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# Upper School Course Catalog 2017-18

*Preparing Boys for Life.*

# INTRODUCTION

The Haverford School offers a demanding, college preparatory curriculum within heterogeneously grouped classes. Certain advanced courses (marked with an asterisk \*) are homogeneously grouped. Within this framework, students are encouraged to pursue a course of study that challenges them beyond the minimum graduation requirements, while allowing time for participation in extracurricular activities and programs as well.

Choosing the course of study that is *best for you* requires thought and care. Students should consult parents, advisors, department chairs and administrators when choosing their courses.

The goal is to develop a course of study that:

- develops one's talents and aptitudes through a varied curriculum
- underscores talents and strengthens areas of relative weakness
- allows time for activities, sports and other extra-curricular activities
- challenges you to discover, develop, and expand areas of the liberal arts that can become sources of pride, joy and fulfillment and
- meets all graduation requirements.

Please note:

A student entering the Upper School is placed in the appropriate level of math based on previous courses, testing, and consultation with the department chair.

In order to graduate, each student must complete one of the following Arts requirements:

- satisfactory completion of a one-year course in the arts
- satisfactory completion of two semester courses in the arts
- satisfactory participation in a one-year Theater Department arts credit activity.  
*See Theater course descriptions for details.*
- satisfactory participation in one of the Music Department's Arts Credit Activities for one year.  
*See Music course descriptions for details.*

A course designated with an asterisk (\*) is designed to provide a highly motivated, talented, passionate student with a rigorous academic experience that moves at an accelerated pace.

Because we want every student to be successful, we are thorough and thoughtful in placing students in our most demanding (\*) courses. A student in an (\*) course who does not earn a final grade of B or better will be reconsidered before he is permitted to matriculate to the next (\*) course in the sequence. A student in a standard course who wishes to be considered for enrollment in a (\*) course must earn a final grade of A-. Please note that these guidelines do not guarantee (\*) placement. Additionally, some departments require readiness diagnostics (math placement exercise, writing sample, etc.,) and some departments, particularly those whose courses are cumulative in nature such as math and foreign language, may require a grade of A or above to advance from a standard to a (\*) course. In all cases, the department chair, in consultation with the classroom teacher, is the final arbiter of student placement.

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# GRADUATION REQUIREMENTS

In the Upper School, a student must complete four years of English, at least three (3) years of mathematics (four are recommended) in the proper sequence concluding with one of the following (1) Pre-Calculus or Pre-Calculus\*, (2) Statistics, (3) Functions, Statistics, and Trigonometry or (4) one of the courses with Calculus in the title, two years of the same modern or classical language, three years of history (including Ancient and Modern World History, and American History), and three years of laboratory science (Physics, Chemistry, and Biology). Students must also meet a Fine Arts requirement. Each student must participate in two interscholastic sports or the equivalent thereof (see handbook) in Third, Fourth, and Fifth Forms, and one interscholastic sport in the Sixth Form year. Health and Physical Education, given during the Fourth Form year, is required of all students, even if they are participating in an interscholastic sport. Numerous elective courses in art, music, and other major disciplines are offered. Advanced elective courses are also offered, and students who qualify are urged to take these electives and other advanced courses. Most students exceed minimum requirements in one or more disciplines by Sixth Form. All Third Form students take six courses. Students in Fourth through Sixth Forms must take at least five courses in each year of study, and no more than six (not including health/physical education).

## GUIDELINES FOR COURSE SELECTION

- Third Form students are required to take six major subjects: English I, Ancient World History, physics, math, a modern or classical language, and a choice of electives (art, music, and theater or a second language). A core faculty sensitive to the needs and importance of this transitional year will teach these courses.
- Single offering, non-required elective courses run only if a minimum number of students enroll. Department Chairs and the Head of Upper School determine the number.
- Advanced courses designated with an asterisk (\*) must be approved by the student's current teacher and ultimately by the appropriate Department Chair. **To qualify for an advanced course, a student must earn a grade of A- or higher in that discipline in the previous year.**
- Students who wish to take six courses (except Third Formers) must have approval of the Head of Upper School.
- The Mathematics Department approves placement of students in standard or advanced (\*) sections. Students with special requests and situations (i.e. advanced work in summer school, enrichment courses, etc.) need to discuss their plans with the Department Chair and current teachers before such courses are taken. Advanced students must complete three years of math in proper sequence, even if they have taken the Pre-Calculus course before their third year of math in the Upper School.

- There will be a week-long Add/Drop period at the beginning of each semester. No courses may be dropped after the first marking period unless there are extenuating circumstances and only in consultation with the Head of Upper School, the appropriate Department Chair, and advisor.
- Independent Study is a privilege generally reserved for Sixth Form students. Independent Study proposals for the first semester are due by September 14, 2017 and for the second semester no later than January 3, 2018. The Independent Study Committee, comprised of the Head of Upper School, the Director of College Counseling, and the appropriate Department Chair, will review each proposal. In some special cases during the Sixth Form year, Independent Study may be substituted for a fifth course or added as a sixth course. **HONORS AND YEARLONG COURSES CANNOT BE DROPPED IN ORDER TO TAKE AN INDEPENDENT STUDY. NB: Independent Study is intended for work that is not available in the normal school curriculum.** No credit toward the graduation requirements is given for courses taken at a school other than Haverford, though coursework completed in Modern and Classical Languages and Mathematics in Middle School may allow a student to take more advanced courses in those subjects in Third Form.
- The Fine Arts requirement in the Upper School can be met by one of the following: satisfactory completion of a one-year course in the arts; satisfactory completion of two semester courses in the arts. Students may also fulfill this graduation requirement through satisfactory participation in a number of “Arts Credit Activities.” See Theatre and Music course descriptions for detailed information. Some of these activities include being an actor or crew member in three school dramatic productions; satisfactory participation in the school chorus or other performance ensemble for one year, satisfactory participation in three trimesters (sports seasons) in Stage Crew. Stage crew may NOT count for both an Arts credit and a Sports credit in the same season. Students may combine activities to accrue a total of at least a year’s participation to complete their Arts requirement.
- Health and Physical Education classes are required during the Fourth Form year. Each student will be scheduled for three periods per cycle for the entire Fourth Form year. All students are required to take Physical Education classes, even if they are playing or managing an interscholastic sport. **SUCCESSFUL COMPLETION OF HEALTH AND PHYSICAL EDUCATION IS A REQUIREMENT FOR GRADUATION. ALSO, EACH THIRD - FIFTH FORM STUDENT MUST PLAY TWO INTERSCHOLASTIC SPORTS PER YEAR OR THE EQUIVALENT THEREOF (See handbook).** Students have the option to play a sport each season of the school year if they desire. The Athletics Department maintains records of each student’s participation in interscholastic sports during his Upper School years.

Students and families, especially those new to the Upper School, will work with the faculty, advisors, and the Head of Upper School in the course selection process. Please call the Head of Upper School if you have any questions.



# FORM III

FALL SPRING

Visual Art: Foundations	
Theatre I	Fundamentals of Music: Theory & Guitar

# FORM IV

FALL SPRING

Visual Art: Foundations	Two-Dimensional Art	Two-Dimensional Art
Ceramic Arts	Three-Dimensional Art: Design	Three-Dimensional Art: Design
Photography	Video & Animation	Video & Animation
Woodworking Arts	Woodworking Arts	Woodworking Arts
	Theatre I	Theatre I
	Theatre II	Theatre II
	Fundamentals of Music: Theory & Guitar	Fundamentals of Music: Theory & Guitar
	Advanced Guitar & Bass Guitar	Advanced Guitar & Bass Guitar
	Music Theory & History*	Music Theory & History*
Music Comp: Trad. & Digit. Songwriting	Music Production & Recording	Music Production & Recording

# FORM V

FALL SPRING

Visual Art: Foundations	Two-Dimensional Art	Two-Dimensional Art
Ceramic Arts	Three-Dimensional Art: Design	Three-Dimensional Art: Design
Photography	Video & Animation	Video & Animation
Woodworking Arts	Woodworking Arts	Woodworking Arts
	Art Portfolio I*: 2D & Digital	Art Portfolio I*: 2D & Digital
	Three-Dimensional Art Portfolio I*	Three-Dimensional Art Portfolio I*
	Theatre I	Theatre I
	Theatre II	Theatre II
	Theatre III*	Theatre III*
	Fundamentals of Music: Theory & Guitar	Fundamentals of Music: Theory & Guitar
	Advanced Guitar & Bass Guitar	Advanced Guitar & Bass Guitar
	Music Theory & History*	Music Theory & History*
Music Comp: Trad. & Digit. Songwriting	Music Production & Recording	Music Production & Recording

# FORM VI

FALL SPRING

Visual Art: Foundations	Two-Dimensional Art	Two-Dimensional Art
Ceramic Arts	Three-Dimensional Art: Design	Three-Dimensional Art: Design
Photography	Video & Animation	Video & Animation
Woodworking Arts	Woodworking Arts	Woodworking Arts
	Three-Dimensional Art: Portfolio I*	Three-Dimensional Art: Portfolio I*
	Three-Dimensional Art: Portfolio II*	Three-Dimensional Art: Portfolio II*
	Art Portfolio I*: 2D & Digital	Art Portfolio I*: 2D & Digital
	Art Portfolio II: 2D & Digital	Art Portfolio II: 2D & Digital
	Art Portfolio II*: 2D & Digital	Art Portfolio II*: 2D & Digital
	Theatre I	Theatre I
	Theatre II	Theatre II
	Theatre III*	Theatre III*
	Fundamentals of Music: Theory & Guitar	Fundamentals of Music: Theory & Guitar
	Advanced Guitar & Bass Guitar	Advanced Guitar & Bass Guitar
	Music Theory & History*	Music Theory & History*
Music Comp: Trad. & Digit. Songwriting	Music Production & Recording	Music Production & Recording

## Fine Arts

- Courses designated with an asterisk (\*) are considered the "Most Demanding" courses offered and will be designated as such on report cards and official transcript
- A 6<sup>th</sup> course in Form VI year must have the approval of the Head of Upper School
- Not all elective courses will be scheduled. Enrollment numbers will determine whether or not a course will be convened for the next academic year



## FORM III

FALL SPRING

English I

Ancient World History

Chinese I

Latin I

Latin II

Latin II\*

Spanish I

Spanish II

Spanish II\*

## FORM IV

FALL SPRING

English II:  
World Literature

Modern World History

Chinese II

Latin II

Latin III

Latin II\*

Latin III\*

Spanish II

Spanish III

Spanish II\*

Spanish III\*

## FORM V

FALL SPRING

English III:  
American Literature

United States History

United States History\*

Chinese III\*

Latin III

Latin IV

Latin III\*

Latin IV\*

Spanish III

Spanish IV

Spanish III\*

Spanish IV\*

## FORM VI

FALL SPRING

English IV: Early  
British Literature

English IV\*

English IV  
Seminars

Government and  
Politics  
(Honors Option)

Modern Middle  
East History

Social Psychology

Social Psychology

Political Olympic  
History

Political Olympic  
History

European  
Dictators\*

The U.S. & the  
Vietnam War

African-American  
History: 1964-Present

African-American  
History: 1964-Present

Roman Archeology

Roman Archeology

Chinese IV\*

Ancient Greek

Latin IV

Latin IV\*

Latin V\*Prose

Latin V\*Poetry

Mythology

Mythology

Spanish IV

Spanish IV\*

Spanish V Cine...

Spanish V Court...

Spanish V\* Latin...

Spanish V\* Liter...

English

History

Modern &  
Classical  
Languages

**A second language can be added during Form III or Form IV years**

- Courses designated with an asterisk (\*) are considered the "Most Demanding" courses offered and will be designated as such on report cards and official transcript
- A 6<sup>th</sup> course in Form VI year must have the approval of the Head of Upper School
- Not all elective courses will be scheduled. Enrollment numbers will determine whether or not a course will be convened for the next academic year



## FORM III

FALL      SPRING

Algebra I
Geometry
Geometry*
Algebra II
Algebra II*

## FORM IV

FALL      SPRING

Geometry
Geometry*
Algebra II
Algebra II*
PreCalculus
PreCalculus*
<b>Software Programming:</b>
I
II

## FORM V

FALL      SPRING

Functions, Statistics & Trigonometry
Algebra II
Calculus
Calculus I*
PreCalculus
PreCalculus*
Note: Form VI will have priority to the following Math electives:
Statistics
Statistics*
Finance: Theory of Interest
Finance: Portfolio Analysis
<b>Software Programming:</b>
I
II

## FORM VI

FALL      SPRING

Functions, Statistics & Trigonometry
PreCalculus
Calculus
Calculus I*
Calculus II*
Linear Algebra*
Statistics
Statistics*
Economics: Macro*
Economics: Micro*
Finance: Theory of Interest
Finance: Portfolio Analysis
<b>Software Programming:</b>
I
II

### Mathematics

- Courses designated with an asterisk (\*) are considered the "Most Demanding" courses offered and will be designated as such on report cards and official transcript
- A 6<sup>th</sup> course in Form VI year must have the approval of the Head of Upper School
- Not all elective courses will be scheduled. Enrollment numbers will determine whether or not a course will be convened for the next academic year



## FORM III

FALL SPRING

Physics: A Conceptual Journey	
Physics: A Problem Based Journey	

## FORM IV

FALL SPRING

Chemistry	
Chemistry*	
Required all year for three periods per cycle	

## FORM V

FALL SPRING

Biology	
Biology*	
Note: Form VI will have priority to Science elective courses:	
Advanced Physics*	
Electronics*	Astronomy
Engineering People & Processes	Engineering Design, Build, and Test
Engineering* Environmental Ethics	Global Impacts of Infectious Disease
Organic Chemistry (Honors Option)	
	Advanced Lab Research I*

## FORM VI

FALL SPRING

Advanced Physics*	
Electronics*	Astronomy
Engineering People & Processes	Engineering Design, Build, and Test
Engineering* Environmental Ethics	Global Impacts of Infectious Disease
Organic Chemistry (Honors Option)	Molecular Biology*
Physiology*	Physiology
	Advanced Lab Research II*

Science
Health & Physical Education

- Courses designated with an asterisk (\*) are considered the "Most Demanding" courses offered and will be designated as such on report cards and official transcript
- A 6<sup>th</sup> course in Form VI year must have the approval of the Head of Upper School
- Not all elective courses will be scheduled. Enrollment numbers will determine whether or not a course will be convened for the next academic year

# ENGLISH

## **Philosophy and Overview**

The English Department is dedicated to educating boys to see the world around them clearly, critically, and sensitively. Through the study of literature, we strive to nurture young men to be thoughtful and generous forces in their communities and to be able to read, write, and speak with precision and power. As students examine literature both traditionally Western and more culturally diverse, they encounter attitudes and lives that expose them to new perspectives. As they write analytical papers, personal narratives, and creative pieces, they build and explore their rhetorical and artistic skills. As they speak in small discussion groups and in formal presentation, they discover their own voices and learn to listen to each other.

The English Department program is structured in such a way that each student's sharpened critical awareness—in reading skills, in writing, and in oration—builds incrementally. As students learn to recognize linguistic structures and possibilities, they also come to understand the basic elements intrinsic to literature of all genres. We know that close observation of textual detail enriches the rhetorical quality of thinking, writing, and speaking. In our efforts to shape and sharpen our students' verbal skills, to expand their knowledge of literature, and to add to their general intellectual growth, we provide memorable and useful experiences. Such is our ambition: that our efforts and associations will instill habits and skills of lifelong value.

## **English I**

This course seeks to ground students in the essential elements of effective reading, writing, and speaking. Two major objectives of the course are to teach students to read for meaning as well as pleasure and to teach them to express themselves clearly and logically through the written word. Writing assignments vary from analytical essays and personal narratives to journal entries and creative exercises. Most assignments emphasize revision and require multiple drafts. During the year students study and discuss works from many genres and examine how plot, character, theme, and language inform each other. Selections from Homer's *The Odyssey* familiarize students with the background of the Western tradition, while providing a common base of reference for the future study of literature at Haverford. Other works in the recent past have included: *A Raisin in the Sun*, *Lord of the Flies*, *American Born Chinese*, and selections of short stories and poems. English I also includes a formal study of grammar, based on online resources, and vocabulary, largely based on *Wordly Wise 3000*.

## **English II: World Literature**

This course exposes students to many genres of world literature and introduces them to the critical idiom. It places special emphasis on close reading and urges students to explore how figurative language, allusion, connotation, and imagery enhance meaning. Students hone these reading skills through sources as diverse as the short stories of Jhumpa Lahiri and Ha Jin, the poems of Wilfred Owen and W.D. Ehrhart, and the drama of Shakespeare's *Macbeth* and Athol Fugard's "*Master Harold*"...and the boys. Marjane Satrapi's graphic novel *Persepolis* and Chinua Achebe's novel *The Haverford School* – *Upper School Course Catalog*

*Things Fall Apart* round out a selection that we hope will challenge and broaden the perspectives of our young men. Expository essays help students to develop analytical and critical skills; personal narrative assignments encourage Fourth Form writers to develop their own voice or rhetorical style. Original poetry, journalism, and frequent print or online journal entries supplement more traditional writing assessments. In order to further their ability to communicate effectively and gracefully, students also continue the study of grammar and vocabulary begun in Third Form, turning their attention to usage and the mechanics of writing. In addition to the core resources of IXL.com, they continue to use *Wordly Wise 3000* and may refer to sources like *Warriner's High School Handbook*.

### **English III: American Literature**

Building upon the grammatical foundation and introduction to literary genres established in Fourth Form, this course is a selective survey of important works that reflect the varieties of the American experience. The course includes selections of poetry, fiction, and essays from authors such as Edwards, Wheatley, Thoreau, Douglass, Whitman, Dickinson, Hughes, Kesey, and Diaz. Core texts include *One Flew Over the Cuckoo's Nest*, *The Great Gatsby*, and *Fences*. This study of American literature serves as the basis for regularly assigned critical papers and personal narratives. Teachers assign a variety of topics, and as the year progresses, students are given greater freedom of choice in their topics and their approaches. The department expects papers to be thorough, well organized, clearly worded, insightful, well documented, and substantially free of spelling, grammatical, and mechanical errors.

### **English IV: Early British Literature (fall semester)**

For the fourth required year of English, the course is divided into two distinct terms. The fall term is devoted to honing the Sixth Formers' skills in close reading and careful writing. Students write frequent analytical essays on complex literary texts. Texts assigned in the recent past include *Brave New World*, *Hamlet*, and classic and contemporary poetry.

### **English IV: Spring Seminars**

In the spring, English IV becomes a seminar style topic-centered class based on the college model, in which students will assume more responsibility for class discussion and presentation. The department will give students the opportunity to indicate preference of seminars, but sections will be formed in the fall at the discretion of the department and depend upon staffing and class-size limits. Current offerings include:

#### **American War Poetry**

This course will trace the history and development of American war poetry from Phillis Wheatley's "To His Excellency General Washington" through all of America's wars up to and including the Iraq War. We will observe how war poetry changes as the centuries progress, identify specifically what these changes are, and try to postulate why they occur.

#### **James Bond: The Cinema of Masculinity**

In this course, we will critically dissect the longest continuously running film series in history. The works of Ian Fleming serve as a unique way to map American masculinity. The coded objects, in Bond, point to drastic changes in male identity from 1950s into the present moment.

### **Journalism: Speaking Truth to Power**

Students will further hone their writing abilities through a study of a variety of contemporary journalistic lenses: investigative, feature, arts criticism, opinion, sports, and world-affairs news analysis. We will read, write, critique, revise, and publish. We will consider the state of contemporary American journalism in its print, digital, and social media contexts.

### **Page and Stage**

After close readings of contemporary and classic plays, students will attend live performances on Philadelphia stages. We will evaluate the effectiveness of the productions using the critical language of the arts journalist. Whenever possible, we will discuss the creative process with writers, directors, designers, and actors.

### **Seeing is Believing?**

By understanding the power of story in visual media, students will focus on being a critical viewer. An initial study of advertising will uncover how audience determines all aspects of the final product: narrative, cast, setting, sound, lighting, framing, acting, and more. In the following larger unit on fiction film, the focus will be on how the story is delivered, noting that film has its own technical vocabulary counterpointing those terms used to analyze in literature.

### **Utopian Literature**

Human beings have been fascinated with utopian literature and the notion of intentional communities before and after Thomas More's time. What can be learned through the study of utopian literature and of the historical and contemporary "planned communities"? Can we envision a better world? Can we implement that vision? Can we foresee the risks in doing so?

### **English IV\***

This English IV fall seminar aims to challenge our most motivated English scholars to become better writers. Students will read masters of the essay, study their techniques, and imitate their style. They will learn to write - clearly, accurately, and above all creatively - about the world that surrounds them. In the second half of the semester we will use our newfound critical reading and writing skills in a deep dive into *Hamlet*. **Sixth Formers may enroll in this first semester course if they meet the following prerequisites: A- average in English III, the recommendation of their English III teacher, and, after consideration of a writing sample, the consent of the department.** In the second semester, the department offers the variety of seminars as described above in English IV.

# FINE & PERFORMING ARTS

## VISUAL ART

### **Philosophy and Overview**

The Haverford Art Department believes that an understanding of the visual arts is an essential part of a strong liberal arts curriculum. As well as providing learning experiences that lead to further study and careers in creative professions, the art curriculum emphasizes the ways in which working in the art studio teaches broader essential life skills. Artists often work from observation in order to strengthen their ability to see more powerfully and critically. We understand that artists use this powerful visual language of signs, symbols, colors, and forms to investigate and communicate ideas. Through their studies, students become aware of how this language is at work in the world around them and become skilled in their ability to communicate effectively. Works of art often involve subtle meanings and complex systems of expression that go beyond ordinary speaking and writing. The actual practice of making art engages the imagination, fosters flexible ways of thinking, develops disciplined effort, promotes innovation and builds self-confidence. Creative people of all sorts, artists, writers, designers, scientists and engineers are all well versed in the complex and challenging process of bringing new ideas into being. Through the Visual Arts curriculum at Haverford, students are able to gain a facility with this practice, making it transferable across disciplines. For some students the study of art will lead to careers in the arts. For many others, it will develop a valuable facility with the often frustrating creative process of bringing something new into being, whether they do so in the art world, the business world, scientific careers or wherever they find themselves. Others, too will have permanently enhanced the quality of their lives with a fluency in the visual language and an informed appreciation of the arts. Each course offered provides students with a broad survey of contemporary and traditional art concepts, techniques and working methods. 2-Dimensional courses emphasize the study of art concepts through the use of drawing, painting and printmaking media. 3-Dimensional courses emphasize traditional sculptural media such as ceramics and woodworking as well as the most contemporary techniques such as 3D printing, laser engraving and product design. 2D Design, Photography and Video & Animation students work with some of the most contemporary digital media available to artists creating photographs, videos, animations and graphic design works. Woodworking addresses these same overarching skills through traditional and contemporary work in this medium. Sequential courses build on the knowledge and skills developed in earlier courses but are flexible enough to allow students to move between 2-dimensional, 3-dimensional or Digital media courses. We strive to instill the courage to face challenges, the skills and practices involved in solving complex problems, a fluency in the primal visual language and an understanding and appreciation of the visual arts and the work of artists throughout time and across cultures.

### **Visual Art: Foundations**

This yearlong course introduces students to the fundamental vocabulary of the visual artist across a wide variety of media, and working methods. Students are exposed to those skills, knowledge and practices fundamental to the visual arts, providing the starting point for all further visual arts courses at Haverford. Students have the opportunity to work with each art instructor in each of the four art studios. Drawing, Painting, Sculpture, Ceramics, 3D & 2D Design, Photography, and Computer Graphics are explored through a variety of hands-on projects. Each project develops students' visual acuity, their fluency in the visual language and their practice in the creative process. Much emphasis is placed on drawing, painting, sculpting from still-life set-ups, the figure, and objects and environments of the students' real world and experiences. By means of structured

projects, each student is encouraged to seek imaginative, personal solutions to a wide variety of problems while learning traditional visual art skills and techniques. Creative concepts, strong design and effective use of media are stressed in an effort to help the student challenge himself and tap his deepest creative potential. Historical and contemporary artists and movements are introduced in relation to each new unit of study. Group critiques, online blogs and written “reflections” give each student the opportunity to learn to articulate his observations about his own work and that of his classmates. This process also prepares the students for the written sections of their two major exams projects. **Foundations is an introductory level course open to students Third through Sixth Forms.**

### **Two-Dimensional Art (*fall and/or spring semester*)**

These semester-long courses serve as the second level in the 2D art sequence, building on the skills and concepts introduced in the Foundations course. Working in a variety of media with pencil, charcoal, pastel, printmaking techniques, watercolors, and oil paints, students will explore fundamentals of line, shape, form, value, color, texture, and composition. Students will begin the course working in black and white and later explore basic color theory. Through projects rooted in prevalent themes in contemporary art, students will strive to develop personal concepts that are well thought out and connected to the work of professional artists. Each project offers significant freedom for students to explore their own ideas and develop their creative thinking skills. Students will spend time looking at art throughout history, critiquing each other’s work, and writing virtual reflections on their process and product. Students can take both the fall and spring semester course without repeating projects.

### **Art Portfolio I\*: 2D and Digital**

is the third level (and most advanced level available to Fifth Form students) in the sequence of drawing and painting based art courses. This course focuses on using the art elements and design principles stressed in lower level courses and developing the skills needed to communicate effectively and passionately. Students will learn to coordinate subject matter, color theory and two-dimensional design to support an overall concept. New artists’ materials including oil paints and gouache will be introduced. Students will begin building a portfolio of high caliber works covering a range of art concepts suitable for college applications, outside exhibitions and competitions and will begin developing a possible theme to serve as the core of future work in the “2D Portfolio II” course. This is an Honors\* level course and as such requires significant time in the studio outside of class (approx 2 periods per week). **Prerequisite: successful completion of one or more yearlong art courses and approval of the instructor. “2-D Art: Portfolio\*” is intended for the most dedicated students, as successful course work is the result of enthusiasm, focus, and a significant investment of time and work.**

### **Art Portfolio II: 2D and Digital**

Art Portfolio II is a culminating course for the most experienced visual art students. The course is designed to offer students who have taken Portfolio I to continue to develop their technical skills and explore personal ideas through the creation of projects of their own design. Students will have the opportunity to experiment with different mediums, explore various artistic voices, and hone their project management skills. While individual artists will work in different media and dissimilar concepts, the class will meet as a group to learn about contemporary artists and critique each other's work. The year finishes with an exhibition of student work. **Prerequisite: successful completion of Portfolio.**

## **Art Portfolio II\*: 2D and Digital**

Art Portfolio II\* is an intensive culminating thesis seminar for the most experienced visual art students. The course is designed to transform experienced art students into emerging young artists by stressing the development of a personal visual arts thesis and a supporting body of work. During class and two hours of extra studio time per week, students will create a related body of work in the form of an investigation. Through individual research and experimentation, each student will discover and refine his most eloquent voice for effective communication in the visual language. While individual artists will work in different media and dissimilar concepts, the class will meet as a group to learn about contemporary artists and critique each other's work. The year finishes with an exhibition of students' thesis works. To receive Honors\* level designation Portfolio II\* students will spend at least 2.5-3 hours a week outside of class on their work. **Prerequisite: successful completion of Portfolio I and approval of the instructor. Art Portfolio II\* is intended for the most dedicated and experienced Sixth Form students only.**

## **Ceramic Arts**

Ceramic Arts is one of three second-level courses in the progression of our 3-Dimensional art curriculum. This full year course is designed to provide a thorough immersion into contemporary and historical practices within the field of Ceramics and how ceramics fits within the overall art making world. Ceramic Arts students will be encouraged to pursue a curiosity about the linkages between process, meaning, and perception within a challenging yet supportive studio environment. Expanding on the ideas presented during the Foundation year experience, Ceramic Arts students will be introduced to and use a huge variety of tools and processes including but not limited to the potter's wheel, figurative sculpture, mold-making, slab-building, and alternative surface treatments. The ultimate aim of this class is to gain the tools and skills to become fearless in the pursuit of an individual artistic voice with skill-building, research, and experimentation happening simultaneously. The work in Ceramics, as in all visual art classes aims to strengthen students' ability to think and see critically, to develop a fluency in the visual language, and to become more adept at the creative process.

## **Woodworking Arts (*fall and/or spring semester*)**

This course allows interested students the opportunity to explore the sculptural and functional aspects of design with wood. At the core of our work is developing an understanding for and a facility with the design process. This project-based course will build from simple construction methods with wood and wood tools and gradually expand the scope and skills used to more and complex forms culminating in a project of the student's own design. Students will have the opportunity and expectation to work imaginatively while accomplishing the goals of each project. The use of hand and power tools as well as the qualities of selected woods will be a component of each unit. Students all learn the basics of linear perspective, orthographic perspective, and scale drawing techniques used by designers, architects and engineers. Students will maintain sketchbooks for planning purposes and a shared personal blog where they will document the progress of their work and learning. Although similar, each semester will vary enough for a student to take both semesters without repeating any material and to deal with more complex ideas and techniques. Two instructors will team teach this course. Mr. Thorburn (Assistant Head) and Mr. Wisniewski (Director of Physical Plant and Facilities) have experience with fine woodworking and building.

## **Three-Dimensional Art: Design (*fall and/or spring*)**

These semester-long courses serve as one of three possible second level courses in the Visual Arts sequence and build on the basic skills acquired in Foundation level courses. Three-Dimensional

Art: Design features a more in-depth focus on the design process itself at work in the production of both sculptural and functional objects and will tackle concepts and projects that require real world problem solving skills. A variety of sculptural and three-dimensional design projects ranging from simple woodworking projects, to product design and architectural design will provide students with the multifaceted experience of planning, design and construction of objects. Students will utilize an array of tools from a personal sketchbook to the industry standard laser cutter. Students will learn how to incorporate computer software, such as Illustrator and CAD to aid in the realization of their work. This course will seek out opportunities to do interdisciplinary work involving engineering and math concepts and skills. Although similar, the first semester focuses on seeing and creating objects using the basic modeling methods while the second semester expands into exploring laser cutters and 3D printers.

### **Three-Dimensional Art: Portfolio I\***

Honors 3D Art: Portfolio is a sculpture course that builds on the concepts of three-dimensional sculpture and design: implicit/explicit volume, balance, rhythm, resemblance, size relation, utility and craftsmanship etc. Students will focus on technical skills and concepts needed to create three-dimensional works in space through the manipulation of various 3D materials and media including wood, clay, wire, plaster, cardboard, and found objects. Extensive technical demonstrations will help students develop material interests and studio skills, including innovative uses of both manual and digital processes. Students will develop imaginative and creative solutions through a series of structured problem solving projects as well as individual project proposals. As an honors course, students will be expected to drive their own practice and find engaging topics for formal inquiry. Every student will be encouraged to follow the creative process, utilizing writing, sketching, and verbal meetings with peers and faculty. Artistic explorations through prototyping, skill acquisition and final creation will culminate in a group critique and a written reflection. **Prerequisite: successful completion of one or more year-long art courses and approval of the instructor. “3-D Art: Portfolio” is intended for the most dedicated and interested students, as successful completion of this course is the result of enthusiasm, focus, and a significant investment of time and work.**

### **Three-Dimensional Art: Portfolio II\***

is our most advanced sculpture course designed as the continuation and advancement of the work generated in the 3-D Art Portfolio course (see above description). Students will develop a sophisticated body of work with individualized areas of research, and a directed, productive approach to studio practice. There will have monthly meetings with faculty and guest artists. Off campus opportunities including field trips to exhibitions, museums, and artist studios will highlight professional practices in contemporary art in the vibrant Philadelphia area. Finally, the course will introduce students to the possibility of participation in major national competitions and exhibitions, self-promotion, and various creative opportunities. **Prerequisite: successful completion of the Three-Dimensional Art: Portfolio I\* and approval of the instructor.**

### **Photography (fall semester)**

With a focus on the digital realm of photography, students will gain an understanding of how artists have used light to create images with both experimental and traditional methods of using light sensitive materials and darkroom techniques. Students will explore how digital photography replicates those traditional techniques and allows for even greater manipulation of images using computer software. Students will learn to use Photoshop software to not only manipulate their digital photographs but to create their own composite images. Students will explore the basics of

graphic design where images, photos and text are combined to create visually powerful communication. Photography is open to Fourth, Fifth and Sixth Form students with or without any other art experience.

### **Video and Animation (*spring semester*)**

Students will learn the basics of video production: storyboarding, shooting, composing, and editing. Working with digital video cameras and Adobe Premiere video editing software students will create a variety of short films that explore different techniques, skills, and subject matter. Students will learn a variety of traditional and contemporary animation techniques to continue their study of the moving image. Students will learn how to present their video and animation works in a variety of formats and will integrate writing, design and computer proficiencies to develop an online portfolio that will demonstrate skills that carry over to many other disciplines. Video and Animation is open to Fourth, Fifth and Sixth Form students with or without any other art experience.

### **Advanced Video and Animation\* (*spring semester*)**

After mastering basic video editing techniques in the Video & Animation course, students in the honors level will have the opportunity to deepen their understanding of this powerful means of communication and expression, becoming more adept at script writing, editing techniques, idea pitching, and creating longer length films. Assignments will reinforce and deepen understanding of the core techniques and skills explored in the introductory level, with more room for exploring personal interests and artistic goals. Honors level students will create longer, more developed films, spending at least 2.5-3 hours a week outside of class on their projects as compared to the 1-hour expectation of intro students. Honors students will read influential texts in film history and film criticism, applying concepts discussed in the readings to their own films. All advanced students will be required to submit to specific student film festivals and competitions.

## **MUSIC**

### **Philosophy and Overview**

Participation in musical study and performance facilitates an appreciation for beauty, a means of self-expression, intellectual growth and a forum for positive community activity. We believe that one appreciates most what he understands and that one understands best what he has experienced. The music curriculum is experiential and has as its core musical literacy and artistry. Literacy is not an end unto itself; rather it is an avenue to artistry, understanding and appreciation. The curriculum is structured to prepare our boys for a lifetime of participation in the musical arts as performers or appreciative, well-educated audience members. Students have the option to pursue an intellectual study of music through the study of theory, guitar, recording and production, songwriting and history. Students may also pursue performance-based participation in the school's musical ensembles. Performance based study includes options in both vocal and instrumental realms. Students may audition for any number of ensembles, including Men's Choirs, String Orchestra, Chamber Music or Jazz Ensemble. Musical ensembles may be taken in fulfillment of the Upper School Arts Requirement. In addition, because of the physical and cooperative nature of ensemble work, yearlong participation in one of the school's musical ensembles may be used to

fulfill one season of sports requirement. Two ensembles, Glee Club and Orchestra, are offered for academic credit.

### **Fundamentals of Music: Theory and Guitar**

This is a yearlong introductory level course to understanding, reading, writing, and creating music. It is intended for students who want to pursue their passion for music but need help building a strong foundation of musical skills, concepts, and language. This course will function as a prerequisite for other higher-level music classes unless a firm grasp of the concepts and skills is demonstrated to the teacher. Students will be expected to begin their mastery of basic to intermediate rhythms in various time signatures, including rhythmic markings; note identification in multiple clefs in every key signature including ledger lines. Intervals, scales, triads, and seventh chords will be introduced both visually and aurally as well as popular song structures/forms, allowing for both analysis and composition of songs. In order to reinforce these concepts, students will be singing, playing the guitar, using MIDI keyboards, percussion, and using digital compositional tools such as Garage Band and Logic Pro.

### **Music Theory and History\***

This is a yearlong honors level course intended for the most musically proficient and inquisitive students. This is a two-pronged course in which we will cover collegiate level theoretical topics that are applicable to all styles of music. These skills will be reinforced through an intense study of music history. We will start in the medieval era and watch and listen to how music evolves throughout time up to the current hits that are listened to today. As we listen to Gregorian chant we will find a better understanding of melody. The polyphony of the Renaissance will inform our understanding of chord progressions, while the Baroque era will be better understood through counterpoint exercises. While our understanding and appreciation of music deepens through our study of classical music, it culminates in applying all of these concepts to modern music. We will analyze what it is that makes music affect us the way it does and learn how to manipulate sound the same way great musicians have throughout history. **Prerequisite: Music Theory and Guitar or instructor approval.**

### **Advanced Guitar and Bass Guitar**

This is a yearlong course for all of the aspiring guitarists/electric bassists. It will teach the necessary techniques to allow students to learn and play intermediate to advanced repertoire in groups and as individuals. Some of the skills that will be covered are scales and modes in multiple octaves and fingering positions; chords in multiple positions across the fret board; fingerpicking exercises designed to increase speed, control, dexterity, and musicality and applying learned skills to repertoire from a diverse array of musical genres. **Prerequisite: Music Theory and Guitar or instructor approval.**

### **Music Production and Recording (*spring semester*)**

This course is for students interested in creating and recording music. This course will focus on digital music production and the art of recording music. Students will learn how to use a

soundboard to mix music, how to use MIDI instruments and digital instruments to enhance their compositions, how to use music software to create their own compositions, how to set up microphones to record voices and/or instruments, and how to produce a finished product such as a digital album. Students will learn the basics of how to use the relevant technology and then put their compositional skills to the test. **Prerequisite: Fundamentals of Music: Theory and Guitar or instructor approval.**

### **Music Composition: Traditional and Digital Songwriting (*fall semester*)**

This course is designed to help students compose their own music. A brief study of some modern compositions will inform us, but the bulk of the course will be the art of writing your own songs. Students will learn how to compose using digital and traditional methods, but in the end will have significant authority in deciding what kind of music they are interested in writing. Students will learn the art of writing a good melody, the art of writing effective harmonies, understanding the texture, layering of multiple parts in music, analyzing the components of compositions from various genres, the technological aspect of using digital software to compose music including both music production software such as Garage Band or Logic and music notation software such as Finale and the art of lyric writing or being a librettist. **Prerequisite: Music Theory and Guitar or instructor approval.**

### **Glee Club**

Students learn the technical aspects of good singing, including breath control, formation of vowel shapes and vocal tone, proper diction in a variety of languages, range extension and agility. Students study repertoire from a variety of genres, from classical to folk to jazz and modern. They perform a capella music as well as music accompanied by piano and orchestra. Through their rehearsal and performances, students learn a valuable skill that can be used as a form of self expression as well as a powerful form of communication. As the music is being rehearsed daily, various compositional techniques and elements of form are pointed out. Glee Club members participate in service learning through outreach performances. This chorus performs at four major concerts each year, at Haverford, in New York City, and in our community. The Glee Club joins forces with area girls' schools and with Haverford's boychoir to perform works such as Vivaldi's Gloria, Handel's Messiah, and Haydn, Mozart and Schubert Masses. Glee Club is a graded course that meets three times a week before school, 8:00 a.m. - 8:30 a.m. on Monday, Tuesday, Thursday, and Friday.

### **Orchestra**

Orchestra is an auditioned ensemble. Students must demonstrate satisfactory ability on their principal instrument to participate, as determined by the director. Students learn to phrase artistically, and develop techniques of articulation, expanded dynamic range, and stylistic interpretation through performance of a range of repertoire covering multiple styles and genres. Orchestra members develop ensemble skills such as leading, critical listening, and collaboration. In addition, students refine technical skills on their given instruments. The Orchestra performs during the annual Haverford School performances. Orchestra is a graded course that meets three times a week before school, 7:45-8:20 a.m.

# THEATER

## **Philosophy & Overview**

The purpose of acting, Hamlet tells us, is to hold ‘the mirror up to nature.’ Students of theater at The Haverford School strive to represent most aspects of human behavior in thoughtful, well-prepared performances both in the classroom and on the Centennial Hall stage. Students are encouraged to understand the world by thinking carefully of their own experience, by inhabiting the skins of others, and by studying classic and contemporary drama.

Theater students develop a speaking voice of power and expression. They learn to move with strength and grace. They experience the value of teamwork in large productions including actors, designers, and technicians. They learn to listen to their peers and to carefully critique their work. Most importantly, theatre students develop a physical and emotional confidence to complement their growing intellectual and athletic abilities.

## **Theater I**

Provides students with opportunities to increase self-awareness, develop critical thinking skills, and explore their talents on page and stage. The course begins with an overview of basic and improvisational skills. Students put these skills into practice by reading, discussing, and performing original monologues, scenes, and works of classical and contemporary drama. In addition, students learn to incorporate their skills in literary analysis by translating their critical understanding into choices they make as an actor. Participation as audience members at Upper School productions provides excellent opportunities to connect class work to live theatrical plays performed by their peers. Students also learn the basics of design and technical theatre to enhance their understanding of the collaboration that is necessary to bring theatrical works to life. The course culminates in the writing and performance of an original short play that incorporates students’ knowledge of acting, design, and directing.

## **Theater II**

is an intermediate level course which builds on the skills acquired in Theater I. Using scripts from 20th and 21st century plays, students read, discuss and act in works by modern playwrights who are bright examples of the power of drama. Scene study focuses on students taking greater risks in their acting work and performance exercises will also include roles that will stretch the student actor. Individual expression and creativity is also encouraged through dramaturgical projects within the context of each play being studied. Participation in or attendance at all Upper School productions will be mandatory as a way of studying and experiencing the various tools in action. Theatre II will also travel off campus to view professional productions to become discriminating consumers of live theatre. The art of directing is an integral unit in Theater II. Each student will direct a scene from one of the plays read in class where concentrated study of the world of the play, character motivation, implementation of blocking, production history, and most importantly,

communicating the action of the scene to their peers. Finally, students are required to work on a final project of their choosing for their exam in June. Students may present playwriting work, scene study intensives, three-minute monologues or directing work of their choice with instructor approval.

**Theater III\* (*spring semester*)**

is an advanced level Independent Study in theatre generally reserved for Sixth Form that incorporates many of the lessons and techniques acquired in Theatre I and II. Students of the Independent Study form a production company with the goal of presenting a play for The Haverford School community and general viewing audience. Under instructor supervision and guidance, participants choose a name for the company, select a play, vote on a student director, and cast the show. Each member of the course will also help build the set, procure costumes and props, and will be responsible for the marketing and publicity to promote the show. Professionals from the theatre community are invited to attend performances to give the students valuable feedback. The Theatre III Independent Study gives students an excellent, hands-on experience in establishing and being responsible for their own production company. A focus on playwriting is also optional. **Permission from Head of Upper School, Director of College Counseling, and Chair of the Drama Department is required.**

# HEALTH & PHYSICAL EDUCATION

## **Philosophy and Overview**

The primary goal of the Health and Physical Education curriculum is to provide the boys with the framework necessary to develop and maintain a fitness plan that they can utilize for a lifetime. Through the health portion of the curriculum the boys are introduced to the five components of fitness and sound training techniques that will guide them in their quest for a personal fitness plan. Principles of diet and exercise and their effect on wellness are incorporated into this plan to allow the students to integrate this information into their program. Through the physical education curriculum, we aim to provide the boys with a variety of lifetime sports and activities that will give the boys the sport skills necessary to establish a lifetime commitment to a healthy lifestyle. We believe that a sound mind in a sound body is an ideal to aspire to and we strive to instill those values in the young men we teach. We also believe that regular daily activity is essential to a healthy cardio-respiratory system, and we try to have at least twenty minutes of vigorous activity each and every class.

## **Health & Physical Education**

This course is required for all Fourth Form students. The class meets three times per cycle, and is divided into two separate curricula. The physical education portion occupies roughly two thirds of the year, with health education taking up the remaining one third. The physical education course introduces the boys to a variety of activities that will form the basis for their adult fitness program. The five components of physical fitness are applied to these activities to give the boys an awareness of the importance of wellness in their lives. The health portion of the course is devoted to current topics including communicable diseases, cardiovascular disease and cancer, how to develop and maintain health relationships, and certification in cardiopulmonary resuscitation. The current text is *“Get Fit, Stay Fit”* by William E. Prentice.

# HISTORY

## **Philosophy and Overview**

The History Department believes that the study of history and social science is at the heart of a strong liberal arts education and, therefore, vital to the development of the essential qualities of a Haverford School graduate. It is through the study of world in the contexts of time and space that a student can understand how the earth and humankind have come to be as they are today and to foresee how the lessons from the past can guide the interactions between peoples and nations in the future. Our core program is two years of global history followed by an in-depth study of United States history. Subsequent electives allow students to closely investigate topics of particular interest, including those in American and global studies, politics and government, and the Olympic Games. Throughout the program, students increase their curiosity, develop their capacity for critical and creative thinking, and expand their openness to new ideas and different ways of experiencing our common humanity.

The Department emphasizes the development of the following attitudes, attributes and skills:

- Read with an inquisitive, critical mind so as to explore material for authenticity and value
- Think critically so as to arrive at well-reasoned conclusions
- Communicate effectively orally and in writing
- Research effectively using both electronic and printed sources
- Apply sound note-taking, memorization, test-taking and other study skills
- Use technology to maximize learning
- Internalize an ethical, moral compass to guide decisions and actions
- Become a life-long student of history

The Department also recognizes the efficaciousness of using collaboration to educate boys by engaging them in major projects that involve research, writing, debating, and oral presentation skills. Among them are the Archeology Project (Third Form), the World War I Trials (Fourth Form), and the Madison Meetings (Fifth Form).

## **Ancient World History**

This Third Form course is, at its core, an introduction to topics in ancient and medieval civilizations. The course has, however, other significant dimensions. It is interdisciplinary: it will involve most other academic disciplines in approaching themes and topics throughout the year. It will systematically address skills the faculty deem necessary for success in Haverford's curriculum: effective reading of texts; note-taking from both reading and class; writing the analytical essay; research techniques using library tools and methods; interpreting maps and other visual presentations; and making oral presentations, both formal and informal. In addition, students will learn how to use the computer for both word processing and research. The format of the course will include seminars, occasional lectures, films/video, and other presentations.

### **Modern World History**

This yearlong Fourth Form course surveys the history of the world from the 13<sup>th</sup> century to the present. The course centers on the development and interaction of western and non-western civilizations over this period, examining significant ideas, events, and persons from the multiple perspectives of political, economic, and social history. The students will approach modern world history both chronologically and thematically, using the six themes of (1) interaction between societies, (2) change and continuity over time, (3) technology and demography, (4) social structure, (5) cultural and intellectual developments, and (6) states and political identities.

The course uses and refines the academic skills taught in Third Form Ancient History. Debates, historical trials (World War I), research papers, analytical essays, and oral presentations are among the methodologies used in this course.

### **United States History**

This yearlong Fifth Form course covers the breath of American history from colonization to the present. The political, economic, and diplomatic developments are at the heart of the course, but social and intellectual history is covered as well. The course combines a traditional chronological approach with an emphasis on selected themes and topics including: the development of the United States as a world power; the socio-economic, racial, and ethnic diversity of American society; the development of the American political tradition (sectionalism, citizenship); and the role of government in the regulation of the economy. Readings include narrative history, news articles, primary sources, and other supplementary materials.

### **United States History\***

This is an advanced version of the classic survey course in United States History. The course provides a foundation for a sophisticated appreciation of the history of the United States, beginning with the settlement of the colonies and ending with the present day. Events are studied within the historical contexts of chronology and geography. Students will acquire a critical lens for the understanding of contemporary issues, such as the tension among liberty, equality, and justice. College-level texts, advanced work with primary and secondary sources, and work in historiography are hallmarks of the course. Aside from preparing boys for success on national examinations, we hope to inspire an active and inquiring sense of citizenship.

### **European Dictators\* (fall semester)**

This is a one-semester advanced course for Sixth Form students. It will focus on 20<sup>th</sup> century Europe between the world wars with special attention to the rise of totalitarianism and the conditions and events

that paved the way to power for Benito Mussolini in Italy, Joseph Stalin in the USSR, Adolph Hitler in Germany, and Francisco Franco in Spain. In addition to traditional history books such as *European Dictatorships: 1918-1945*, we will make use of memoirs such as Orwell's *Homage to Catalonia* and Levi's *Christ Stopped at Eboli*, Picasso's *Guernica* and Kampf's *Venus & Adonis*,  
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films like the Christopher Isherwood-inspired *Cabaret* and Leni Riefenstahl's classic and chilling documentary *Triumph of the Will*, and the poetry of Osip Mandelstam and C. Day-Lewis.  
**Prerequisite: A- in American History and recommendation of teacher.**

### **Government and Politics (*fall semester*)**

This course will present an introduction to the study of government and politics. Our inquiries will begin with the intellectual and historical foundations of the western style of government. From there, we will learn about the organization of our own federal government, including the political forces that dictate its behavior, before discussing various Constitutional issues arising from current demographic, economic, and political trends. Finally, we will analyze the 2016 general elections in depth. This course will make use of various outside experts and speakers and will culminate in a final research project. As an ***elective honors class***, students who wish to pursue the Honors designation must elect to do so within the initial drop-add period for the fall semester. "Honors" students will be expected to complete additional reading, research, and written assignments. Any student may choose honors, but he must meet clearly-defined progress points throughout the semester in order to maintain the honors designation.

### **Modern Black Lives: African American History: 1964-Present (*fall or spring semester*)**

This course will explore questions related to the social and historical evolution of the history of Black America following the Civil Rights Movement of the 1960's. So often, African American Studies courses focus on the long period of Enslavement culminating with the legal codes that emanate from the Civil Rights Act of 1964. This course will use poetry, music, art and traditional historical primary sources to build the collective narrative of Modern Black Lives from 1964 to the present day. Anticipated units include: Political Messaging in the Civil Rights Era, Post Civil-Rights Urban Realities, Black Arts Movement (1970s); The Crack Epidemic and The War on Drugs (1980s); Hip Hop Politics (1990s); Black Music in the New Millennium; Black Lives Matter Movement (2010s).

### **Social Psychology (*fall or spring semester*)**

This course for Sixth Form students examines the principles of social psychology: that is, how individuals think, feel, and behave in regard to other people and how individuals' thoughts, feelings, and behaviors are affected by others. The course will concentrate on the process of social thinking, such as motivation, leadership, conformity, obedience and persuasion, and social relations, including aggression, altruism, prejudice and attraction. General principles of coping, grouping identities, and social stress will be discussed. In addition to readings from the text, the course will include discussions of "case studies," film presentations and journal writing.

### **Political Olympic History (*fall or spring semester*)**

This course focuses on the study of political conflicts through the lens of the Olympic Games. We will focus specifically on Olympic years in which the games were particularly controversial. Starting in Ancient Greece and studying how the games were a direct reflection of Greek society, we will then turn to the first modern games in 1898. From there, we will examine the 1936 Berlin

Olympics, Mexico City in 1968 (particularly under the scope of African American rights), Munich in 1972, and the boycotts of the 1980 and 1984 games in Moscow and Los Angeles. The course will conclude with an analysis of the Beijing Olympics of 2008.

**Modern Middle East History (*spring semester*)**

This one-semester elective provides an overview of the modern Middle East. This examination includes state and regime formations, international relations, and contrasting domestic politics. Additionally, the course will examine the theoretical roots of Islamic fundamentalism and its effect on the formulation, growth, and actions of radical Islamic terrorist organizations. We also will evaluate contemporary issues surrounding U.S. foreign policy as it pertains to the politics, economics, and conflicts of the Middle East.

**Roman Archaeology (*fall or spring semester*)**

This interdisciplinary class will use material culture in order to understand Roman history and culture. We will pay particular attention to the relation of art, architecture and artifacts with the political, social and religious institutions of Rome, Italy and the Roman provinces. Topics will include the creation of Roman national identity, the landscape of the city of Rome, and the experience of living in a Roman city. (This is a History course. Knowledge of Latin is NOT required.)

**The U.S. and the Vietnam War (*spring semester*)**

The Vietnam War was arguably the most divisive event in American history since the Civil War, and the Sixties were certainly among the most turbulent times in American history: the revolt against the Establishment, the civil rights movement, feminism, the antiwar movement, the counterculture; JFK, LBJ, RMN, SDS, SCLC, SNCC, VVAW, NOW; the Gulf of Tonkin, the Black Panthers, My Lai, Woodstock, Altamont; the music, the drugs, the Tet Offensive, the Silent Majority, Watergate. And running through it all, binding the Sixties together while tearing America apart: the seemingly endless war in Vietnam. What was it all about? Take this course and find out.

# MATHEMATICS

*It is clear that the chief end of mathematical study must be to make the students think.*

—John Wesley Young

## **Philosophy and Overview**

The Upper School Mathematics Program sets forth clear, high-quality academic benchmarks that all students must master by the end of each course. These are designed to exceed the Pennsylvania Common Core Standards in their respective subjects. The Haverford School's expectations are rigorous, relevant to the real world, and reflect the knowledge and skills our graduates will need to be well prepared for the mathematical challenges in life beyond Haverford.

Each of our courses offers a comprehensive set of mathematical learning objectives with the common goal of creating efficient problem solvers, effective communicators, independent learners and confident critical thinkers; skills that extend beyond mathematics. We remain committed to improving the mathematics offerings available to our students on a continual basis. Our instruction and our curriculum are monitored and adjusted to best serve our charges – the future global citizens of the 21st Century.

## **About Algebra I and Geometry**

*Algebra is important as a modeling and problem solving tool, and bridges the gap from computational mathematics to abstract understanding. Geometry introduces the spatial relationships that exist in two and three dimensions. The concepts learned in these introductory courses are used by each of us every day and form the foundation upon which subsequent math courses build.*

## **Algebra I**

Algebra I is an introductory course designed for incoming Third Formers who have had little or no algebra or who need a thorough review of basic algebra. After a review of arithmetic operations, the first semester focuses on the basic concepts of algebra: using variables to represent numbers, evaluating formulas, solving algebraic equations, and the graphing of linear equations and basic transformations. The second semester looks at systems of linear equations, functional notation, quadratic equations and rational expressions. Use of the graphing calculator will be developed as an aid to solving systems of equations and quadratic equations.

## **Geometry**

This course provides a comprehensive introduction to Euclidean geometry. Topics covered include foundations of geometry, deductive reasoning and proof, transformations, coordinate geometry, congruence and similarity, polygons, circles, area, and volume. A solid foundation in Algebra I is required.

## **Geometry\***

This course provides a thorough yearlong study of Euclidean Geometry at an advanced level for qualifying students from Forms III and IV. The course will include a rigorous treatment of mathematical proof, and students will be expected to justify the major theorems of the course. The students will also be expected to connect concepts and the most successful students will solve problems creatively. A mastery level understanding of Algebra I and a teacher recommendation are required.

## **About Algebra II**

*The Haverford School offers two levels of Algebra II - honors and standard. The goal of each is to expand and deepen your existing knowledge of Algebra I and Geometry; both courses emphasize the computational and theoretical components of the subject matter. Successful completion of these courses will satisfy the Common Core requirements for Algebra (as set by the Pennsylvania Department of Education) and will prepare students to tackle more advanced coursework in the future.*

## **Algebra II**

This yearlong, standard level course is intended to cover (and surpass) the Common Core requirements. This is an exhaustive curriculum with particular emphasis on the practical/computational components of the subject and on the use of functions as mathematical models for solving real-world problems. **Prerequisite: Geometry**

In particular, the topics to be covered will include (but not necessarily to be limited to) the following:

- Properties of Sets of Numbers and Number Systems
- Solving Equations, Inequalities and Absolute Value Problems
- Functions and Relations, and their Graphs
- Transformations of Functions
- Linear Functions and Systems of Linear Equations
- Quadratic Functions and Introduction to Complex Numbers
- Properties of Higher-Degree Functions and Polynomials
- Radical Functions and Rational Exponents (Roots and Powers)
- Exponential and Logarithmic (Common) Functions
- Rational Functions
- Use of Functions as Mathematical Models
- Elementary Probability

## **Algebra II\***

This yearlong course covers the topics outlined above, but in a much more rigorous fashion. There are a number of additional topics presented as well. One of the distinguishing features of this course over its standard counterpart is the greater commitment in both time and effort required for success. This course delves much deeper into the theory behind the basics and contemplates a wider range of topics. The curriculum reaches well beyond the Common Core requirements and prepares the students to tackle PreCalculus at the honors level the following year. **Prerequisites: Geometry\* and teacher recommendation OR Standard Geometry with a grade of “A” for both semesters and both semester exams and teacher recommendation.**

Some of the enhanced/additional topics that will be studied in detail include the following:

- Domain and Range of Functions and their Inverses
- Systems of Inequalities and Absolute Value Equations
- Families of Functions and their Transformations and Graphs; End Behavior of the Functions
- Quadratic Equations (using advanced Factoring Techniques)
- Complex Number System/Operations
- Systems of Quadratic Equations/Inequalities
- Exponential and Logarithmic Functions using  $e$  and Change in Base Theorem
- Rational Functions and their Graphs – Asymptotes, Discontinuities, Intercepts, Roots and End Behavior
- Conic Sections – their Transformations and Graphs
- Probability (Combinatorics) and Introduction to Statistics (including Binomial and Normal Distributions)
- Matrix Mathematics (solving real-world problems via matrices)
- Linear Programming (solving real-world problems)
- Functions as Mathematical Models (using technology/software to solve real-world problems)
- Periodic Functions and Trigonometry; Trigonometric Identities/Equations (time permitting)

### **Functions, Statistics, and Trigonometry:**

This course provides a preparation for the study of PreCalculus, geared toward those students needing further review of advanced algebra concepts. First semester topics include functions, transformations, polynomials, and rational functions. Second semester topics include exponential and logarithmic functions, unit circle, basic trigonometry, and an introduction to statistics. Real-world models are developed throughout. **Prerequisite: Algebra II.**

## **About PreCalculus**

*PreCalculus builds on the concepts from Algebra and Geometry to create the foundation for the study of Calculus and is offered in standard and honors levels. This challenging course includes an examination of many types of functions including trigonometric, exponential, logarithmic, rational, quadratic, and higher degree polynomials. Students will be challenged to examine mathematics graphically, analytically, verbally and numerically. The use of the graphing calculator will be required in this course, and students will be expected to know the five basic graphical functions: minimum, maximum, value, zero, and intersection.*

## **PreCalculus**

This course provides a comprehensive preparation for the study of Calculus at Haverford or an Introductory Calculus course in college. Polynomial, exponential, and logarithmic functions are emphasized in the first semester and trigonometry, sequences and series, and probability are the focus of the second semester. Real-world models are developed throughout. This course requires a strong working knowledge of material from Algebra II and will include both computational and theoretical components. **Prerequisites: A grade of B or higher in Algebra II and teacher recommendation.**

## **PreCalculus\***

This course covers all of the topics in regular PreCalculus with additional topics of conic sections, parametric equations, polar coordinates, vectors, and the complex plane. The course is fast paced and requires a solid understanding of the skills from Algebra II. Connections with the sciences, economics and other real world applications are developed throughout. This course will also develop the student's skills in the use of the graphing calculator, in all of its modes. **Prerequisite: A grade of "B+" or better in Algebra II\* or "A" or better in Algebra II and teacher recommendation.**

**The following mathematics courses are primarily for Fifth and Sixth Form students and require departmental approval to enroll.**

## **About Calculus**

*Inspired by problems in astronomy, Newton and Leibniz developed the ideas of calculus more than 300 years ago. Since then, each century has demonstrated the power of calculus to illuminate questions in mathematics, the physical sciences, engineering, and the social and biological sciences. Calculus is an extraordinarily powerful tool when reducing complicated problems to manageable procedures.*

*The Haverford School offers two levels of Calculus: standard and honors. The goal of both courses is to provide students with a clear understanding of the ideas of calculus as well as provide a solid foundation for subsequent courses. Both courses require a strong working knowledge of material from Algebra II and PreCalculus, the ability to work independently, and include both computational and theoretical components.*

## Calculus

This yearlong course begins with a brief review of functions including logarithmic, exponential and trigonometric. After developing the ideas of limits and continuity, the course will focus on the two major concepts of Differential and Integral Calculus. Students will learn methods for taking derivatives and antiderivatives and use these methods in various applications. Although not as theoretical as Honors Calculus, this course requires a strong working knowledge of previous courses, the ability to work independently, and a desire to learn high-level mathematics. The students will use their graphing calculators as well as various online resources. **Prerequisite: A final grade of “B+” in PreCalculus and the recommendation of your current teacher.**

## Calculus I\*

This course is a thorough and challenging analysis of limits, derivatives, and Riemann integration. In addition to numerous applications, this course includes a theoretical component and advanced methods of differentiation and integration that will not be covered in Standard Calculus. This course will prepare students to take Calculus II\* at THS or move into a more theoretical Calculus course in college, such as required for Mathematics, Engineering or applied science majors. It is anticipated that students, having successfully completed Calculus\*, may successfully sit for the AP Examination in the spring. **Prerequisite: A grade of “B” or above in PreCalculus\* and teacher recommendation OR a final grade of “A” in PreCalculus and teacher recommendation.**

## Calculus II\* (*fall semester*)

This is a rigorous and fast paced one semester course which builds on the foundation of Calculus I\*. Topics covered include applications of differential equation to physics, engineering, and biology, infinite series, parametric and polar representation, and the foundations of vector calculus. **Prerequisite: Calculus I\* and teacher recommendation.**

## Linear Algebra\* (*spring semester*)

This is a one semester Honors level mathematics elective that studies systems of linear equations and the properties of matrices. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering. Due to its broad range of applications, linear algebra is one of the most widely taught subjects in college-level mathematics (and increasingly in high school).

**Prerequisite: Completion of Calculus I\* or Standard Calculus and teacher recommendation.**

## About Statistics

*In a society inundated with information, the ability to analyze and interpret data is an invaluable tool. Statistics provides the opportunity for students of the subject to learn how to make good decisions with data. Statistics permeates every branch of the natural and social sciences, and the ability to infer from statistical analysis is crucial in business, economics, political science and medicine. It is very likely that you will be required to take a Statistics course in college and then use it in your career.*

*The Haverford School offers two levels of Statistics: Honors and Standard. Both courses are designed to meet (and exceed) the Data Analysis Core Curriculum requirements (as adopted by the*

*Pennsylvania Department of Education); both will include computational and theoretical components dealing with descriptive and inferential statistical techniques.*

### **Statistics**

This yearlong course is intended to provide students a framework to think about the world “statistically.” Real-world problems will be solved using 21<sup>st</sup> century methodologies, i.e. by incorporating useful technologies and working collaboratively; the process will be project-based, highly interactive, and engaging. This course is open to V and VI Form students. It is ideally suited for students who have completed FST or PreCalculus and are now looking to expand their mathematical horizons. The course utilizes an online textbook for readings and exercises.

**Prerequisite: Completion of PreCalculus with a grade of B+ or PreCalculus\* and a teacher recommendation.**

### **Statistics\***

This is a yearlong comprehensive survey of the foundations of probability theory and statistical methods for collecting, organizing, displaying, analyzing and drawing conclusions from data. Emphasis is placed on clear and accurate reporting of the results obtained from these activities. Statistics\* is a demanding course (both in time commitment and complexity), open to qualified Form V or VI students who wish to study statistics at a level comparable to a rigorous college course. It is anticipated that students, having successfully completed Statistics\*, may successfully sit for the AP Examination in the spring. Technology will be used extensively for solving problems contemplated in the course. No specific textbook shall be required (although classroom copies of *Stats: Modeling the World* by: Bock, Velleman & De Veaux will be available for reference).

Students may take this course concurrently with Calculus, Calculus I\* or Calculus II\*.

**Prerequisite: Completion of PreCalculus with a grade of B+ or PreCalculus\* and a teacher recommendation.**

### **About Finance and Economics**

*Making sound fiscal and monetary decisions is an essential life skill, yet most people acquire it only with age and through a process of trial and error. Studying Finance and Economics will equip students with powerful mathematical and decision-making skills to help them take control of and proactively map their lives in an uncertain world. Clear financial and economic thinking will yield profound benefits for students of the subjects, as well as for society-at-large.*

### **Finance: Theory of Interest (fall semester)**

Open to VI Form students, this course explores the theories and applications of both simple and compound interest. We will learn the basics of general annuities and perpetuities; amortization tables and sinking funds will be developed; bonds and equity instruments will be compared and contrasted; and capital budgeting will be discussed. In addition to valuing various financial securities using both simple and compound interest, this course analyzes current events and their impact on the markets. A major goal of the course will be to teach students effective problem-solving techniques using real-world monetary transactions. Technological solutions to all of the problems contemplated will be emphasized. No specific textbook shall be required (although classroom copies of Schaum’s Outline - *Mathematics of Finance* will be available for reference).

Theory of Interest is offered in the fall as a stand-alone course; taking Portfolio Analysis in the spring is not required, although it is desirable. **Prerequisite: Algebra II**

**Finance: Portfolio Analysis (*spring semester*)**

Open to Sixth Form students, the main objective is to provide students with a sound understanding of the concepts and practices associated with making sound investments. We will contemplate topics such as: financial statements, financial instruments, the markets and related indices, risk and return vs. pricing theory, performance evaluation, and efficient diversification. A wide variety of securities will be discussed. Among them are: common stocks, bonds, mutual funds, real estate, options and tax-advantaged investments. The capstone project for the course will be the design, construction, and management of a hypothetical portfolio by the students. This course additionally examines the impact of current events on a weekly basis. Students will evaluate various current events and examine the positive or negative results on stock price, market indices, and the economy as a whole. All of the required reading material is available online, so no specific textbook will be utilized. Portfolio Analysis is offered in the spring as a stand-alone course; taking Theory of Interest in the fall is not a prerequisite, although it is helpful. **Prerequisite: Algebra II**

**Economics: Macro\* (*fall semester*)**

This conceptually challenging VI Form elective covers the main ideas of macroeconomics, the study of the large-scale structure of the national and world economy. The mathematical level is comparable to that of an introductory college class in macroeconomics. Topics include national income accounting (GDP), economic growth, unemployment and inflation, the financial sector, money and banking, aggregate supply and demand, and fiscal and monetary policy. **Prerequisite: Students must be enrolled in or have completed a Calculus course.**

**Economics: Micro\* (*spring semester*)**

This mathematically demanding VI Form elective covers the main ideas of microeconomics, the study of the decision-making processes of consumers and producers in a market economy. The mathematical level is comparable to that of an introductory college class in microeconomics. Topics include market equilibrium, elasticity, taxes and price controls, international trade, consumer and producer decisions, competition and monopoly, and externalities, such as pollution and global climate change. **Prerequisite: Students must be enrolled in or have completed a Calculus course.**

**Software Programming I (*fall or spring semester*)**

This course begins with learning how to write and develop algorithms, and the students explore how to program a computer to solve such algorithms using the Python programming language. During the course, students will work through pre-designed projects, develop their own projects, design solutions, and learn how to test and debug their programs. There are several work days dedicated to independent work on projects. Due to the nature of the material, students can anticipate spending several hours outside of class working on their programs as well. It is expected that students will master algorithm building and develop an understanding of the object oriented nature of Python. **Prerequisite: Algebra II**

**Software Programming II (*spring semester*)**

Students will learn to identify interesting problems that can be addressed with software. They will explore Python’s usage of classes and objects and use them in programs they build. Working as a collective is an essential skill for future programmers and students taking this course will learn to develop this skill and practice it regularly. **Prerequisite: Teacher recommendation and completion of SPI with a B or higher. Students must demonstrate a strong work ethic and a history of consistent homework and project completion to qualify.**

The following course progression may be used to determine your plan for each year.

Although not included in the chart, math electives are also available in Forms V and VI.

Form II	Form III	Form IV	Form V	Form VI
PreAlgebra	Algebra I	Geometry	Algebra II	Functions, Statistics, and Trigonometry or PreCalculus
Algebra I	Geometry	Algebra II	PreCalculus	Calculus or Statistics or Statistics*
Algebra I	Geometry*	Algebra II*	PreCalculus*	Calculus I* and/or Statistics*
Geometry	Algebra II	PreCalculus	Calculus	Calculus I* or Statistics* or Statistics
Geometry	Algebra II*	PreCalculus*	Calculus I*	Calculus II* and/or Statistics*

# MODERN & CLASSICAL LANGUAGES

## Philosophy and Overview

The Modern and Classical Languages Department prepares boys for a future in the global community. In order to create the best target language experience for our students, we seek to cultivate a program that incorporates the following interconnected principles:

**Cultural understanding and empathy:** The study of languages beyond English provides a unique opportunity to not only gain perspective on cultures separated from ours in space and time, but also better understand our own. Our culture-centered language curriculum, while maintaining rigorous linguistic standards, intentionally teaches our boys empathy and appreciation for diversity.

**Language acquisition:** Our program provides the opportunity for students to become proficient at reading, writing, speaking and listening in the respective languages. To achieve these proficiencies, we provide a learning environment that fosters intellectual risk-taking and problem-solving skills.

**Incorporation of authentic experience:** We put the study of language in context by incorporating meaningful, real life resources into the curriculum. We value experiences beyond our school walls, both in the local community and abroad, and strive to provide opportunities for our boys to travel.

## Chinese I

This introductory course is offered to students with little or no prior experience in Mandarin Chinese. Basic background information of the language such as tone graphs, pinyin, and formation of characters will be introduced. Vocabulary, grammatical structures, and cultural references will be taught and discussed at an elementary level. Students will learn to read simple passages and write in simplified Chinese characters. In the second semester, students will engage in basic communicative tasks related to daily settings. This course is mostly conducted in Chinese, with the exception of addressing important and difficult concepts.

## Chinese II

This course continues to build on skills, comprehension and proficiency developed previously in Chinese I. More vocabulary and grammatical structures will be introduced. Students will be equipped with the ability to communicate with native speakers in everyday settings and sustain meaningful conversations. Emphasis will be placed on performing culturally authentic and pragmatic communicative tasks.

### **Chinese III\***

This course continues to build on skills, comprehension and proficiency developed previously in Chinese II. More vocabulary and grammatical structures will be introduced. Students will be equipped with the ability to communicate with native speakers in everyday settings and sustain meaningful conversations. Emphasis will be placed on performing culturally authentic and pragmatic communicative tasks. Chinese is the main medium in the classroom and in casual situations throughout the school day. **Prerequisite: department approval.**

### **Chinese IV\***

This course continues to refine students' listening, speaking, reading and writing skills previously developed in Chinese III\*. Conversations and discussions will be based on socially and culturally authentic context and materials. Students will learn to compose descriptive passages using advanced vocabulary, sentence structures, and both traditional and up-to-date idioms that have substantial reflection on Chinese current affairs. Chinese is the main medium in the classroom and in casual situations throughout the school day. **Prerequisite: B+ average in Chinese III and department approval.**

### **Latin I**

This introductory course examines the linguistic, cultural and historical traditions of the Greco-Roman civilizations. As a way to foster clear and logical thinking, Latin grammar, syntax and translation form the core of study. Since Latin is a basic constituent of the English language, the course examines vocabulary with particular emphasis on English derivatives and related definitions. Students also study mythological, historical and cultural themes in order to broaden their appreciation of the foundations of Western civilization.

### **Latin II**

This course, offered to students who have completed Latin I in the Middle or Upper School, reviews the fundamentals of Latin I and introduces more sophisticated grammatical concepts requisite for success at the intermediate level. To introduce the art of translation, fables and mythological stories are read, as well as adapted selections from ancient literature. Emphasis is placed on precise analysis and expression in preparation for reading the original works of the Latin writers in Latin III. **Prerequisite: department approval.**

### **Latin II\***

Students who choose this course should be especially eager to continue their study of Latin and classical literature. While including the elements described for Latin II, the pace and depth of the curriculum are aggressive and presume an avid enthusiasm for scholarship. Students will complete the majority of Latin grammar while reading and translating extensive selections from classical and medieval literature. In addition, students will study the history and culture of ancient Rome in depth, using archaeological and epigraphic as well as literary sources. **Prerequisite: A- in Latin I and department approval.**

### **Latin III**

This course continues with the mastery of sophisticated grammatical concepts which are studied in the context of historical writings. With the text Duces Romanorum the students examine ancient Rome with an emphasis on its greatest leaders from its founding through the Republic. In the spring, particular emphasis will be placed on the works of Caesar. **Prerequisite: department approval.**

### **Latin III\***

This course allows the student to apply his knowledge of Latin grammar, syntax and vocabulary to the reading, translating, analyzing and understanding of Latin literature from the late Republic. Particular emphasis will be placed on the works of Caesar and Cicero. In conjunction with our translations, students will study the literary, cultural, intellectual and historical contributions of the ancient Roman world. This course, in comparison with the Latin III course, proceeds at an enhanced pace and depth. **Prerequisite: B in Latin II\* and department approval.**

### **Latin IV**

Students study the traditions of ancient epic by reading the Iliad, its ancient Latin translation, the Ilias Latina, and Vergil's epic poem The Aeneid. Selections are translated from the Latin, while other passages are examined and discussed in English. In addition to mastering Latin epic meter, students become familiar with Latin poetic style and its place in the Western literary canon. Through extensive translation and textual analysis, students develop their confidence in reading at sight and, by writing short papers and giving oral reports on relevant topics, they enhance their appreciation of poetic artistry. **Prerequisite: B- in Latin III and department approval.**

### **Latin IV\***

Students study Vergil's epic poem The Aeneid in its historical setting as well as in its place within the traditions of epic genre. Selections are translated from the Latin, while other passages are examined and discussed in English. In addition to mastering Latin epic meter, students become familiar with figures of speech and the Vergil's unparalleled poetic style. Through extensive translation and textual analysis, students develop their confidence in reading at sight and, by writing short papers and giving oral reports on relevant topics, they enhance their appreciation of Vergil's artistry. This course, in comparison with the Latin IV course, proceeds at a greatly enhanced pace and depth. **Prerequisite: B in Latin III\* and department approval.**

### **Latin V\* Prose (*fall semester*)**

In this course students will have the opportunity to read and study a variety of Roman prose writings including history, political commentary, philosophy and letters. The works of authors such as Livy, Tacitus, Suetonius, Caesar, Cicero and/or Pliny will provide the basis for a more thorough understanding of the Roman Republic and Empire. The prose selections will enable students to improve both their reading fluency and literary analysis skills as they gain a better appreciation of Roman culture, history and literature. **Prerequisite: A in Latin IV and department approval.**

### **Latin V\* Poetry (*spring semester*)**

In this course, students will have the opportunity to read and study a range of Roman poetry including epic, lyric and satire. The works of authors such as Ovid, Catullus, Martial and/or Juvenal will offer the student insights into Roman thinking about politics, love, everyday life, mythology and poetry. The poetry will enable students to improve both their reading fluency and literary analysis skills as they gain a better appreciation of Roman culture, history and literature.

**Prerequisite: A in Latin IV and department approval.**

### **Spanish I**

This course is designed for the student who has had little or no prior exposure to the Spanish language. It emphasizes the acquisition of fundamental practical vocabulary, a solid foundation in basic grammatical structures, a detailed study of the verb system and the development of sound pronunciation and speaking skills.

### **Spanish II**

Students enrolled in this course have successfully completed Haverford's first year of the language. In Spanish II, students will continue to build a solid foundation in the fundamentals of grammar and in the acquisition of a practical, useful, contemporary vocabulary for oral and written communication in a variety of everyday situations. Furthermore, through various cultural explorations, students will continue to expand their knowledge of Hispanic cultures. Students participate in daily oral drills, complete translation exercises, read short passages and write one-page compositions. Throughout the year, the students continue to expand their vocabulary and strengthen their precision both in speaking and writing, and gain mastery of the future, conditional, imperfect and perfect tenses. **Prerequisite: department approval.**

### **Spanish II\***

Students enrolled in this course have successfully completed Haverford's first year of the language, and are prepared for the significantly faster pace of this course. Students in this class will master the future, conditional, imperfect and perfect tenses of the indicative mood, and will also undertake a thorough study of the present subjunctive. The class will be conducted almost entirely in Spanish, unless the explanation of a complex grammatical concept demands otherwise. Students will engage in oral drills, and translation exercises, and will create presentations and one-page compositions. The class will read and discuss short literary passages and current articles relevant to Hispanic culture. **Prerequisite: A- average in Spanish I and department approval.**

### **Spanish III**

Students enrolled in this course have successfully completed Haverford's Spanish II curriculum. Spanish III begins with a thorough review of grammar covered in the second year. Students will then continue their study of the subjunctive mood, and will be introduced to more complex grammatical structures. Students will read longer passages, and sections of authentic literary works, and will engage in class discussion primarily in Spanish. In Spanish III, students complete their study of the Spanish verb system, and begin to apply their skills to a variety of exercises

designed to promote greater fluency in spoken and written Spanish. **Prerequisite: department approval.**

### **Spanish III\***

This course is designed for students who have successfully completed Haverford's Spanish II\* curriculum. Emphasis in Spanish III\* is divided among five basic language skills: listening comprehension, speaking, reading, writing, and cultural understanding. This third-year course begins with a review of second year skills and introduces appropriate new material to help students improve their command of grammatical structures, active and passive vocabulary, and comprehension of both literary and non-literary written Spanish. Short stories, films, and newspaper articles are incorporated into the curriculum, in order to foster greater understanding of Hispanic culture, and to help the student develop the skills necessary to express himself in spoken Spanish. Students in Spanish III\* make the transition from sequential materials used at the previous levels of language instruction to the ability to express themselves creatively in oral and written Spanish. **Prerequisite: B average in Spanish II\* and department approval.**

### **Spanish IV**

The objective of this course is to help the students to convert the linguistic skills acquired during the three previous years into a coherent, clear, and useful means of communication. It prepares students to converse at length and handle everyday situations with confidence. Students view films in Spanish, and read literary works from world-renowned Spanish and Latin American authors. They also use the Internet, magazines and newspapers to read about current events in the Spanish speaking world. The films, literary readings and articles are the basis for classroom discussion and provide students with a general understanding and appreciation for the Hispanic culture. By the end of this course the student should have developed the self-assurance and confidence necessary for using the target language in informal conversations, or before a variety of audiences, ranging from a small circle of friends to a full class. **Prerequisite: B- average in Spanish III and department approval.**

### **Spanish IV\***

This is an interactive course involving advanced vocabulary and grammatical structure, as well as intensive study and usage of the Spanish language. Students in this class will continue to develop greater proficiency in all four language skills: listening, reading, writing, and speaking. Students in Spanish IV \* will discuss contemporary news, cultural topics, literary readings, and Spanish films. The goal of this course is to help students achieve fluency, and, as such, it will enable students to communicate with greater confidence, giving them the tools they need to handle day-to-day situations in a contextualized setting. **Prerequisite: B average in Spanish III\* and department approval.**

### **Spanish V: Cine del mundo hispano (fall semester)**

This course addresses themes relevant to the 21st century in the Hispanic world, many of them polemic in nature. Topics include immigration, oppressive government regimes, global responsibility and regionalism versus globalization. Students learn the skill set necessary to watch, The Haverford School – Upper School Course Catalog

understand and interpret Hispanic film and ultimately enabling the students to view films critically and as empathetic global citizens. Advanced grammar and vocabulary will be reinforced through discussion and composition. **Prerequisite: B- average in Spanish IV and department approval.**

**Spanish V: Conversación y Controversia (*spring semester*)**

In this semester-long course, students will explore global issues through the literature, art, history, politics, film, and culture of the Spanish-speaking world. Particular emphasis will be placed on developing speaking skills, but students will be required to complete nightly readings in order to participate effectively in class. Readings will be aimed at helping students develop cultural empathy and an understanding of current world events, and will include newspapers, blogs, and other internet sources, as well as literary works. In addition to daily class participation, students will be expected to work individually and in groups on diverse oral projects such as podcasts, Powerpoint presentations and debates. Additionally, several films will be chosen to complement the themes of the texts explored in class. **Prerequisite: B- average in Spanish IV and department approval.**

**Spanish V\*: Latinoamérica en el siglo XX (*fall semester*)**

This advanced class will use the literature, art and film of the last century to explore the role of political and economic events in the Spanish-speaking world. In particular the political changes, economic crises and social movements that have so influenced and affected countries such as Chile, Guatemala, Venezuela, Cuba, Argentina and México. The content of this course will be tailored to student interest and current events. Students will be exposed to the unique voices of novelists, short story writers, journalists, poets, artists and filmmakers whose work was informed by these events. Students will also gain insight into the socio-political antecedents and repercussions of these critical events. **Prerequisite: A average in Spanish IV and department approval.**

**Spanish V\*: Literatura y cultura latinoamericana (*spring semester*)**

In this course students will explore latin american culture through literature. The short stories of such authors as Rulfo and Márquez will transform the reader's understanding of the human experience. This advanced course is dedicated to reading and interpreting literature of the Spanish speaking world with particular emphasis on the short narrative. Immersed in the target language, students will participate actively in discussions and write reflections on literary and social justice topics. Students will explore the historical, cultural, and literary influence of various authors from all over Latin America and Spain through the 21st century. **Prerequisite: A average in Spanish IV and department approval.**

## CLASSICS ELECTIVES

### **Ancient Greek**

This course will endeavor to immerse the student in the rich intellectual, cultural, historical and literary heritage of ancient Greece, with particular emphasis on Athens in the fifth century BC. Through daily reading of ancient Greek, the students will gain mastery of grammatical concepts, acquire a substantial, working vocabulary and attain proficiency in translation. Initially reading Greek passages adapted from such Classical authors as Herodotus, Thucydides and Aeschylus, by the end of the course we will be reading those same authors in the original. We will also be exploring additional literary traditions by reading several Greek tragedies in translation. The students will be encouraged at all times to examine and reflect upon the myriad of contributions that the ancient Greeks have made to Western Civilization. **Prerequisite: department approval.**

### **Mythology (*fall or spring semester*)**

Though we are separated from the ancient Greeks by millennia, Greek mythology continues to play an important role in shaping and understanding our culture. In this class, we will become familiar with major stories and themes from Greek myths, as well as examine how myths are structured, how people use myths to understand their experiences, how societies apply myths to political purposes, and how myths are depicted in ancient and modern art. No knowledge of Latin is necessary to enjoy and succeed in this class. [This is a Classics course. Knowledge of Latin is **NOT** required.]

# SCIENCE

## Philosophy and Overview

The Haverford School Science Department strives to produce graduates who demonstrate a well-developed scientific intellect. Crucial to this goal is the development of critical thinking and the ability to synthesize and analyze available information. Possessing those tools, the boys can then apply their knowledge to the integration of concepts within the realm of science and across disciplines. We want the boys to understand that science is an active and ongoing process. We mold active learners who are capable of independent, cooperative, and collaborative work using the available technology and tools. We emphasize the students' status as global citizens, including but not limited to the stewardship of their environment, ethical decision making, and possessing comprehensive historical perspective. We consistently model for and try to instill in the boys, personal qualities that will sustain open-mindedness, creativity, imagination, and curiosity. By supporting informed risk-taking and encouraging the patient pursuit of goals, we look to cultivate persevering, hard-working students who will possess the confidence and resiliency to continue their study of science regardless of obstacles they may encounter. Through this process we hope to nurture and help the boys sustain the inherent awe, passion, and wonder that science can inspire.

## Physics

The Haverford student sets out on his Upper School science journey with an exploration of fundamental physics, laying the foundation for in-depth explorations of chemistry and biology. Third Form students will have a choice between a conceptual or a problem based approach. The two physics courses are designed around a project-based curriculum and strive to be the cornerstone in our development of scientifically literate graduates who appreciate science and are curious about the natural world. Both courses are structured around pillars of physics such as Newton's Laws, the Law of Conservation of Energy, and electricity and magnetism. Both approaches provide the student with the opportunity for intellectual investigation, tactile experience, and the development of appropriate and vital critical thinking and problem solving skills. The students, through individual and collaborative work, will engage in laboratory research, reading, writing, problem-solving, and relevant and creative projects. **Successful completion of one of these courses is required of all Third Form students.**

Within the construct described above we incorporate project-based inquiries that allow students to explore foundational aspects of topics that could include applications of engineering, robotics, programming, and collaborative problem-solving. Centered around the concepts and phenomena discussed in class, these open-ended experiences help to further develop the skills of scientific problem-solving and reasoning that will be relevant to their future science classes and their lives well beyond Haverford. Therefore, class time is often devoted as much to laboratory study and peer discussion as to the more traditional lecture and recitation. The student learns to write formal laboratory reports in the format expected throughout his Upper School science experience and

beyond. During his laboratory exercises, the student will be required to capture data, work collaboratively with colleagues, and use imagination, ingenuity, and creativity to solve the practical problems presented.

### **Physics-A Conceptual Journey**

This physics course is conceptually challenging while supporting development of essential problem solving skills. Detailed, challenging, and in-depth projects, modeling, and collaborative experiences will be the primary modes of exploration with the intentional and appropriate incorporation of mathematical principles. Third Form students will have the opportunity to develop or reinforce their mathematical problem solving skills at the Algebra I level. Physics concepts will be explored through the perspective of how they relate to real world problems and issues. Mathematical and problem solving skills will be incorporated as needed within the context of the conceptual foundation that forms the fundamental structure of the course. It is designed to challenge each boy to stretch and grow through scientific inquiry, collaboration, concept mastery and appropriate mathematical applications.

### **Physics-A Problem Based Journey**

This course is designed to build the same foundation as the conceptual journey with an emphasis on a deeper and broader mathematical exploration. Mathematical concepts will be essential in forming the basis of the conceptual foundation in physics. It is designed with the intent of offering those boys who really enjoy the challenges of establishing a clear and lasting connection between the conceptual foundation and the mathematics that predict and define their physical experiences in the world around them. **It is recommended that boys enrolling in this course have completed geometry successfully or have demonstrated appropriate skills on a readiness assessment co-designed by The Haverford Science and Math departments.**

Both courses will provide a thorough and challenging exploration of fundamental physics while providing the student with the opportunity to master the essential mathematical skills needed for success in both levels of Fourth Form chemistry.

### **Chemistry**

The second of three *required* courses, Chemistry is an integral component of Haverford's Upper School science sequence. Like Physics, Chemistry emphasizes problem-solving strategies, experimentation, teamwork, project based activities, and the fundamental principles of physical science. To that foundation it adds an understanding of modern theoretical concepts, the relationship between structure and function, multi-step calculations, and qualitative and quantitative laboratory work. All Chemistry courses provide students with an understanding of basic chemical concepts: atomic and molecular structure, periodic properties of elements, reactions, stoichiometric calculations, thermochemistry, solution chemistry, acids and bases, and equilibrium. We expect students who have completed a course in Chemistry to have a firm grounding in experimental procedures, calculations, basic error analysis, and lab report writing skills. Students should also be able to manage an appropriate schedule of reading, problem solving, preparation, and participation. Calculators and computers with related software are frequently

used for problem solving and data analysis. Chemistry is an important prerequisite for the Biology course which students customarily complete in their Fifth Form year.

- **Chemistry** - This is a broad introduction to, and overview of, the general principles and problem-solving techniques in the study of the composition of substances and the changes these substances undergo. The course touches on all of the five major branches in chemistry: inorganic, organic, analytical, physical, and biochemical.
- **Chemistry\*** - This fast moving and very challenging course includes all the requirements of Chemistry with an added emphasis on more complex and mathematically intense problem-solving techniques, independent learning, and detailed applications to contemporary science and technology. Topics will be explored in more depth and at a faster pace than in Chemistry, and students may explore additional topics in Thermodynamics, Electrochemistry, and/or Reaction Kinetics. Students should *expect* frequent and challenging out of class assignments for its entirety. **Prerequisite: Successful completion of Geometry and an established record of dedication to fulfilling course requirements and a conscientious commitment to excel. Completion of Physics with a final grade of A or better and endorsement of the Physics and Math instructors, with approval of the Science Department Chair. It is advantageous to have completed Algebra II before enrolling in this course. However, students may enroll in Chemistry\* while concurrently enrolled in Algebra II provided they have the endorsement from their math and science instructors, and permission of the Science Chair.**

## Biology

Fifth Form Biology is the last of the science requirements for graduation from The Haverford School. The course takes advantage of the experience students have acquired in their earlier physics and chemistry courses. As the science of biology takes an increasingly molecular approach to pursuing answers to questions about life processes, and as technological advances provide tools of studying phenomena with more and more precision, a student must demonstrate competency in the physical sciences in order to achieve the greatest understanding of modern biology.

Each student should gain a thorough knowledge of biological processes that apply to him and to the natural world around him. He should, therefore be able to make intelligent decisions about biological issues affecting him and his community, as they will certainly arise in his future. What is more, we want students to grow to have an appreciation for the richness of the natural world, a curiosity about the many mysteries that remain, and the confidence to continue to study biology at the higher levels of college and graduate school.

- **Biology** - Principle topics may include cell biology, biochemistry, classical and modern genetics, molecular biology, evolution, and animal and plant physiology. Besides acquiring new knowledge, students refine their laboratory skills: making careful, quantitative observations, asking good questions, forming testable hypotheses, designing laboratory procedures, effectively and safely manipulating laboratory apparatus, gathering, analyzing,

and presenting laboratory data, and coming to reasonable conclusions. **Prerequisite: Third Form Physics and Chemistry or permission of the Science Chair.**

- **Biology\*** - Similar in content to Biology, general topics may include evolution, cell biology, biochemistry, classical and modern genetics, molecular biology, and animal and plant physiology. This course examines these phenomena at an accelerated pace and in greater breadth and depth. Understandably, daily workload is heavier in this course, and some laboratories are more challenging, than in standard Biology. Throughout the year we will exercise our freedom to pursue subjects that catch our particular interest. **Prerequisite: An established record of dedication to fulfilling course requirements and a conscientious commitment to excel. Third Form Physics and a grade of A or better in Chemistry or successful completion of Honors Chemistry with the endorsement of the Chemistry instructor and permission of the Science Chair.**

### **Advanced Physics\***

A yearlong course designed for those Sixth-Formers who are seriously considering the physical, medical, or engineering sciences as a future college major or career path. The purpose of this course is to revisit topics from Third-Form physics while exploring additional topics common to a second-year physics curriculum. All topics will be explored from a conceptually deep and computationally intense perspective that often relies on calculus. Students will need to be proficient in algebra, trigonometry, and basic calculus. Students will explore relativity, linear and circular motion, fluid dynamics, temperature and heat transfer, quantum physics, health physics, and much more. The course will be conducted at an accelerated pace with a strong focus on problem-solving. Finally, students should *expect* frequent and challenging class assignments including group collaborations as well as reading and interpreting actual academic papers.

**Prerequisite: An established record of dedication to fulfilling course requirements and a conscientious commitment to excel. Completion of Algebra II with a grade of A- or better. Completion of Pre-Calculus. Completion of Honors Chemistry with endorsement of the science faculty and permission of the Science Chair. Co-requisite: Completion of or concurrent enrollment in Calculus or a more advanced course in mathematics.**

### **Astronomy (spring semester)**

The purpose of this course is to introduce the student to compelling aspects of Astronomy that they may be less familiar with, namely to those areas of our universe that extend beyond our local solar system. We will investigate such areas as cosmology, galactic morphology, stellar evolution, dark matter and energy, evidence for intelligent life beyond our solar system, and the ultimate fate of the universe itself. We will be utilizing one of the more definitive classroom texts about Astronomy, *Universe* by Freedman and Kaufmann. Our discussion will begin with a look at the origin and development of the universe and some of the largest-scale aspects of Astronomy, effectively moving backwards through the book.

### **Electronics\* (fall semester)**

This course provides an introduction to electricity and electronics with a focus on hands-on experience and practical applications. Electronics is one of the fastest expanding fields in research. From the invention of the transistor almost sixty years ago to our current reliance on the “Information Superhighway”, electronics has been a vital part of our modern technological society. The semester will begin with a look at the evolution of electronics over the last century. This will be followed by a thorough examination of the basic principles: voltage, current, resistance, Ohm's Law, Kirchoff's Law, etc. After a significant amount of time is spent on identifying and understanding how various electronic components work, students will design their own circuits. Using a solder gun and solderless breadboards, students will learn how to build analog circuits that accomplish particular tasks. Later in the semester, students will also have an opportunity to work with integrated circuits. Teamwork, critical thinking, and problem solving will be important attributes. Assessment will be based on weekly lab projects, quizzes, homework, and a long-term circuit project. **Prerequisite: An established record of dedication to fulfilling course requirements and a conscientious commitment to excel. Completion of pre-Calculus with a grade of A- or better and a grade of B or better in Honors Chemistry or A- or better in Chemistry. Endorsement of the current science teacher and permission of the Science Chair. Co-requisite: Enrollment in a Calculus course or higher**

### **Engineering\* (fall semester)**

Engineering\* is a semester-long course designed for students who are seriously considering any engineering discipline as a college major. Students will be required to use first principles of physics, mathematics, chemistry, and biology to design, build, and test structures and devices. Prior to building, students will apply their developing knowledge of mechanics while preparing calculation-based designs. Students will then construct working prototypes to test their models, while gathering and analyzing data to inform the iterative process. The goal of each project will be to address an engineering problem relevant to practicing engineers while adhering to specific design and economic constraints. The accelerated pace of Engineering\* will require students to complete calculations, modeling, and data analysis independently. The course will cover the same fundamental topics included in Engineering in addition to topics requiring advanced mathematics and rigorous problem solving. These topics will include energy transfer, fluid dynamics, biomechanics, materials chemistry, mechanics of materials, programming, systems integration and others as time permits. Students should *expect* frequent and challenging out of class assignments for its entirety. **Prerequisite: An established record of dedication to fulfilling course requirements and a conscientious commitment to excel. Completion of pre-Calculus with a grade of A- or better and a grade of B or better in Honors Chemistry or A- or better in Chemistry with endorsement of the current science teacher and permission of the Science Chair. Co-requisite: Enrollment in a Calculus course or higher.**

### **Engineering: People and Processes (fall semester)**

Engineering is the discipline that makes the modern world tick. Students will learn exactly what Engineering is and who are engineers. They will explore the practical process philosophies that a

good engineer must use. Through a series of real world applications they will investigate the complexities of the decisions faced by engineers and develop the thought processes that guide engineers through these mazes. Included in these are the trade-offs to find optimum solutions, the design process and the importance of failure. The students will conclude this semester with a team based project, where in a real business environment, they must deliver a product against a series of specifications, on-time and to cost. **Prerequisite: Endorsement of the current science teacher and permission of the Science Chair.**

### **Engineering: Design, Build, and Test (*spring semester*)**

The class provides students with the opportunity to design, build and test projects in teams of two or three. The projects, which will vary year by year, will be based around a definable goal. In this environment the students will practice real world engineering in that they will be responsible for not only achievement of the end goals, but also for creating the detailed discrete steps that need to be taken to achieve those goals. The projects will always challenge the student to work in a collaborative environment where a drive to consensus is vital. Previous projects have included: designing and prototyping sports equipment, designing and manufacturing Trebuchets to meet specific ballistic goals, and designing, programming, and assembling Sumo Wrestling Robots. The projects are rooted in the real world and through them the students will benefit from not only the hands-on engineering experience but also the development of life skills that are the hallmarks of good engineers. **Prerequisite: Endorsement of the current science teacher and permission of the Science Chair.**

### **Environmental Ethics and Policy (*fall semester*)**

As young adults, it is of paramount importance that Haverford students understand some of the most pressing environmental challenges that confront their generation in the new millennium. Essential global issues such as water scarcity, peak oil, climate change, and much more will be explored. Local issues in the state of Pennsylvania involving hydraulic fracking and environmental justice will also be discussed. We will take a holistic approach to confronting environmental challenges by not only discussing the scientific factors at play, but the social, moral, political, and economic factors as well. The course will be conducted like a discussion-driven graduate seminar where different points of view are encouraged. Course content will be borrowed from the University of Pennsylvania's graduate program in Environmental Studies. Students will be expected to read and interpret policy assessment reports and academic papers, constructively debate their peers, reach out to experts in the field, and collectively seek meaningful solutions.

### **Global Impacts of Infectious Disease (*spring semester*)**

This course will examine the historical and contemporary impacts of infectious disease on our planet and its inhabitants. To demonstrate understanding, students will independently research and present proposals to minimize or eliminate the effects of a particular disease. Course and lab work will focus on the intersections of molecular and cellular biology, microbiology, immunology, physiology, ecology, epidemiology, and principles of public health. Students can expect to gain a breadth of knowledge in these

areas; depth of study for particular topics will be determined by needs for student projects and student interest. **Prerequisite: Successful completion of Biology with the endorsement of the Biology instructor and permission of the Science Chair.**

### **Molecular Biology\* (*spring semester*)**

This course is the synthesis of several disciplines: biochemistry, genetics, cell biology, and microbiology. Biologists have the means to analyze the Human Genome. The dissection of the molecular pathway through which hereditary information flows between DNA, RNA, and protein molecules adds to our understanding of human development and disease. Technological developments have provided powerful methods to isolate, analyze, and manipulate DNA, RNA and protein molecules. These developments have transformed biological and medical research. The majority of class time will be spent in the lab, learning and using molecular and cell biology research techniques to sequence a gene. Biotechnology will be provided to students, so they can learn theory, practice, and applications with hands-on experimental work. The curriculum may include applications of biotechnology such as genetic engineering, gene therapy, immunotherapy, and regenerative medicine. **Prerequisite: Successful completion of Biology\*. The endorsement of the Biology instructor and permission of the Science Chair.**

### **Organic Chemistry\* or Organic Chemistry (*fall semester*)**

This second-year chemistry course will provide a solid foundation in some of the fundamental concepts of organic chemistry. Topics will include; organic nomenclature, functional groups, acid/base theory, isomerism, resonance, and basic reaction mechanisms related to synthesis and polymerization. The lab component of the course will introduce students to some skills and techniques essential for experimentation in an organic chemistry laboratory course. There is no doubt that organic chemistry touches almost every aspect of our daily lives. Emphasis will be placed on establishing connections to biology, biochemistry, material science, pharmacology, and art. The course will be designed so that, by completing additional assignments and meeting clearly delineated expectations, students can choose to augment the standard requirements of the course to constitute mastery at the honors level. The differences in those requirements will be founded in independent study, depth of knowledge, and complexity of problems and interpretations. **Prerequisite: Successful completion of Chemistry\* or a grade of B or better in Chemistry, endorsement of the chemistry instructor, and permission of the Science Chair.**

### **Physiology (*spring semester*)**

Physiology is a biological sciences course that focuses specifically on the normal functions and components of living organisms, especially human. Major themes are the mechanisms the sustain life and the ways in which these normal processes can be disrupted. Depending on student interest, topics may include locomotion, digestion, respiration, reproduction, transportation, transmission of information, regulation of body functions, and/or defenses against disease. Student understanding will be assessed by tests, laboratories, and projects. **Prerequisite: Successful completion of biology.**

### **Physiology\* (*fall semester*)**

Physiology is a biological sciences course that focuses specifically on the normal functions and components of living organisms, especially human. Major themes are the mechanisms that sustain life and the ways in which these normal processes can be disrupted. The honors level of this course will focus on different and more complex topics than standard level and may include, but is not limited to, immunology, neurology, and/or reproductive anatomy. Students will be expected to examine topics in more depth, augment classroom learning by reading current literature, and communicate their understanding via a culminating research paper. **Prerequisite: Successful completion of Biology with the endorsement of the Biology instructor and permission of the Science Chair.**

### **Advanced Laboratory Research Cooperative I\* (*spring semester Fifth Form*)**

Boys will explore several scientific fields via exploration as well as reading and discussion of selected current scientific research. Once they have identified a particular area of interest, the boys will begin investigating opportunities for placement in a cooperating local University or Private laboratory. Boys who complete this independent study portion of the course may be asked, based on their performance, to commit to enrolling in ALRC II\*. Following that invitation and commitment the boys will be enrolled in a six to eight-week summer research experience in which they will work closely with investigators and/or graduate students at area university, or private laboratories on research projects they have selected. Upon successful completion of the summer research portion of the course, boys will receive retroactive credit for ALRC I\*. **Prerequisite: Completion of Chemistry\* and Biology\* with a grade of “A-“ or better. Students will apply and be selected for this course by the science department during the fall semester of the Fifth Form year. Academic achievement, discipline record, attendance record, and input from past and current instructors will be considered during the application process. Formal invitations to enroll will be extended by the lead instructor or the Science Chair. Co-requisite: Students who receive credit for ALRC I\* must enroll in ALRC II\* in the Sixth Form**

### **Advanced Laboratory Research Cooperative II\* (*fall semester Sixth Form*)**

This is a one semester course for Sixth Form students who have completed ALRC I\*. If necessary, students continue to gather and analyze experimental data based on their summer research work. Time is then devoted to the organization, analysis, evaluation, and interpretation of their data. Concurrently the boys will discuss each other’s data in a presentation/seminar format. The boys will then formally write up their research for possible submission to competitions or publications and begin preparations for presentation of their research experience to the Haverford School Community. If time permits, students will explore possible research extension questions based on their original work. During the spring semester they will occasionally be asked to advise and interact with Fifth Formers currently enrolled in ALRC I\*. Students will meet with the research advisor at least one double period each cycle. They will be expected to work independently between meetings. This course will be scheduled in addition to the students’ regular five class load. **Prerequisite: Successful completion of ALRC I\* and permission of the ALRC I\* instructor and the Science Chair.**

## INDEPENDENT STUDY

This is an opportunity primarily for Sixth Form students to pursue an academic interest in a tutorial setting. Independent study can further the academic and intellectual interest of both students and faculty, enrich the curriculum, and encourage interdepartmental courses and cooperation. **STUDENTS MAY NOT DROP AN HONORS COURSE OR A YEARLONG COURSE IN ORDER TO TAKE AN INDEPENDENT STUDY.** Be sure to include this in your planning for your academic course load. This course is available to students during the fall or spring semesters of the Sixth Form year or, in rare cases, the Fifth Form year. A student, in conjunction with the appropriate teacher, will develop his independent study proposal that is then forwarded to the Independent Study Committee. Please ask the Head of the Upper School or the Director of College Counseling about further details.

**Note: Independent Study is intended for work that is not available in the normal school curriculum.**

# CO-CURRICULAR ACTIVITIES

## ATHLETICS

Each student must participate in two interscholastic sports or the equivalent thereof in Third, Fourth, and Fifth Forms and one interscholastic sport in the Sixth Form year.

<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Cross-Country	Basketball	Baseball
Football	Ice Hockey	Crew
Soccer	Winter Track	Lacrosse
Water Polo	Squash	Tennis
Crew	Swimming & Diving	Track & Field
Golf	Wrestling	Ultimate Frisbee
	Crew	

## MUSIC AND THEATER

### Notables

This is the premier vocal ensemble at The Haverford School. An auditioned vocal ensemble, students sing a variety of a cappella music from around the world. Students refine the proper use of their voice, enabling them to sing music of great complexity and vocal range. The Notables perform music in a variety of musical styles, with emphasis placed on historical and stylistic performance practice techniques. Students sing in balanced voice parts, and sing music with up to eight parts. They sing in a number of languages, and memorize a substantial repertoire for performance. Additionally, elements of stage deportment, ambassadorship, and community service comprise a substantial part of ensemble study. The students rehearse extensively, and perform at school and in the larger community. The Notables are committed to providing community service through artistic performance. They perform numerous concerts each year, with the majority performed at hospitals, nursing homes, senior centers and the like. The ensemble frequently produces recordings. Students are evaluated on their level of artistry, coachability, memorization skills, and adherence to performance practices of the various styles in which they sing.

### The Haverford School Jazz Ensemble

This ensemble performs a variety of contemporary, jazz-influenced arrangements for winds, brass, and percussion section. Students are auditioned and must demonstrate a satisfactory skill level to participate, as determined by the director. Students learn the skills of performing in an ensemble.

They hone their technical skills and play in a variety of jazz styles. More advanced students apply their skills and knowledge to the art of improvisation. Performance venues include school functions as well as evening concerts in the winter and spring. Students must inform their advisor and the Jazz Ensemble Director of their intent for this activity to count towards their Arts graduation requirement.

### **The Haverford Advanced Chamber Ensembles**

These are auditioned ensembles for advanced instrumental players. Students refine their musical skills by studying and performing literature from the standard chamber music repertoire. They focus on playing soloistically within a small ensemble while matching bow strokes, articulations, tone colors and interpretations. The ensembles meet one morning per week and perform throughout the school year.

### **Glee Club**

Students learn the technical aspects of good singing, including breath control, formation of vowel shapes and vocal tone, proper diction in a variety of languages, range extension and agility. Students study repertoire from a variety of genres, from classical to folk to jazz and modern. They perform a capella music as well as music accompanied by piano and orchestra. Through their rehearsal and performances, students learn a valuable skill that can be used as a form of self expression as well as a powerful form of communication. As the music is being rehearsed daily, various compositional techniques and elements of form are pointed out. Glee Club members participate in service learning through outreach performances. This chorus performs at 4 major concerts each year, at Haverford, in New York City, and in our community. The Glee Club joins forces with area girls' schools and with Haverford's boychoir to perform works such as Vivaldi's Gloria, Handel's Messiah, and Haydn, Mozart and Schubert Masses. Glee Club is a graded course that meets three times a week before school, 8:00 a.m. - 8:30 a.m. on Monday, Tuesday, Thursday for tenors or Tuesday, Thursday, and Friday (for bass/baritones) with Wednesday being a make up day to allow for morning conflicts.

### **Orchestra**

Orchestra is an auditioned ensemble. Students must demonstrate satisfactory ability on their principal instrument to participate, as determined by the director. Students learn to phrase artistically, and develop techniques of articulation, expanded dynamic range, and stylistic interpretation through performance of a range of repertoire covering multiple styles and genres. Orchestra members develop ensemble skills such as leading, critical listening, and collaboration. In addition, students refine technical skills on their given instruments. The Orchestra performs during the annual Haverford School performances. Orchestra is a graded course that meets before school, 7:45-8:20 a. m. 3 times a week.

### **Stage Crew**

As a member of stage crew, students have the opportunity to participate in the active creation of theatre. Working both on school productions and with professional organizations, students have hands-on experience with carpentry, lighting technology, and with scenic painting. To fulfill one sports requirement through this activity, students must complete one semester of stage crew

participation. To fulfill both sports requirements, students need to participate in stage crew for the school year. However, all Haverford students must participate in the athletic program at least once before graduation.

### **Performance and Production Opportunities**

Each year, The Haverford School Drama Department produces a minimum of two Upper School plays and/or musicals. By participating in theatrical productions either on the stage or back stage, students will become a vital part of a collaborative team. Students may count their participation in *one* of the upper school productions as *one* of their sports requirements. Students may not count participation in both productions as a fulfillment of their sports requirements for the school year.

## **CLUBS**

With more than 50 clubs and activities to choose from, our Upper School offers myriad opportunities for students to explore extracurricular activities and to develop leadership skills. All clubs are student-designed and student-led, with a faculty adviser who offers guidance and mentoring. Students and faculty are passionate about their interests – and they often extend their club commitments well beyond the boundaries of our schedule and campus.

All of our clubs and activities are active during the full School year. At the beginning of each academic year, students have the opportunity to join or start clubs based on their personal interests, and we enthusiastically encourage them to get involved. The list below is a representative, but not comprehensive, sampling of clubs and activities that have been offered in the Upper School over the past several years. Clubs will be offered each year based on student interest.

Actors' Studio	Fantasy Sports Club	Philosophy Club
Art Club	Film Club	Poetry Club
Car Club	Glee Club	Politics Club
Ceramics Club	Global Leadership	Robotics
Chess Club	Haligoluk ( <i>yearbook</i> )	Science Olympiad
Coding Club	Hero-X	Signet Society
Creative Writing	Math Club	Spirit of Innovation
Debate and Speech	Mock Trial	Stage Crew
DECA	Model UN	Student Council
Diplomacy Society	Monster Mask Creation	Sustainability Alliance
Diversity Alliance	PB&J Club	The Index ( <i>newspaper</i> )
Economics Club	Pegasus ( <i>literary magazine</i> )	Yoga Club

## SERVICE LEARNING

The Upper School Student Service Board at Haverford is very active, with a wide variety of activities and opportunities. These events are student driven and student run and all students are invited to participate. Students who are not on the Service Board are welcome to present ideas for projects at each of our twice-monthly meetings. Some examples of service projects are as follows:

**City Year Servathon** is a day where volunteers renovate community centers in Philadelphia.

**Special Olympics** invites students to support special needs kids with a weekend of sport activities and “competitions” at this annual event held at Villanova each November.

**Riverbend Environmental Center’s Haunted Trails** is an annual opportunity for students to help one of our environmental partners stage a fun evening of ghoulish activities for children and nature lovers.

**Literacy Program** supports Bryn Mawr Tutoring and goes to West Philadelphia to tutor young people.

**Empty Bowls** is our yearlong hunger awareness education program, culminating with the Empty Bowls supper in April, which raises funds for our local hunger partners and advocates for those challenged by hunger and homelessness.

**Helping Hunger Cooking Club** meets several times throughout the year to prepare meals for 200 homeless people at Life Centers of Delaware County and Ronald McDonald House. Together with Agnes Irwin, students cook and later serve these meals.

**Philadelphia Cares Day** is a day of service involving urban renewal in the Philadelphia schools.

**Environmental Work Days** Throughout the year we partner with local organizations to support and promote environmental projects including: clearing bike and walking trails, cleaning up streambeds, prepping playgrounds for physically disabled, helping plant and harvest at our local CSAs, etc. in Radnor, Haverford and Lower Merion

To raise awareness and funds, boys participate along with students from Agnes Irwin and Baldwin in various walks such as: **AIDS Walk Philly, Juvenile Diabetes Walk, American Heart Walk, Out of the Darkness Suicide Awareness Walk, The Buddy Walk** to support kids with Down Syndrome, **Walk to Cure MS**, and several others throughout the year.

In the spring, we participate in **Race for the Cure for Breast Cancer** and the **Home Run Baseball Derby** to raise funds for **Prostate Cancer Research**. Our Lacrosse team runs the annual **Checking for Cancer Tournament** to support male cancer research.

Students also have the opportunity to lead campaigns to support those in need such as Hunger Relief, the elderly, the homeless, and a variety of other crisis situations as they occur.

## **SERVICE LEARNING IN THE CLASSROOM**

Whenever possible, we seek to integrate service opportunities into the classroom and curriculum to offer students real-life context to what it is they are learning. Examples might be: students in American History class will run a voter registration project for our own students; Ceramics students build bowls to be painted and sold at our Empty Bowls Supper; Engineering students design a water collection and irrigation system to help make the Learning Garden sustainable and environmentally responsible; Spanish classes tutoring immigrant workers in our region.

These efforts put their education and knowledge into action, and are offered to students throughout all divisions at The Haverford School.

## **QUESTIONS**

If you have any questions about the contents of this Course Catalog, please contact:

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