spring)

This course is designed for students who would like to increase their general knowledge of what music means in our world. We will approach this from an historical as well as a "hands-on" approach to all of the components that make up this complex art form. Upon completion of this course, a student should have the tools to be a life-long learner in music.

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 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 is also part of the choir year.

The Pembroke Hill Chorale (Full Year)

This chorus will consist of juniors and seniors who enjoy being part of a choral ensemble and enjoy making music together as a team. The members of this group will have many opportunities for positions of leadership within the context of the choral ensemble. Chorale will learn and perform many standard choral works, as well as challenging contemporary and popular songs. 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. Concert Choir and Chorale will rehearse and perform together throughout the year. Excellence in both the rehearsal and performance processes will define the goals of the ensemble.

The Pembroke Hill Concert Choir (Full Year)

This chorus will consist of freshmen and sophomores who enjoy being part of a choral ensemble. The group will learn and perform many standard choral works, as well as challenging contemporary and popular songs. 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. Concert Choir and Chorale will rehearse and perform together throughout the year. Excellence in both the rehearsal and performance processes will define the goals of the ensemble.

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 of the Twentieth Century (Spring)

Prerequisite: Exploration in Music or departmental approval

What do a bale of hay and a butterfly have to do with music? You'd be surprised to find out all the strange sounds that composers have called "music" in recent history. Either as a separate course, or a continuation of the Music History course, this class will be an intense look at the music of the past century. From the abandonment of tonality, to the advent of Rock and Roll, it was an interesting period. Come hear all the music you missed before you were born. This course will be offered every year in the Spring.

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 iPads. 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 on the iPad, this class is for you.

Theatre Arts (Fall or Spring)

This course serves as an introduction to the Theatrical Arts, in which students will explore the history and significance of theatre as communication practice. Additionally, students will investigate how social and political changes can affect theatre/theatrical expression and identify elements of cultural preservation in theatre. Basic techniques of script analysis, character development, directing, and design will also be introduced as we work through significant periods in theatre history.

Acting I (Fall)

This course is designed to introduce the fundamentals of acting through an exploration of ensemble, operational vocabulary; and a focus on self-awareness, collaboration, storytelling, and confidence. We will explore these elements through creative lecture, discussion, exercise, improvisation, script analysis, scene and monologue work.

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 their own 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 Oscar Wilde.

Theatre Lab (Fall)

Prerequisite: Theatre Arts, Acting I or Instructor Approval

Creativity and collaboration are concepts found in all disciplines, nowhere more so than in the theatre. The course is designed to allow students the opportunity to develop creative abilities through experiences in performance-based arts and apply these in a collaborative project. Students will work alone and in groups to develop solutions to dramatic and practical problems. Students will perform in a short play within class time

and crew on all other projects therein when necessary. Coursework will culminate in a showcase open to the community on an evening in December prior to finals week, in which all students are expected to participate.

Directing (Fall)

Prerequisite: Elements of Theatrical Design or Instructor Approval

Under the guidance of the instructor, students will direct or stage manage a brief scene/One-Act of their choosing. We will explore the challenges of directing with special attention to the practical problems and aesthetic questions that arise. Particular emphasis will be given to spatial relationships and the development of an aesthetic perspective. In this course, student directors and stage managers will advance their ability to effectively and collaboratively communicate their vision for a production by learning critical strategies. Through play selection, casting, and scene-work, students will acquire a deeper understanding of a director's responsibilities. Coursework will culminate in a showcase open to the community on an evening in December prior to finals week in which all students are expected to participate.

The Directing course is designed to be taught inside the Theatre Lab class section as an advanced level course for those interested and meeting the necessary qualifications.

Elements of Theatrical Design(Fall or Spring)

Prerequisite: Theatre Arts

This course is designed to build a fundamental understanding of technical elements related to theatrical arts. It will provide insight into the perspectives and experiences of theatrical technicians by examining the individual roles related to collaboration, concept, and construction of a variety of technical elements. Topics will include: directing, stage management, prop construction, costume construction, lighting design, and scene painting. During this course, students are expected to participate in the construction and creation of technical elements for both the upper school musical and spring play, which may require thoughtful clothing choices to avoid undue damage or restriction.

Auditioning (Fall or Spring)

Prerequisite: Acting I, Acting II, or Instructor Approval

Auditioning provides students with a broader understanding of the techniques required to approach the professional world. Topics covered will include company research, professional resume creation, monologue preparation, musical theatre, improvisation, head-shot selection, casting agencies, and cold readings. Students will exit the course with a “package,” including an updated professional resume, audition-ready monologues, and a song.

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 film-making 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.

Debate II (Full Year)

Prerequisites: 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 three interscholastic tournaments during each semester.

Advanced Debate (Full Year)

Prerequisites: 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 four interscholastic tournaments during each semester.

Advanced Speech (Spring)

Prerequisites: Exploration of Music, Theatre Arts, or Debate I Foundations Course

Advanced Speech will serve as an introduction to practical speaking. The course will cover topics ranging from informative speeches, demonstrative speeches, persuasive speeches, and interviewing. Students will learn basic best-practices of public speaking and advanced skills in rhetoric. A performing arts foundation course is required as a prerequisite.

Discussions in Contemporary Issues (Spring)

Prerequisites: Exploration of Music, Theatre Arts, or Debate I Foundations Course

Contemporary Issues will examine the national and international issues that define our global landscape. The course will examine these issues from political, social, and philosophical perspectives. Curriculum may include topics that are affecting the Pembroke Hill community, our mission, or topics that students are concerned about. This class is a seminar that will require the participation of students in discussions, presentations, and advocacy positions on discussed issues.

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.

From the general Visual Art course through the AP Studio Art Portfolio course, students of any interest or ability level will gain aesthetic awareness and develop perceptual and analytical skills. Students expand their ability to express and develop ideas through a variety of visual media and practice discussing artwork using the vocabulary of artists: the elements of art and principles of design.

Visual Art Focus

The art department seeks to identify those students with a passion for art and who have the capability, as well as the dedication, to pursue the development of a portfolio by senior year. A strongly developed portfolio will more than likely enhance the student's success in the college admissions process.

An art department faculty member may recommend an interested student at any time from 8th grade or after. A student may also request a portfolio review to join the Visual Art Focus program. Students accepted into this program are allowed to bypass the Visual Art course and enroll in Drawing as the first step. The commitment that the student and parents will agree to is a 4-year focus in the Visual Arts, in which the student participates in at least one visual art class each year. In addition, focus students are assured a spot in an art class of their choice each year. The culmination of the visual art focus is the AP Studio Art Portfolio class (See course description). It is understood that if the Art Focus student does not enroll in the AP Studio course, or if he chooses to drop the focus at any time during her enrollment, the student must fulfill the introductory Visual Art course requirement.

Visual Art Semester Course Offerings

Visual Art (Fall or Spring)

Visual Art is the mandatory introductory art course in the upper school. The Art Department recommends the Visual Art course to be taken in the 9th or 10th grade. Passing this course will allow the student to enroll in more specialized art electives.

This course provides a framework of knowledge and skills upon which the upper school art courses build. Students will learn to see and think like an artist and will develop technical skills using a variety of tools, materials, and techniques. Students will practice 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 design through application of the elements of art: line, shape, form, composition, value, and color theory as well as the principles of design: unity, variety, balance, emphasis, rhythm, repetition, scale, and contrast. The student's intentional use of content, composition, and craft will be included in assessments. Students will develop perceptual skills crucial to visual art and methods of peer and self-evaluation, including methods of visual analysis.

Drawing I or II (Fall or Spring)

Note: This course serves as the entry level art course for all Visual Art Focus students.

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 Perspective. 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 is more self-directed, larger in scale, 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. Color theory will be stressed as well as developing skills and knowledge of composition. 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 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.

Ceramics I or II (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.

Photography (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.

Advanced Studio Art (Fall) (Not to be confused with AP Studio Portfolio)

This advanced semester-long course is for the student who wishes to continue exploration of studio art practice and begin development of their personal vision in a body of work (a portfolio). This course can follow or precede AP Studio. The pursuit of personal ideas and creative thinking will be emphasized, in conjunction with the expansion of technical skills. Students will explore drawing, two-dimensional, and three-dimensional design through studio practice and research. A wide range of techniques may be studied, utilizing the Elements of Art and Principles of Design, as well as various media including: drawing, painting, printmaking, photography, ceramics, sculpture,

jewelry, collage, and mixed media. Students will be encouraged to investigate art from various cultural, social, and historical backgrounds, which will include contemporary artists and movements. Students will engage in regular critique and written reflection to aid in developing and articulating personal ideas. As the course progresses, students will select media and subject matter that best communicates their ideas and strengths, creating a small body of work with a cohesive theme. *Prerequisite: two semesters of visual art courses.*

Advanced Photography (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.*

Making Comics (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 story-telling. 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. ***Prerequisite: Visual Art or Drawing.***

Printmaking I or II (Fall or Spring)

Students will explore a unique means of personal expression resulting in the creation of multiple original images. Through the various printmaking methods—monotype, relief (linoleum-cut), intaglio (etching or engraving), lithograph, screen print, or a combination of methods—students will develop drawing and design skills. The organization of pictorial ideas and individual creativity will be encouraged through the multitude of creative possibilities in printmaking. With a grade of B+ or better, students may enroll in Printmaking II to experience more advanced printmaking problems.

Sculpture I or II (Fall or Spring)

This course allows students to explore concepts of three-dimensional art. Students will build objects that occupy physical space and learn how to evoke interest in the space around them. Through the study of historical and contemporary sculpture, they will learn formal concepts of 3-Dimensional design. By using volume, mass, line, space, and texture, they will utilize new approaches to visual communication to explore ideas. Students will investigate methods of additive and subtractive sculpture to fabricate expressive objects out of various materials such as clay, wood, plaster, metal, and found objects. Students will have an opportunity to solve problems that are physical, visual and conceptual as they explore contemporary approaches to sculpture. With a grade of B+ or better, students may enroll in Sculpture a second time.

Visual Art Year-long Course Offerings:

AP Studio Art: (Full Year)

Drawing Portfolio
Two-Dimensional Design Portfolio
Three-Dimensional Design Portfolio
(Junior Year / Senior Year)

Prerequisites include: Art Focus commitment, courses in 2-D and/or 3-D areas each year so that students are in a position by the middle of junior year to choose from the three Portfolio options listed above.

The Advanced Placement Studio Art opportunity is intended for the highly motivated student who wishes to pursue serious study in the Visual Arts. The fulfillment of the rigorous portfolio requirements is developed over the year and compiled in the spring for the AP exam. Beginning this year, the criteria for an AP Portfolio has changed. Students will investigate a wide range of materials as they develop artwork that communicates their personal voice and vision in a series of artworks that explores investigation of one theme (the Concentration). From these artworks, five will be selected to represent the student's highest achievement (Quality). Students are expected to work at school and at home throughout the school year. Students' work produced prior to the AP Studio course may also be submitted. Students will be expected to produce approximately 15-20 works of art in a variety of media, techniques, and subject matter. Each portfolio requires submissions in two distinct sections: Quality and Concentration. *It is strongly recommended that the student use the time prior to the AP Studio year to take pre-college art courses, a pre-college art residency program at a college or university, or the Advanced Studio Art course*

AP Studio Portfolios: *(students will each select one area from the options below)*

The Two-Dimensional Design Portfolio demonstrates proficiency in 2-D design using a variety of art forms. These 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 issues that investigate depth and space articulated through additive, subtractive, and/or fabrication processes such as ceramics, sculpture, silversmithing, fashion, installation 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.

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.

AP Art History (Full Year)

Enrollment for qualified sophomores requires Art Department chair approval.

This course explores such topics as the nature of art, its uses, its meanings, art making, and responses to art. Through investigation of diverse artistic traditions of cultures from prehistory to the present, the course fosters in-depth and 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, constructing understanding of individual works and interconnections of art-making processes and products throughout history. 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.

Language

All students are required to take **three** years of 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 and vocabulary will be taught; speaking practice and communicative activities 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 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 oral projects 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 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 be expected to 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, demonstrating a high level of comprehension and facility with the language. They will be required to write clear, persuasive 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. After successful completion of the introductory sequence (Latin I and II), students will be prepared to read “unabridged” Latin prose in Latin III.

Latin III (Full Year)

Prerequisite: Latin II

Students will read selections from Latin prose and poetry, focusing primarily on authors of the Late Republican and Early Imperial periods. For most of the year, the readings will be drawn from the final stages of *The Cambridge Latin Course*, Unit IV, and will offer an introduction to both poetry and prose through reading excerpts from Ovid, Catullus, Horace, Pliny the Younger, Cicero, and Vergil. Students will further their understanding through secondary reading sources, presentations, Internet activities, films, 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 Plautus, 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 the AP 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 grammatical 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

Spanish III reviews and expands the vocabulary and grammar concepts acquired in Spanish II. Upon completion of the course, students will have been introduced to 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 and will read a short detective novel.

Spanish- Level IV (Full Year)

Prerequisite: Spanish III

The objective of this course is to develop 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. 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 (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, which will be reviewed throughout the year.

Spanish Electives (Fall and/or Spring)

Prerequisite: Spanish IV, Spanish IV Accelerated or Hispanic Literature Studies

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 grammatical 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. Vocabulary lists 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. In addition to the graphing calculator, iPads will be utilized for additional resources and interactive activities.

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 representation 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 representation 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 reviewing functions, equations, and inequalities from algebra: polynomial, radical, rational, exponential, and logarithmic. Following the review, topics include trigonometry, vectors, partial fractions, matrices, sequences, series, probability, conics, parametric and 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.

AP Calculus BC

This course covers all of the topics from the Calculus AB outline plus some additional integration techniques, sequences, series, parametric and polar functions, and vector-valued functions, thus preparing students for the BC Calculus Advanced Placement Exam. The content of Calculus BC is designed to qualify the student for placement one college semester beyond that granted for Calculus AB. Students must be able to perform their evaluations with and without the use of a calculator.

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.

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 the Lifetime Personal Fitness course, 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 the Lifetime Personal Fitness course 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.

Lifetime Personal Fitness Course

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 Lifetime Personal Fitness course through the PHS Physical Education Department. All sophomores not participating in athletics will be required to enroll in the Lifetime Personal Fitness course.

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.

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 requested.

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 second week of November depending on state playoffs.

<i>Boys</i>	<i>Girls</i>
Cross Country	Cheerleading
Football	Cross Country
Soccer	Field Hockey
Swimming and Diving	Tennis
	Golf
	Volleyball

Winter

Practices begin around the last week of October and may continue into the second week of March depending upon state playoffs.

<i>Boys</i>	<i>Girls</i>
Basketball	Basketball
Wrestling	Cheerleading
	Swimming and Diving
	Dance

Spring

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

<i>Boys</i>	<i>Girls</i>
Baseball	Soccer
Golf	Track & Field
Lacrosse	Lacrosse
Tennis	
Track & Field	

Science

Three years of science are required for graduation.

Students are required to take Biology in ninth grade and Chemistry in 10th. 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. Students may double in science courses in the junior and/or senior 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, anatomy and physiology, and ecology. Frequent classroom activities and laboratory work reinforces conceptual understanding and develops analytical skills. Students will be evaluated on homework, laboratory reports, tests, class participation and various papers and projects.

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.

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, human anatomy and physiology, plant anatomy and physiology, ecology, and animal behavior. The course includes review in the spring in preparation for the AP Biology exam.

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.

Semester Electives:

Human Physiology (Fall)

Prerequisite: Biology

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.

Neurobiology and Cognition (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. Neurobiology is the study of the nervous system and its constitutive parts – nerve cells and neural circuits – 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. Students will also be introduced to advances in other fields within cognitive sciences, such as cognitive psychology and philosophy, which contribute to our understanding of mental processes such as language and memory.

Human Physiology (Spring)

Prerequisite: Biology

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.

Recommended 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

Examples of a few different pathways through the science department.

9th	10th	11th	12th
Biology	Chemistry	Semester electives	Physics
Biology	Chemistry Accelerated	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.

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 Psychology (Full Year)

Prerequisite: B+ or higher average in previous science courses

What could be more interesting than trying to answer some of the questions about why people act the way they do? Can we predict, understand, possibly even control behavior? As we try to answer these questions, as well as others, our focus will be on the systematic and scientific study of the behavior and mental processes of human beings and other animals. Students will be exposed to the psychological facts, principles and phenomena associated with the major subfields of psychology as well as learn about the methods psychologists use in their science and practice. Additional topics will include history of psychology, sensation and perception, states of consciousness, cognition, motivation and emotion, testing, abnormal behavior, psychological disorders, and socio-cultural influences on behavior.

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.

This course is the study of Western art (major focus) and non-Western art (minor focus) within its historical and cultural context. Students will discover how art embodies values of a culture with reference to time and place of origin. Emphasis will be placed on students' acquiring the ability to identify and describe major cultures, art movements, and art forms. Using the appropriate vocabulary, students will gain the ability to analyze the structure of artworks, interpret meaning, and evaluate aesthetic quality. This course will prepare students for the Advanced Placement Art History exam. Local museums and galleries will be a major resource, and field trips are frequent. A.P Art History may be taken to satisfy the Visual Art graduation requirement (i.e., it can replace the introductory 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.

Contemporary Social Issues (Spring semester elective)

This college preparatory, social science seminar will examine contemporary social issues such as globalization, transnationalism and immigration through the lens of cultural anthropology. Cultural anthropology calls into question what we assume to be normal, natural and self-evident. While we will learn about other cultures (both near and far), we will inherently learn more about ourselves and our own perspectives, biases, and assumptions. This course will introduce fundamental concepts, ideas, issues and debates in contemporary social issues through ethnographic examples of culture in action.

2019-2020 Student Course Catalog

GOA students are modern learners.

The mission of Global Online Academy (GOA) is to reimagine learning to enable students to thrive in a globally networked society. GOA provides a positive, interactive, and academically rigorous environment for students to learn. We offer courses that connect students to topics they care about, and we offer a network that connects students to peers as passionate as they are.

As GOA learners, our students also develop a specific set of skills, skills that might not be exercised as often in a bricks-and-mortar environment. Based on our research, student surveys, and feedback from our faculty, we have identified the following six core competencies that our students develop in practical, hands-on ways, no matter which GOA course they take:

1. Collaborate with people who don't share your location.
2. Communicate and empathize with people who have perspectives different from your own.
3. Curate and create content relevant to real-world issues.
4. Reflect on and take responsibility for your learning and that of others.
5. Organize your time and tasks to learn independently.
6. Leverage digital tools to support and show your learning.

To build these skills, GOA courses are:

- **Globally connected:** Even though our courses are online, students get to know their teacher and classmates by learning how to use technology to build relationships. Each of our classes has no more than 20 students from many different schools, led by an expert teacher from one of our member schools. Students log in multiple times a week to engage in discussions, collaborate on projects, and share ideas.
- **Challenging:** GOA courses are designed to be as rigorous as any course at a home school. Students spend 5-7 hours a week on their courses. GOA courses are mostly asynchronous: students do not show up on certain days at certain times. Instead, teachers publish a calendar of activities, and within that framework, students work on their own schedules, gaining critical independent learning skills along the way.
- **Relevant:** We want students to pursue their passions. Our courses offer practical, hands-on experience in how these ideas can be applied to the world outside of school. Students have a voice and choice in the work they do and the ideas they explore.

DEPARTMENT DESIGNATIONS

Unless otherwise noted, courses are one semester long. Some courses are cross-listed and will appear in multiple departments. Some courses are offered in multiple terms and appear more than once.

ART, MEDIA, AND DESIGN	
<i>Semester 1</i>	<i>Semester 2</i>
Creative Nonfiction Writing	Fiction Writing
Filmmaking	Digital Photography
Poetry Writing	Computer Science II: Game Design and Development
iOS App Design	Graphic Design
Graphic Design	Architecture
	Advocacy
	iOS App Design

MATHEMATICS AND TECHNOLOGY	
<i>Semester 1</i>	<i>Semester 2</i>
Computer Science I: Computational Thinking	Computer Science I: Computational Thinking
iOS App Design	Computer Science II: Analyzing Data with Python

NEW! Problem Solving with Engineering and Design	Computer Science II: Game Design and Development
Number Theory	Computer Science II: Java
Game Theory	Game Theory
	Linear Algebra
	iOS App Design
<i>Yearlong</i>	
Multivariable Calculus	

SCIENCE AND HEALTH	
<i>Semester 1</i>	<i>Semester 2</i>
Medical Problem Solving I	Medical Problem Solving I
Bioethics	Bioethics
Global Health	Global Health
Introduction to Psychology	Introduction to Psychology
Positive Psychology	Positive Psychology
Social Psychology	Social Psychology

NEW! Problem Solving with Engineering and Design	Neuropsychology
	Abnormal Psychology
	Medical Problem Solving II

SOCIAL SCIENCES	
<i>Semester 1</i>	<i>Semester 2</i>
NEW! International Relations	9/11 in a Global Context
Microeconomics	Macroeconomics
Introduction to Investments	Entrepreneurship in a Global Context
NEW! Introduction to Legal Thinking	Prisons and the Criminal Law
NEW! Business Problem Solving	Climate Change and Global Inequality
Applying Philosophy to Modern Global Issues	Advocacy
NEW! Race & Society	Gender Studies
	Genocide and Human Rights

WORLD LANGUAGES
<i>Yearlong</i>

NEW! Chinese Language Through Culture I
Arabic Language Through Culture I
Arabic Language Through Culture II
Arabic Language Through Culture III
Japanese Language Through Culture I
Japanese Language Through Culture II
NEW! Japanese Language Through Culture III

SUMMER: JUNE 17-AUGUST 2, 2019	
<i>Summer@GOA offers some of our most popular courses in an intensive 7-week format.</i>	
9/11 in a Global Context	Introduction to Investments
Abnormal Psychology	Introduction to Psychology
Computer Science I: Computational Thinking	Medical Problem Solving I
Computer Science II: Java	Microeconomics
Fiction Writing	Number Theory

ACADEMIC CALENDAR 2019-2020

SEMESTER 1

SEPTEMBER 4- DECEMBER 20, 2019

August 16, 2019	Semester 1 and Yearlong Course welcome pages published for students
August 19-September 3	Synchronous teacher/student pre-course conversations. These are important (ungraded) initial conversations between teachers and students.
Wednesday, September 4: Semester 1 and Yearlong Courses Open	
September 16 (5pm PST)	Last day to ADD a GOA course (and drop with no financial penalty)
September 23 (5pm PST)	Last day to DROP a GOA course
October 26	End of Grading Period 1
Semester Break	Due to the diversity of GOA schools' calendars, teachers in Semester 1 will be able to choose the week during which their class will be on break. They will make this choice the first week of the semester based on the schedules of the students on their roster and communicate that to students, Site Directors, and GOA.
November 8	Grade Reports distributed
December 6	Course Catalog for 2020-2021 will be published along with 2020-2021 Academic Calendar.
December 20, 2019: Semester 1 Ends (end of Grading Period 2)	
January 10, 2020	Semester 1 Grade Reports distributed

SEMESTER 2
JANUARY 15-MAY 1, 2020

December 13, 2019	Semester 2 course welcome pages published for students
January 3-15, 2020	Synchronous teacher-student conversations for Semester 2 courses. These are important (ungraded) initial conversations between teachers and students.
Wednesday, January 15: Semester 2 Courses Open (yearlong courses resume)	
January 27	Last day to ADD a Semester 2 GOA Course (and last day to drop with no penalty)
Feb 3	Last day to DROP a Semester 2 GOA Course
March 6	End of Grading Periods 1 (semester) and 3 (yearlong)
Semester Break	Due to the diversity of GOA schools' calendars, teachers in Semester 2 will be able to choose the week during which their class will be on break. They will make this choice the first week of the semester based on the schedules of the students on their roster and communicate that to students, Site Directors, and GOA.
March 20	Grade Reports distributed
March 31	Enrollment Opens at 00:00 UTC (8pm Eastern Time on March 30)
April 23-27	Catalyst Conference
Friday, May 1: Semester 2 Ends (end of Grading Periods 2 (semester) and 4 (yearlong))	
May 15	Grade Reports distributed

NCAA COURSE APPROVALS

NCAA

The below GOA courses are NCAA-approved for 2018-2019.

9/11 in a Global Context	Creative Nonfiction Writing	Linear Algebra	Poetry Writing
Advanced Topics in Economics	Fiction Writing	Macroeconomics	Positive Psychology
Applying Philosophy to Modern Global Issues	Game Theory	Medical Problem Solving I	Prisons and the Criminal Law
Arabic Language Through Culture	Genocide & Human Rights	Medical Problem Solving II	Social Psychology
Climate Change and Global Inequality	Global Health	Microeconomics	
Comparative Politics	Introduction to Psychology	Multivariable Calculus	
Computer Science II: Analyzing Data with Python	Japanese Language Through Culture I	Neuropsychology	
Computer Science II: Java	Japanese Language Through Culture II	Number Theory	

ART, MEDIA, AND DESIGN

OFFERED IN SEMESTERS 1 AND 2

GRAPHIC DESIGN: What makes a message persuasive and compelling? What helps audiences and viewers sort and make sense of information? This course explores the relationship between information and influence from a graphic design perspective. Using an integrated case study and design-based approach, this course aims to deepen students' design, visual, and information literacies. Students are empowered to design and prototype communication projects about which they are passionate. Topics include: principles of design and visual communication, infographics, digital search skills, networks and social media, persuasion and storytelling with multimedia, and social activism on the internet. Student work will include individual and collaborative group projects, graphic design, content curation, analytical and creative writing, peer review and critiques, and online presentations.

iOS APP DESIGN*: Learn how to design and build apps for the iPhone and iPad and prepare to publish them in the App Store. Students will work much like a small startup: collaborating as a team, sharing designs, and learning to communicate with each other throughout the course. Students will learn the valuable skills of creativity, collaboration, and communication as they create something amazing, challenging, and worthwhile. Coding experience is NOT required and does not play a significant role in this course. ***Prerequisite: For this course, it is required that students have access to a computer running the most current Mac or Windows operating system. An iOS device that can run apps (iPod Touch, iPhone, or iPad) is also highly recommended.***

*Cross-listed in Mathematics and Technology

SEMESTER 1

CREATIVE NONFICTION WRITING: Tell your own stories and the stories of the world around you! This course centers on the art of shaping real experiences into powerful narratives while growing foundational writing skills. Participants will read, examine, and write diverse works of creative nonfiction including personal narratives, podcasts, opinion editorials, profile pieces, and more. Emphasizing process over product, this writing workshop provides opportunities to create in new ways. Students will practice essential craft elements (e.g., voice, style, structure) while reflecting on stories from their own lives, communities, and interests. They will also build a personalized library of inspiring mentor texts, consider opportunities for publication, and develop sustainable writing habits. Both in real-time video chats and online discussion spaces, students will support one another intentionally; feedback is an essential

component of this course, and students will gain experience in the workshop model, actively participating in a thriving, global writing community. Creative nonfiction has never been as popular as it is today; participants will experience its relevance in their own lives as they collaboratively explore this dynamic genre.

FILMMAKING: This course is for students interested in developing their skills as filmmakers and creative problem-solvers. It is also a forum for screening the work of their peers and providing constructive feedback for revisions and future projects, while helping develop critical thinking skills. The course works from a set of specific exercises based on self-directed research and culminates in a series of short experimental films that challenge students on both a technical and creative level. Throughout, we will increasingly focus on helping students express their personal outlooks and develop unique styles as filmmakers. We will review and reference short films online and discuss how students might find inspiration and apply what they find to their own works. ***Prerequisite:** Students must have access to an HD video camera, tripod or other stabilizing equipment, and editing software such as iMovie, Premiere Pro, etc.*

POETRY WRITING: This poetry writing workshop explores identity and seeks to answer the question: How are you shaped (or not) by the community you live in? Our goal is to create a supportive online network of writers who use language to discover unique and mutual understandings of what it means to be a global citizen from a local place. Students draft and revise poems, provide and receive frequent feedback, and read a range of modern and contemporary poets whose work is grounded in place. Sample assignments include audio and video recording, an online journal, study of performance poetry, peer video conferences, close reading, investigations into process and craft, collaborative poetry anthologies, and a class publication. All writers have the opportunity to submit their work to international contests and publications.

SEMESTER 2

ADVOCACY: This skills-based course explores the creativity, effort, and diversity of techniques required to change people's minds and motivate them to act. Students learn how to craft persuasive arguments in a variety of formats (e.g., written, oral, and multimedia) by developing a campaign for change around an issue about which they care deeply. We explore a number of relevant case studies and examples as we craft our campaigns. Units include persuasive writing, social media, public speaking, informational graphics, and more. The culminating project is a multimedia presentation delivered and recorded before a live audience.

ARCHITECTURE: In this course, students build an understanding of and apply skills in aspects of site; structure, space and design. While gaining key insights into the roles of

architectural analysis, materials, 3D design, and spatial awareness, students develop proficiency in architectural visual communication. We begin by learning the basic elements of architectural design to help analyze and understand architectural solutions. Through digital and physical media, students will use models to enhance visual communication, study the role building materials play in architectural design and develop an understanding of the impact materials have on structural design and cultural traditions. At each stage of the course students interact with peers from around the globe, learning and sharing how changes in materials, technology, and construction techniques lead to the evolution of contemporary architecture style and visual culture. The course culminates with a final project in which each aspiring architect will have the opportunity to work towards a personal presentation for the GOA Catalyst Conference. Students will, through a variety of outcomes, present an architectural intervention which they have proposed as a solution to an identified need, one emanating from or focused within their own community. Throughout the course students will refer to the design process and will use visual journaling techniques to track, reflect and evidence their burgeoning understanding of architecture, construction, and engineering.

COMPUTER SCIENCE II: GAME DESIGN AND DEVELOPMENT*: In this course, students design and develop games through hands-on practice. Comprised of a series of "game jams," the course asks students to solve problems and create content, developing the design and technical skills necessary to build their own games. The first month of the course is dedicated to understanding game design through game designer Jesse Schell's "lenses": different ways of looking at the same problem and answering questions that provide direction and refinement of a game's theme and structure. During this time, students also learn how to use Unity, a professional game development tool, and become familiar with the methodologies of constructing a game using such assets as graphics, sounds, and effects, and controlling events and behavior within the game using the C# programming language. Throughout the remainder of the course, students will work in teams to brainstorm and develop new games in response to a theme or challenge. Students will develop their skills in communication, project and time management, and creative problem-solving while focusing on different aspects of asset creation, design, and coding. *Prerequisites: Computer Science I: Computational Thinking or its equivalent.*

*Cross-listed in Mathematics and Technology

DIGITAL PHOTOGRAPHY: In an era where everyone has become a photographer obsessed with documenting most aspects of life, we swim in a sea of images posted on Instagram, Facebook, Snapchat, Pinterest, or another digital medium. To that end, why is learning how to use a digital camera important and what does taking a powerful and persuasive photo with a 35mm digital single lens reflex (DSLR) camera require? Digital photography explores this question in a variety of ways, beginning with the technical aspects of using and taking advantage of a powerful camera then moving to a host of creative questions and opportunities. Technical topics such as aperture, shutter, white balance, and resolution get ample coverage in the first half of the course, yet each is pursued with the goal of enabling students to leverage the possibilities that come with manual image capture. Once confident about technical basics, students apply their skills when pursuing creative questions such as how to understand and use light, how to

consider composition, and how to take compelling portraits. Throughout the course, students tackle projects that enable sharing their local and diverse settings, ideally creating global perspectives through doing so. Additionally, students interact with each other often through critique sessions and collaborative exploration of the work of many noteworthy professional photographers whose images serve to inspire and suggest the diverse ways that photography tells visual stories. ***Prerequisite: Students must have daily access to a DSLR camera.***

FICTION WRITING: This course connects students interested in creative writing (primarily short fiction) and provides a space for supportive and constructive feedback. Students gain experience in the workshop model, learning how to effectively critique and discuss one another's writing in an online environment. In addition to developing skills as readers within a workshop setting, students strive to develop their own writing identities through a variety of exercises. The course capitalizes on the geographic diversity of the students by eliciting stories that shed light on both the commonalities and differences of life experiences in different locations. Additionally, we read and discuss the work of authors from around the globe. Students' essential responsibilities are twofold: to engage in the class as readers and writers and to focus on their development as readers and writers. Both require participation in discussions of various formats within our online community, as well as dedicated time outside of class reading and providing feedback on one another's work and writing original pieces for the workshop.

MATHEMATICS AND TECHNOLOGY

OFFERED IN SEMESTERS 1 AND 2

COMPUTER SCIENCE I: COMPUTATIONAL THINKING: *This course (or its equivalent) is a prerequisite to all Computer Science II classes at GOA.* Computational thinking centers on solving problems, designing systems, and understanding human behavior. It has applications not only in computer science, but also myriad other fields of study. This introductory level course focuses on thinking like a computer scientist, especially understanding how computer scientists define and solve problems. Students begin the course by developing an understanding of what computer science is, how it can be used by people who are not programmers, and why it's a useful skill for all people to cultivate. Within this context, students are exposed to the power and limits of computational thinking. Students are introduced to entry level programming constructs that will help them apply their knowledge of computational thinking in practical ways. They will learn how to read code and pseudocode as well as begin to develop strategies for debugging programs. By developing computational thinking and programming skills, students will have the core knowledge to define and solve problems in future computer science courses. While this course would be beneficial for any student without formal training as a programmer or computer scientist, it is intended for those with no programming experience.

iOS APP DESIGN*: Learn how to design and build apps for the iPhone and iPad and prepare to publish them in the App Store. Students will work much like a small startup: collaborating as a team, sharing designs, and learning to communicate with each other throughout the course. Students will learn the valuable skills of creativity, collaboration, and communication as they create something amazing, challenging, and worthwhile. Coding experience is NOT required and does not play a significant role in this course. ***Prerequisite: For this course, it is required that students have access to a computer running the most current Mac or Windows operating system. An iOS device that can run apps (iPod Touch, iPhone, or iPad) is also highly recommended.***

*Cross-listed in Mathematics and Technology

GAME THEORY: Do you play games? Do you ever wonder if you're using the "right" strategy? What makes one strategy better than another? In this course, we explore a branch of mathematics known as game theory, which answers these questions and many more. Game theory has many applications as we face dilemmas and conflicts every day, most of which we can treat as mathematical games. We consider significant global events from fields like diplomacy, political science, anthropology, philosophy, economics, and popular culture. Specific topics include two-person zero-sum games, two person non-zero-sum games, sequential games, multiplayer games, linear optimization, as well as voting and power theory.

SEMESTER 1

(NEW!) PROBLEM SOLVING WITH ENGINEERING AND DESIGN*: This course investigates various topics in science, technology, computer programming, engineering, and mathematics using a series of projects and problems that are both meaningful and relevant to the students' lives. Students will develop engineering skills, including design principles, modeling, and presentations, using a variety of computer hardware and software applications to complete assignments and projects. This is a course that focuses on practical applications of science and mathematics to solve real-world issues. Prototyping and project-based learning are therefore essential components of the course. Upon completing this course, students will have an understanding of the application of science and mathematics in engineering and will be able to make informed decisions concerning real-world problems. Furthermore, students will have worked on a design team to develop a product or system. Throughout the program, students step into the varied roles engineers play in our society, solve problems in their homes and communities, discover new career paths and possibilities, and develop engineering knowledge and skills. There are no particular math or science prerequisites for this course, just an interest in using STEM to solve problems and a desire to learn!

*Cross-listed in Science and Health

NUMBER THEORY: Once thought of as the purest but least applicable part of mathematics, number theory is now by far the most commonly applied: every one of the millions of secure

internet transmissions occurring each second is encrypted using ideas from number theory. This course covers the fundamentals of this classical, elegant, yet supremely relevant subject. It provides a foundation for further study of number theory, but even more, it develops the skills of mathematical reasoning and proof in a concrete and intuitive way and is necessary preparation for any future course in upper-level college mathematics or theoretical computer science. We progressively develop the tools needed to understand the RSA algorithm, the most common encryption scheme used worldwide. Along the way we invent some encryption schemes of our own and discover how to play games using number theory. We also get a taste of the history of the subject, which involves the most famous mathematicians from antiquity to the present day, and we see parts of the story of Fermat's Last Theorem, a 350-year-old statement that was fully proven only twenty years ago. While most calculations will be simple enough to do by hand, we will sometimes use the computer to see how the fundamental ideas can be applied to the huge numbers needed for modern applications. ***Prerequisite: A strong background in precalculus and above, as well as a desire to do rigorous mathematics and proofs.***

SEMESTER 2

COMPUTER SCIENCE II: ANALYZING DATA WITH PYTHON: In this course, students utilize the Python programming language to read, analyze, and visualize data. The course emphasizes using real- world datasets, which are often large, messy, and inconsistent. Because of the powerful data structures and clear syntax of Python, it is one of the most widely used programming languages in scientific computing. Students explore the multitude of practical applications of Python in fields like biology, engineering, and statistics. ***Prerequisite: Computer Science I: Computational Thinking or its equivalent.***

Students who take this course may be interested in iOS App Design, Problem Solving with Engineering and Design or Game Theory as well.

COMPUTER SCIENCE II: GAME DESIGN AND DEVELOPMENT: In this course, students design and develop games through hands-on practice. Comprised of a series of "game jams," the course asks students to solve problems and create content, developing the design and technical skills necessary to build their own games. The first month of the course is dedicated to understanding game design through game designer Jesse Schell's "lenses": different ways of looking at the same problem and answering questions that provide direction and refinement of a game's theme and structure. During this time, students also learn how to use Unity, a professional game development tool, and become familiar with the methodologies of constructing a game using such assets as graphics, sounds, and effects, and controlling events and behavior within the game using the C# programming language. Throughout the remainder of the course, students will work in teams to brainstorm and develop new games in response to a theme or challenge. Students will develop their skills in communication, project and time management, and creative problem-solving while focusing on different aspects of asset creation, design, and coding. ***Prerequisites: Computer Science I: Computational Thinking or its equivalent.***

COMPUTER SCIENCE II: JAVA: This course teaches students how to write programs in the Java programming language. Java is the backbone of many web applications, especially eCommerce and government sites. It is also the foundational code of the Android operating system and many tools of the financial sector. Students learn the major syntactical elements of the Java language through object-oriented design. The emphasis in the course will be on creating intelligent systems through the fundamentals of Computer Science. Students will write working programs through short lab assignments and more extended projects that incorporate graphics and animation. ***Prerequisite: Computer Science I: Computational Thinking or its equivalent.***

LINEAR ALGEBRA: In this course students learn about the algebra of vector spaces and matrices by looking at how images of objects in the plane and space are transformed in computer graphics. We do some paper-and-pencil calculations early in the course, but the computer software package Geogebra (free) will be used to do most calculations after the opening weeks. No prior experience with this software or linear algebra is necessary. Following the introduction to core concepts and skills, students analyze social networks using linear algebraic techniques. Students will learn how to model social networks using matrices as well as discover things about the network with linear algebra as your tool. We will consider applications like Facebook and Google. ***Prerequisite: Geometry and Algebra 2 or the equivalents.***

YEARLONG

MULTIVARIABLE CALCULUS: In this course students learn to differentiate and integrate functions of several variables. We extend the Fundamental Theorem of Calculus to multiple dimensions and the course will culminate in Green's, Stokes' and Gauss' Theorems. The course opens with a unit on vectors, which introduces students to this critical component of advanced calculus. We then move on to study partial derivatives, double and triple integrals, and vector calculus in both two and three dimensions. Students are expected to develop fluency with vector and matrix operations. Understanding parametric curve as a trajectory described by a position vector is an essential concept, and this allows us to break free from one-dimensional calculus and investigate paths, velocities, and other applications of science that exist in three-dimensional space. We study derivatives in multiple dimensions and use the ideas of the gradient and partial derivatives to explore optimization problems with multiple variables as well as consider constrained optimization problems using Lagrangians. After our study of differentials in multiple dimensions, we move to integral calculus. We use line and surface integrals to calculate physical quantities especially relevant to mechanics, electricity and magnetism, such as work and flux. We will employ volume integrals for calculations of mass and moments of inertia and conclude with the major theorems (Green's, Stokes', Gauss') of the course, applying each to some physical applications that commonly appear in calculus-based physics. ***Prerequisite: The equivalent of a college year of single-variable calculus, including integration techniques, such as trigonometric substitution, integration by parts, and partial fractions. Completion of the AP Calculus BC curriculum with a score of 4 or 5 on the AP Exam would be considered adequate preparation.***

SCIENCE AND HEALTH

OFFERED IN SEMESTERS 1 AND 2

BIOETHICS: Ethics is the study of what one should do as an individual and as a member of society. In this course students evaluate ethical issues related to medicine and the life sciences. During the semester, students explore real-life ethical issues, including vaccination policies, organ transplantation, genetic testing, human experimentation, and animal research. Through reading, writing, and discussion, students learn basic concepts and skills in the field of bioethics, deepen their understanding of biological concepts, strengthen their critical-reasoning skills, and learn to engage in respectful dialogue with people whose views may differ from their own. In addition to journal articles and position papers, students will be required to read Rebecca Skloot's *The Immortal Life of Henrietta Lacks*.

Students who take this course may be interested in Global Health, Medical Problem Solving I/II or Climate Change and Global Inequality.

GLOBAL HEALTH: What makes people sick? What social and political factors lead to the health disparities we see both within our own community and on a global scale? What are the biggest challenges in global health and how might they be met? Using an interdisciplinary approach to address these questions, this course improves students' health literacy through an examination of the most significant public-health challenges facing today's global population. Topics include the biology of infectious disease (specifically HIV and Malaria); the statistics and quantitative measures associated with health issues; the social determinants of health; and the role of organizations (public and private) in shaping the landscape of global health policy. Students use illness as a lens through which to examine social issues like poverty, gender, and race. Student work includes analytical and creative writing, research, peer collaboration, reading and discussions of nonfiction, and online presentations.

INTRODUCTION TO PSYCHOLOGY: What does it mean to think like a psychologist? In Introduction to Psychology, students explore three central psychological perspectives – the behavioral, the cognitive, and the sociocultural – in order to develop a multi-faceted understanding of what thinking like a psychologist encompasses. The additional question of “How do psychologists put what they know into practice?” informs study of the research methods in psychology, the ethics surrounding them, and the application of those methods to practice. During the first five units of the course, students gather essential information that they apply during a group project on the unique characteristics of adolescent psychology. Students similarly envision a case study on depression, which enables application of understandings from the first five units. The course concludes with a unit on positive psychology, which features

current positive psychology research on living mentally healthy lives. Throughout the course, students collaborate on a variety of activities and assessments, which often enable learning about each other's unique perspectives while building their research and critical thinking skills in service of understanding the complex field of psychology.

MEDICAL PROBLEM SOLVING I: In this course students collaboratively solve medical mystery cases, similar to the approach used in many medical schools. Students enhance their critical thinking skills as they examine data, draw conclusions, diagnose, and identify appropriate treatment for patients. Students use problem-solving techniques in order to understand and appreciate relevant medical/biological facts as they confront the principles and practices of medicine. Students explore anatomy and physiology pertaining to medical scenarios and gain an understanding of the disease process, demographics of disease, and pharmacology. Additional learning experiences include studying current issues in health and medicine, building a community-service action plan, interviewing a patient, and creating a new mystery case.

POSITIVE PSYCHOLOGY: What is a meaningful, happy, and fulfilling life? The focus of psychology has long been the study of human suffering, diagnosis, and pathology, but in recent years, however, positive psychologists have explored what's missing from the mental health equation, taking up research on topics such as love, creativity, humor, and mindfulness. In this course, we will dive into what positive psychology research tells us about the formula for a meaningful life, the ingredients of fulfilling relationships, and changes that occur in the brain when inspired by music, visual art, physical activity, and more. We will also seek out and lean on knowledge from positive psychology research and experts, such as Martin Seligman's Well Being Theory, Mihaly Csikszentmihalyi's idea of flow, and Angela Lee Duckworth's concept of grit. In exploring such theories and concepts, students will imagine and create real-world measurements using themselves and willing peers and family members as research subjects. As part of the learning studio format of the course, students will also imagine, research, design, and create projects that they will share with a larger community. Throughout the development of these projects, student will collaborate with each other and seek ways to make their work experiential and hands-on. Students will leave the class with not only some answers to the question of what makes life meaningful, happy, and fulfilling, but also the inspiration to continue responding to this question for many years to come.

SEMESTER 1

SOCIAL PSYCHOLOGY: Are you thinking and acting freely of your own accord or is what you think, feel, and do a result of influences by the people around you? Social psychology is the scientific study of how and why the actual, imagined, or implied presence of others influences our thoughts, feelings, and behavior. The principles of social psychology help explain everything from why we stop at stop signs when there is no one around to why we buy certain products, why in some situations we help others and in some we don't, and what leads to more dramatic (and catastrophic) events such as mass suicides or extreme prejudice and discrimination. As we

take up these topics and questions, students will build and engage in a community of inquiry, aimed primarily at learning how to analyze human behavior through the lens of a social psychologist. Social Psychology invites students to explore, plan, investigate, experiment, and apply concepts of prejudice, persuasion, conformity, altruism, and the self that bring the “social” to psychology. The course culminates in a public exhibition of student-designed investigation of a social psychological topic of their choice. This course uses a competency-based learning approach in which students both build GOA core competencies that transcend the discipline and learn how to think like a social psychologist. Much of the course is self-paced; throughout the semester, students are assessed solely in relation to outcomes tied to the competencies.

(NEW!) PROBLEM SOLVING WITH ENGINEERING AND DESIGN*: This course investigates various topics in science, technology, computer programming, engineering, and mathematics using a series of projects and problems that are both meaningful and relevant to the students' lives. Students will develop engineering skills, including design principles, modeling, and presentations, using a variety of computer hardware and software applications to complete assignments and projects. This is a course that focuses on practical applications of science and mathematics to solve real-world issues. Prototyping and project-based learning are therefore essential components of the course. Upon completion of the course, students will have an understanding of the application of science and mathematics in engineering and will be able to make informed decisions concerning real-world problems. Furthermore, students will have worked on a design team to develop a product or system. Throughout the program, students step into the varied roles engineers play in our society, solve problems in their homes and communities, discover new career paths and possibilities, and develop engineering knowledge and skills. There are no particular math or science prerequisites for this course, just an interest in using STEM to solve problems and a desire to learn!

*Cross-listed in Mathematics and Technology

SEMESTER 2

ABNORMAL PSYCHOLOGY: This course focuses on psychiatric disorders such as schizophrenia, eating disorders, anxiety disorders, substance abuse, and depression. As students examine these and other disorders, they learn about the symptoms, diagnoses, and treatments. Students also deepen their understanding of the social stigmas associated with mental illnesses. This course may be taken as a continuation of Introduction to Psychology, although doing so is not required.

MEDICAL PROBLEM SOLVING II: This course is an extension of the problem-based learning done in Medical Problem Solving I. While collaborative examination of medical case studies will remain the core work of the course, students will tackle more complex cases and explore new topics in medical science, such as the growing field of bioinformatics. Students in MPS II will also have opportunities to design cases based on personal interests, discuss current

topics in medicine, and apply their learning to issues in their local communities. ***Prerequisite: Medical Problem Solving I.***

NEUROPSYCHOLOGY: Have you ever wondered how your brain determines all aspects of your behavior, emotion, learning and understanding each moment of the day? In Neuropsychology we will tackle this enormous question through our exploration of basic brain anatomy and function and the neurobiological perspective on cognitive and behavioral disorders. In addition, students investigate the neuropsychology of mindfulness, learning and memory along with how the brain and human behavior change over time. Students also pursue a citizen science project on mapping neurons to understand the nature and process of scientific research. The course culminates with students developing a fundraising campaign for a nonprofit foundation or research organization of their choosing, which supports research and/or patient care initiatives on a specific neurological condition. Student project topics have included everything from Alzheimer's disease to traumatic brain injury, addiction, synesthesia, and other areas of interest. We also focus on diagnostic and treatment challenges, including behavioral and pharmaceutical management. Neuropsychology can be taken as a continuation of Introduction to Psychology, although Intro is not a prerequisite.

SOCIAL SCIENCES

SEMESTER 1

APPLYING PHILOSOPHY TO MODERN GLOBAL ISSUES: This is an applied philosophy course that connects pressing contemporary issues with broad-range philosophical ideas and controversies, drawn from multiple traditions and many centuries. Students use ideas from influential philosophers to examine how thinkers have applied reason successfully, and unsuccessfully, to many social and political issues across the world. In addition to introducing students to the work of philosophers as diverse as Confucius, Immanuel Kant, John Rawls and Michel Foucault, this course also aims to be richly interdisciplinary, incorporating models and methods from diverse fields including history, journalism, literary criticism, and media studies. Students learn to develop their own philosophy and then apply it to the ideological debates which surround efforts to improve their local and global communities.

(NEW!) BUSINESS PROBLEM SOLVING: How could climate change disrupt your production and supply chains or impact your consumer markets? Will tariffs help or hurt your business? How embedded is social media in your marketing plan? Is your company vulnerable to cybercrime? What 21st century skills are you cultivating in your leadership team? Students in this course will tackle real-world problems facing businesses large and small in today's fast changing global marketplace where radical reinvention is on the minds of many business leaders. Students will work collaboratively and independently on case studies, exploring business issues through varied lenses including operations, marketing, human capital, finance and risk management as well as sustainability. As they are introduced to the concepts and practices of business, students will identify, analyze and propose solutions to business problems, engaging in research of traditional and emerging industries, from established multinationals to startups.

(NEW!) INTERNATIONAL RELATIONS: Are China and the U.S. on a collision course for war? Can the Israelis and Palestinians find a two-state solution in holy land? Will North Korea launch a nuclear weapon? Can India and Pakistan share the subcontinent in peace? These questions dominate global headlines and our daily news feeds. In this course, you will go beyond the soundbites and menacing headlines to explore the context, causes, and consequences of the most pressing global issues of our time. Through case studies, you will explore the dynamics of international relations and the complex interplay of war and peace, conflict and cooperation, and security and human rights. Working with classmates from around the world, you will also identify and model ways to prevent, mediate, and resolve some of the most pressing global conflicts.

INTRODUCTION TO INVESTMENTS: In this course, students simulate the work of investors by working with the tools, theories, and decision-making practices that define smart investment. We explore concepts in finance and apply them to investment decisions in three primary contexts: portfolio management, venture capital, and social investing. After an introduction to theories about valuation and risk management, students simulate scenarios in which they must make decisions to grow an investment portfolio. They manage investments in stocks, bonds, and options to learn a range of strategies for increasing the value of their portfolios. In the second unit, students take the perspective of venture capital investors, analyzing startup companies and predicting their value before they become public. In the third unit, students examine case studies of investment funds that apply the tools of finance to power social change. Throughout the course, students learn from experts who have experience in identifying value and managing risk in global markets. They develop their own ideas about methods for taking calculated financial risks and leave this course not just with a simulated portfolio of investments, but the skills necessary to manage portfolios in the future.

(NEW!) INTRODUCTION TO LEGAL THINKING: Inspired by GOA's popular Medical Problem Solving series, this course uses a case-based approach to give students a practical look into the professional lives of lawyers and legal thinking. By studying and debating a series of real legal cases, students will sharpen their ability to think like lawyers who research, write and speak persuasively. The course will focus on problems that lawyers encounter in daily practice, and on the rules of professional conduct case law. In addition to practicing writing legal briefs, advising fictional clients and preparing opening and closing statements for trial, students will approach such questions as the law and equity, the concept of justice, jurisprudence and legal ethics.

MICROECONOMICS: In this course, students learn about how consumers and producers interact to form a market and then how and why the government may intervene in that market. Students deepen their understanding of basic microeconomic theory through class discussion and debate, problem solving, and written reflection. Students visit a local production site and write a report using the market principles they have learned. Economic ways of thinking about the world will help them better understand their roles as consumers and workers, and someday, as voters and producers.

(NEW!) RACE & SOCIETY: What is race? Is it something we're born with? Is it an idea that society imposes on us? An identity we perform? A privilege we benefit from? Does our own culture's conception of race mirror those found in other parts of the world? These are just a few of the questions that students in this course will explore together as they approach the concept of race as a social construct that shapes and is shaped by societies and cultures in very real ways. Throughout the course students will learn about the changing relationship between race and society across time and across cultures. Engaging with readings, films, and speakers from a variety of academic fields (history, sociology, anthropology, literature) students will explore, research, reflect on and discuss the complex set of relationships governing race and society.

SEMESTER 2

9/11 IN A GLOBAL CONTEXT: September 11, 2001 was a tragic day that changed the world in profound ways. In this course students explore the causes of 9/11, the events of the day itself, and its aftermath locally, nationally, and around the world. In place of a standard chronological framework, students instead view these events through a series of separate lenses. Each lens represents a different way to view the attacks and allows students to understand 9/11 as an event with complex and interrelated causes and outcomes. Using a variety of technologies and activities, students work individually and with peers to evaluate each lens. Students then analyze the post-9/11 period and explore how this event affected the U.S., the Middle East, and the wider world.

CLIMATE CHANGE AND GLOBAL INEQUALITY: Nowhere is the face of global inequality more obvious than in climate change, where stories of climate-driven tragedies and the populations hit hardest by these disasters surface in every news cycle. In this course students will interrogate the causes and effects of climate change, and the public policy debates surrounding it. In case studies, we will research global, regional, and local policies and practices along with the choices of decision makers and what they mean to the populations they serve. Who benefits, who suffers, and how might we change this equation? Following the Learning Studio model, in the second half of the course, students will work with their teacher to design their own independent projects reflecting their individual interests and passions. We will collaborate in workshops with classmates to deepen our collective understanding of the complex issues surrounding climate change. Throughout the semester we will also build and curate a library of resources and share findings in varied media, engaging as both consumers and activists to increase knowledge, challenge and advocate for sustainable norms. Finally, students will have the opportunity to reach a global audience by participating in GOA's Catalyst Conference in the spring 2019, as they present their individual projects to spark change in local communities through well-informed activism.

ENTREPRENEURSHIP IN A GLOBAL CONTEXT: How does an entrepreneur think? What skills must entrepreneurs possess to remain competitive and relevant? What are some of the strategies that entrepreneurs apply to solve problems? In this experiential course, students develop an understanding of entrepreneurship in today's global market; employ innovation, design, and creative solutions for building a viable business model; and learn to develop, refine, and pitch a new startup. Units of study include Business Model Canvas, Customer Development vs. Design Thinking, Value Proposition, Customer Segments, Iterations & Pivots, Brand Strategy & Channels, and Funding Sources. Students use the Business Model Canvas as a roadmap to building and developing their own team startup, a process that requires hypothesis testing, customer research conducted in hometown markets, product design, product iterations, and

entrepreneur interviews. An online startup pitch by the student team to an entrepreneurial advisory committee is the culminating assessment. Additional student work includes research, journaling, interviews, peer collaboration, and a case study involving real-world consulting work for a current business.

GENDER STUDIES: This course uses the concept of gender to examine a range of topics and disciplines that include feminism, gay and lesbian studies, women's studies, popular culture, and politics. Throughout the course students examine the intersection of gender with other social identifiers: class, race, sexual orientation, culture, and ethnicity. Students read about, write about, and discuss gender issues as they simultaneously reflect on the ways that gender has manifested in and influenced their lives.

GENOCIDE AND HUMAN RIGHTS: Students in this course study several of the major 20th century genocides (Armenian, the Holocaust, Cambodian, and Rwandan), analyze the role of the international community in responding to and preventing further genocide (with particular attention to the Nuremberg tribunals), and examine current human rights crises around the world. Students read primary and secondary sources, participate in both synchronous and asynchronous discussions with classmates, write brief papers, read short novels, watch documentaries, and develop a human rights report card website about a nation of their choice.

MACROECONOMICS: Macroeconomics is the study of economic units as a whole rather than of their individual components. The aggregate unit is usually a national economy and that will be our focus in this course. Students will learn to better understand how to measure national economic activity with concepts like gross domestic product, unemployment and inflation and the strengths and weaknesses of these statistics. Students will then study theoretical methods of influencing national economic activity with monetary and fiscal policy and will learn about some of the controversy surrounding these policy tools. The advantages and disadvantages of international trade and of methods of setting exchange rates will also be introduced. The course will include an individual student investigation of a national economy other than their home country. Students will identify their economic findings and present resolutions in their final report.

PRISONS AND THE CRIMINAL LAW: Criminal courts in the United States have engaged in an extraordinary social experiment over the last 40 years: they have more than quintupled America's use of prisons and jails. Has this experiment with "mass incarceration" produced more negative effects than good? Is it possible at this point to reverse the experiment without doing even more harm? In this course, students become familiar with the legal rules and institutions that determine who goes to prison and for how long. Along the way, students gain a concrete, practical understanding of legal communication and reasoning while grappling with mass incarceration as a legal, ethical, and practical issue. In an effort to understand our current scheme

of criminal punishments and to imagine potential changes in the system, we immerse ourselves in the different forms of rhetoric and persuasion that brought us to this place: we read and analyze the jury arguments, courtroom motions, news op-eds, and other forms of public persuasion that lawyers and judges create in real-world criminal cases. Topics include the history and social functions of prisons; the definition of conduct that society will punish as a crime; the work of prosecutors, defense attorneys, and judges in criminal courts to resolve criminal charges through trials and plea bargains; the sentencing rules that determine what happens to people after a conviction; the alternatives to prison when selecting criminal punishments; and the advocacy strategies of groups hoping to change mass incarceration. The reading focuses on criminal justice in the United States, but the course materials also compare the levels of imprisonment used in justice systems around the world. Assignments will ask students to practice with legal reasoning and communication styles, focused on specialized audiences such as juries, trial judges, appellate judges, sentencing commissions, and legislatures. The work will involve legal research, written legal argumentation, peer collaboration, and oral advocacy.

Note: This course is offered through Wake Forest University School of Law and is designed by Ronald Wright, the Needham Y. Gulley Professor of Criminal Law. Prof. Wright is also part of the teaching team for this course. Students who take this course should expect a college-level workload (8-10 hours a week). Successful completion of this course will be rewarded with a certificate from the law school.

WORLD LANGUAGES

YEARLONG

ON GOA's WORLD LANGUAGE PROGRAM:

GOA World Language courses seek to awaken student interest in language and culture through an approach that is at once rigorous and modern. The courses are all yearlong, competency-based classes in which students are given considerable autonomy to progress through language acquisition modules and demonstrate mastery to their teachers as their skills develop. Our competencies and learning outcomes for these courses are adapted from [ACTFL's "can-do" statements](#). Our students typically achieve Novice proficiency by the end of a level I course, Intermediate proficiency by the end of level II and Intermediate High/Advanced Low proficiency by the end of level III. While our courses teach all four language skills, they place particular emphasis on interpersonal communication (as opposed to more presentational modes of communication). In addition to building their speaking and writing skills, students learn to leverage a modern understanding of language acquisition, how to align goals with practice, how to ask questions, how to curate resources from the internet and an extended network of native speakers of the target language. Students in these courses connect with one another frequently to discuss their language learning process and to take deep dives into the culture and history of the languages that they are studying.

In 2019-2020 Japanese II & III students will share a Canvas space - allowing for differentiated levels of language instruction and practice within a larger community for cultural exchange and discussions. The same is true for Arabic II & III. Level I students in Arabic, Japanese and Chinese will be in Canvas courses with only level I students.

ARABIC LANGUAGE THROUGH CULTURE I Through study of Levantine (Jordanian) Arabic and the Arabic writing system, students develop Novice proficiency in interpersonal communication. Students will be able to communicate in spontaneous spoken conversations on very familiar and everyday topics, including personal introductions, families, daily routines, and preferences, using a variety of practiced or memorized words, phrases, simple sentences, and questions.

ARABIC LANGUAGE THROUGH CULTURE II Arabic II students have one year of Arabic Language Through Culture or have demonstrated Novice proficiency through summer coursework or other experiences. Students will communicate in spontaneous spoken conversations on familiar topics, including food, weather, and hobbies, using a variety of practiced or memorized words, phrases, simple sentences, and questions.

ARABIC LANGUAGE THROUGH CULTURE III Students in Arabic III have demonstrated Intermediate interpersonal proficiency in Arabic (MSA or a dialect) through two years in Arabic Language Through Culture or other coursework, and have demonstrated an ability to work online independently and reliably with instructors and peers in Arabic Language Through Culture or another GOA class. Students in Arabic III will have opportunities to direct their own study through choice of material and topic. They will use Arabic to interact with native speakers on topics of their choosing, and to explore topics of interest through a variety of media (written works, audio, video, face-to-face interviews).

(NEW 1!) CHINESE LANGUAGE THROUGH CULTURE I: Through this introduction to Mandarin Chinese language and culture students will learn the building blocks of spoken and written communication- pronunciation, tones, stroke order and radical recognition. Students will carry out basic interactions in Chinese orally and in writing. Interpersonal communication and functional vocabulary acquisition will lay the foundations for a more in-depth study of Chinese writing and grammar. Vocabulary is practiced in a thematic and communicative way and will leave students prepared to exchange introductory greetings, as well as to discuss family, dates and time, hobbies, visiting friends, making plans among other topics. Students will also study cultural and historic elements of the Chinese-speaking world. Audio and video materials, computer software, games, projects, and presentations foster student interaction and participation. By the end of the first year, students will have achieved Novice level proficiency.

JAPANESE LANGUAGE THROUGH CULTURE I: This full-year course is a unique combination of Japanese culture and language, weaving cultural comparison with the study of basic Japanese language and grammar. While examining various cultural topics such as literature, art, lifestyle and economy, students learn the basics of the Japanese writing system (Hiragana and Katakana), grammar and vocabulary. Through varied synchronous and asynchronous assignments, including hands-on projects and face-to-face communications, students develop their speaking, listening, reading and writing skills. The cultural study and discussions are conducted in English, with topics alternating every two to three weeks. The ultimate goal of this course is to raise awareness and appreciation of different cultures through learning the basics of the Japanese language. The focus of this course is 60 percent on language and 40 percent on culture. This course is appropriate for beginner-level students.

JAPANESE LANGUAGE THROUGH CULTURE II: Through language learning, students in this course share their voices, cultivate global perspectives, and foster appreciation of self and others. Students expand their knowledge of the basic skills introduced in Japanese Language Through Culture I while further developing their speaking, listening, writing, and reading skills. Each unit follows the IPA model (Integrated Performance Assessment), blending three modes of communication: interpretation of authentic material in Japanese, synchronous and asynchronous practice in speaking and writing, and oral and written presentations. Each unit focuses on one of the following cultural topics: Design and Expression, Ecology, Entertainment, East meets West, Harmony, and Nature. In addition, students will have the opportunity to select and pursue topics of their own interest. Grammar topics will cover the essential forms that are typically introduced in the second and third year of a high school Japanese program. By learning the Dictionary

Form, Nominalizer, TE form, TA form, NAI form, and Noun Modifier, students are able to add more complexity to their sentence construction. In doing so, they shift from forming simple sentences to communicating in a coherent paragraph. As online learners, students are expected to exhibit superb time management and communication skills, as well as take ownership of their learning. While grammar instruction will be delivered through asynchronous work and face-to-face meetings, much of the course content will be curated and created by students through their research and collaboration. The focus of this course is 60 percent on language and 40 percent on culture. ***Prerequisite: Japanese Language Through Culture I or permission from the instructor.***

JAPANESE LANGUAGE THROUGH CULTURE III: Students in Japanese III have mastered most of the conjugation patterns (TE/TA form, dictionary form, and NAI form) that are necessary to speak and write in complex structures. While advancing their grammatical knowledge (including giving and receiving, potential form, and honorific form), students will compare and examine similar functions and their subtle differences. In speaking, students are allowed to speak in informal/casual style with each other and with the teacher in order to solidify their control of the Plain Form. Interpersonal communications will be done through face-to-face conversation and recorded messages. In reading and listening, students will curate, share, and practice with grasping the gist of authentic materials. Such material may include TV commercials, news, movies, children's books, online newspapers, and cooking recipes. In writing, students will work on creative writing, expository writing, and analytical writing (compare-and-contrast in the AP format). Semester 1 will incorporate JLPT N5 exam material. Taking the exam is not necessary but encouraged. In Semester 2, students will participate in that GOA Catalyst Conference.