## REGULAR DAILY SCHEDULE

**Summer Session Schedule**—Upper School & E.L.I., July 3 – August 5

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
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<tbody>
<tr>
<td><strong>MONDAY</strong></td>
<td></td>
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<tr>
<td>7–9 a.m.</td>
<td>Breakfast available to all</td>
</tr>
<tr>
<td>8:30–10 a.m.</td>
<td>Period 1</td>
</tr>
<tr>
<td>10:15–11:45 a.m.</td>
<td>Period 2A</td>
</tr>
<tr>
<td>11:45 a.m.–12:30 p.m.</td>
<td>Free</td>
</tr>
<tr>
<td>11 a.m.–2 p.m.</td>
<td>Lunch available to all</td>
</tr>
<tr>
<td>12:30–2 p.m.</td>
<td>Period 2B</td>
</tr>
<tr>
<td>2:10–3:10 p.m.</td>
<td>College Counseling</td>
</tr>
<tr>
<td>3:30–4 p.m.</td>
<td>All-School/Cluster Meeting (chapel or cluster location)</td>
</tr>
<tr>
<td>4–5 p.m.</td>
<td>Clubs</td>
</tr>
<tr>
<td>5–7 p.m.</td>
<td>Dinner available to all</td>
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<tr>
<td>7:30–9:30 p.m.</td>
<td>Study Hours</td>
</tr>
<tr>
<td>9:30 p.m.</td>
<td>Final Dorm Sign-in</td>
</tr>
<tr>
<td>10:30 p.m.</td>
<td>Students in their rooms</td>
</tr>
<tr>
<td><strong>TUESDAY, THURSDAY, FRIDAY</strong></td>
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<tr>
<td>7–9 a.m.</td>
<td>Breakfast available to all</td>
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<tr>
<td>8:30–10 a.m.</td>
<td>Period 1</td>
</tr>
<tr>
<td>10:15–11:45 a.m.</td>
<td>Period 2A</td>
</tr>
<tr>
<td>11:45 a.m.–12:30 p.m.</td>
<td>Free</td>
</tr>
<tr>
<td>11 a.m.–2 p.m.</td>
<td>Lunch available to all</td>
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<tr>
<td>12:30–2 p.m.</td>
<td>Period 2B</td>
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<tr>
<td>2:10–3:10 p.m.</td>
<td>College Counseling</td>
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<tr>
<td>3:30–5:30 p.m.</td>
<td>Afternoon Activities</td>
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<tr>
<td>5–7 p.m.</td>
<td>Dinner available to all</td>
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<tr>
<td>6–7:30 p.m.</td>
<td>Evening period</td>
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<tr>
<td>7:30–9:30 p.m.</td>
<td>Study Hours</td>
</tr>
<tr>
<td>9:30 p.m.</td>
<td>Final Dorm Sign-in</td>
</tr>
<tr>
<td>10:30 p.m.</td>
<td>Students in their rooms</td>
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<tr>
<td><strong>WEDNESDAY</strong></td>
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<tr>
<td>7–9 a.m.</td>
<td>Breakfast available to all</td>
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<tr>
<td>8:30–9:30 a.m.</td>
<td>Period 1</td>
</tr>
<tr>
<td>9:45–10:45 a.m.</td>
<td>Period 2</td>
</tr>
<tr>
<td>11 a.m.–2 p.m.</td>
<td>Lunch available to all</td>
</tr>
<tr>
<td>11 a.m.–6 p.m.</td>
<td>College Trips</td>
</tr>
<tr>
<td>5–7 p.m.</td>
<td>Dinner available to all</td>
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<tr>
<td>7:30–9:30 p.m.</td>
<td>Study Hours</td>
</tr>
<tr>
<td>9:30 p.m.</td>
<td>Final Dorm Sign-in</td>
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<tr>
<td>10:30 p.m.</td>
<td>Students in their rooms</td>
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<tr>
<td><strong>SATURDAY</strong></td>
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<tr>
<td>7–9 a.m.</td>
<td>Breakfast available to all</td>
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<tr>
<td>8:30–10 a.m.</td>
<td>Period 1</td>
</tr>
<tr>
<td>10:15–11:45 a.m.</td>
<td>Period 2</td>
</tr>
<tr>
<td>11 a.m.–2 p.m.</td>
<td>Lunch available to all</td>
</tr>
<tr>
<td>5–7 p.m.</td>
<td>Dinner available to all</td>
</tr>
<tr>
<td>11 a.m.</td>
<td>Final Dorm Sign-in</td>
</tr>
<tr>
<td>11:45 p.m.</td>
<td>Students in their rooms</td>
</tr>
<tr>
<td><strong>SUNDAY</strong></td>
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<tr>
<td>10–10:30 a.m.</td>
<td>Breakfast available to all</td>
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<tr>
<td>10:30 a.m.–1:30 p.m.</td>
<td>Brunch available to all</td>
</tr>
<tr>
<td>1–6 p.m.</td>
<td>Student activities/trips</td>
</tr>
<tr>
<td>5–7 p.m.</td>
<td>Dinner available to all</td>
</tr>
<tr>
<td>7:30–9:30 p.m.</td>
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</tbody>
</table>
Please find the course offerings for Andover Summer 2018 Upper School below. When applying for admission, students will select the course program they are seeking. Those options include: Upper School or Upper School Hybrid courses. If admitted, it is to whichever program they have applied. Upon enrollment, students and parents will submit their course requests through the Parent Portal. Families may select an Intensive (course instruction covers Periods 1 and 2) or select a course for Periods 1 and 2.

Boarding students are required to enroll in two courses while Day students may select one or two course periods.

**ARTS - VISUAL AND PERFORMING**

**Acting and Play Production**  
Grades 9–12 | PERIOD 2  
Working from the ground up, students learn how to use their minds, bodies, and voices as professional actors do. Beginning with physical and vocal exercises, improvisation games, and other ensemble-building workshops, the course then moves on to more advanced acting techniques. Students learn about scene and character analysis, objectives, obstacles, subtext, status, stakes, backstory, and internal conflict. They also explore a wide range of dramatic form and structure by studying several canonical plays as well as work by the up-and-coming playwrights of today. The course culminates in the production of an evening of polished five-to 10-minute scenes presented to the entire Summer Session audience.

**Ceramics**  
Grades 9–12 | PERIOD 2  
This course discusses the elements of 3-D design and focuses on the creative potential of the student. Ceramics at Phillips Academy is comparable to ceramics courses taught at art schools and select universities; the Academy is equipped with facilities for pit firing, high-fire gas, and Raku. Techniques, glazes, and firing procedures are introduced with the support of books, slides, and visits to the campus’s Addison Gallery of American Art and Robert S. Peabody Museum of Archaeology.

**Digital Photography**  
Grades 9–12 | PERIOD 2  
Students learn the basics of photography and how to use digital cameras. Students scan their images into Adobe Photoshop, where they can transform them by adding color and using the program’s many altering techniques. Through this class, students gain an understanding of photography and how technology can improve their images. The ultimate challenge is for students to push their creative limits. Students are encouraged to bring a digital camera; those who do not have one are welcome to borrow one for the duration of the program.

**Drawing and Painting**  
Grades 9–12 | PERIOD 1  
The fundamental elements of drawing—line, shape, value, perspective, and composition—are emphasized in the initial weeks of this course. Students are introduced to a variety of materials (graphite, charcoal, ink, and acrylic) through a series of exercises that celebrate drawing as a creative act. From drawing, students can expand into the realm of painting and mixed media, working from a variety of approaches.

**Graphic Design**  
Grades 9–12 | PERIOD 2  
Have you ever tried to design a poster, flyer, business card, yearbook, or class presentation and been stymied by the considerable choices you must make? In our information-driven society, graphic design principles and concepts are needed more than ever to bring balance, clarity, and visual appeal to all varieties of content.
According to noted graphic designer Paul Rand, “To design is much more than simply to assemble, to order, or even to edit; it is to add value and meaning, to illuminate, to simplify, to clarify, to modify, to dignify, to dramatize, to persuade, and perhaps even to amuse. To design is to transform prose into poetry. Design broadens perception, magnifies experience, and enhances vision. Design is the product of feeling and awareness, of ideas that originate in the mind of the spectator.”

**Intensive Film Workshop**
Grades 9–12 | PERIOD 1
This course is for students interested in making a serious commitment to expressing themselves through the motion picture. This intensive program leads students through an exploration of each aspect of filmmaking, from the conception of an idea to the final steps in editing. The course is segmented to include film development, pre-production scheduling, production, and editing. Students explore the genre of the fiction film, studying the styles and techniques of various filmmakers. Projects are produced using some of today’s most technologically advanced materials and systems, available on campus in the Polk-Lillard Electronic Imaging Center. Students gain a greater film/video vocabulary as well as a technical background allowing them to continue with filmmaking.

**Studio Art**
Grades 9–12 | PERIOD 2
Do you want to become a better artist? Would you like to create a body of quality artwork that can be used later in a college portfolio? Learn the tools of the studio artist. Through study of the elements and principles of design, students will create various works of art using a variety of media. Techniques in painting, drawing, printmaking, and computer design are the course’s primary focus. Classic subjects such as portraits, still lifes, landscapes, and the figure will comprise much of the subject matter in this class. Students will watch art films and visit local galleries to supplement the curriculum.

**Web Design and Advanced**
Computer Graphics
Grades 9–12 | PERIOD 1
Cross-listed under Computer Science, this course introduces students to the fundamentals of design on the computer and concentrates on software programs to enhance their skills. Using the computer as a creative tool, students blend photography, type, sound, video, animation, and interactivity. While studying various artists who utilize different media to understand the elements of design, students develop computer skills to express themselves visually. Students work on various projects, creating digital collages, a short movie, and a website that incorporates animation and sound.

**COMPUTER SCIENCE**

**Introduction to Programming**
Grades 9–12 | PERIOD 2
This course provides an introduction to computer programming for students with no previous programming experience. Students explore the basics of computer programming while creating animations, games, and simulations. Topics include object-oriented programming, variables, decisions, events, and the basics of game design in a graphical environment. Students do not need a strong high school math background, making this an ideal course for younger students. Though the course is not taught with a traditional programming language, all concepts can be transferred to other object-oriented languages, such as Java and Visual Basic.

**Programming in Java**
Grades 9–12 | PERIOD 1
Intended as an introduction to computer programming using traditional coding methods, this course emphasizes methodology, algorithms, data structures, code style, and the Java programming language, as suggested by the College Board for the Advanced Placement (AP) Computer Science exam. Students learn to design and implement computer-based solutions to a variety of problems. In addition, students design
programs that are expandable and understandable, and they learn how and when to write code that is reusable. Although this is not an official AP course, students are exposed to most of the topics covered on the AP Computer Science exam and will learn how to create small, structured programs using the Java language.

Prerequisite: completion of Algebra II

**Web Design and Advanced Computer Graphics**
Grades 9–12 | PERIOD 1
This course is cross-listed. See full course description under Arts—Visual and Performing.

**Contemporary Authors**
Grades 9–12 | PERIOD 1 and PERIOD 2
This course offers students the opportunity to develop an in-depth understanding and appreciation of a range of different writers. It focuses on students’ abilities to read novels, plays, short stories, and/or essays actively and to write articulately. This critical reading and writing course challenges students to confront a variety of written and visual texts and encourages them to see writing as a valuable tool. It helps them see themselves as independent thinkers and teaches them how to give voice to their thoughts through the written word. A variety of books and authors will be examined.

**Creative Writing**
Grades 9–12 | PERIOD 1 and PERIOD 2
This course is for students who think of writing as an art, not just a useful skill. Students read and write in several genres—short story, poetry, and nonfiction memoir—using the readings as models for their own work. In their writing, students are expected to develop mastery of fundamental techniques of good writing, from basic grammar and usage to metaphorical language and plot structure. Required to write daily, revise, and produce polished final drafts as well as share in class, students begin to transform raw talent into true skill.

**Digital Journalism**
Grades 9-12 | PERIOD 2
This course is for students who want to explore the intersection between storytelling, technology, and traditional reporting. Students will engage a variety of digital platforms—from social media to podcasts to online magazine articles—to develop stories that engage both reason and emotion. Daily reading and writing exercises will help students expand their repertoire of rhetorical strategies, learn to analyze audiences, and determine which digital platforms are most appropriate for various situations. Students will gain experience in field reporting and conducting research, and they will build a digital portfolio of work over the course of the program.

**Playwriting**
Grades 9-12 | PERIOD 1 and PERIOD 2
This class serves as introduction to the craft of dramatic writing. Playwriting rewards risk-taking and finding your own personal voice; through in-class workshops, rapid writing prompts, and long-form assignments, students will develop this voice by exploring the concepts of character, dialogue, dramatic conflict, and narrative structure. By also exploring and analyzing plays by professional playwrights, students will gain an understanding of the variety of voices producing plays in the American theatre today. The capstone project of the class will be a ten-minute play written by each student.

**Shakespeare**
Grades 10–12 | PERIOD 1
This course offers students the opportunity to develop an in depth understanding and appreciation of William Shakespeare through text, performance, and film. With an emphasis on building fluency and
confidence in the language of Shakespeare, students will explore and discuss his use of language, the content and context of his work, and his continued relevance. Multiple film versions complement course readings and discussions, and students will engage in a variety of learning experiences, including recitations, analytical writing, creative writing, scene presentations, and film projects.

**Speech and Debate**  
**Grades 10–12 | PERIOD 1 and PERIOD 2**  
In a survey, 3,000 Americans were asked what they dreaded most. Public speaking came in first—ahead of death! In an encouraging classroom atmosphere, students are taught to improve both the delivery and the content of their public speaking. Students write, revise, and speak extensively and are introduced to competitive high school speech activities, such as extemporaneous speaking, impromptu speech, and Lincoln-Douglas debate. Close analysis of contemporary American political speeches and research of controversial topics such as the death penalty, abortion, and gun control provide issues for classroom debate. Students develop an invaluable skill that will serve them for the rest of their lives. This course assumes no prior knowledge of public speaking or debate.

**Writing for Success**  
**Grades 9–12 | PERIOD 1 and PERIOD 2**  
The most important writing course students will ever take and the most sought-after writing course at Andover, Writing for Success emphasizes essay composition as a craft and exposes students to different uses and combinations of rhetorical modes, including definition, description, narration, process, comparison, and analysis. Over the course of the program, students practice constructing effective sentences and paragraphs to suit a variety of topics, audiences, and aims. By writing every day as well as reading and discussing the style and mechanics of published essays, students experience writing as a rewardingly rigorous, recursive, and creative process that involves brainstorming, planning, composing, editing, reverse outlining, and constructive peer review.

**Writing the College Essay**  
**Grades 10–12 | PERIOD 1 and PERIOD 2**  
This course will move students through the brainstorming, drafting, and revision process to create a set of polished essays that can be used during the college application process. Focusing on the prompts released by the Common Application as well as addressing common short-answer questions, this course will support students in creating essays that represent their individual personalities and ambitions. Students will be required to write daily, participate in workshop activities and critiques, and reflect on their own life experiences.

**ENGLISH LANGUAGE LEARNING INSTITUTE**

**ELL Core Course**  
**Grades 9–12 | PERIOD 1**  
First period course sections of ELL are divided into levels according to the results of a placement process that includes an exam and an interview shortly after arrival. Classes are offered to meet the needs of students who are highly proficient in English as well as those who need more practice and support. (A beginner-level course is not offered; students should have scored above 450 on the paper-based TOEFL, above 133 on the TOEFL CBT, or above 45 on the TOEFL iBT.) While all classes stress the development of competencies in the skills of reading, writing, listening, and speaking, close attention is paid to individual needs. Students are exposed to a wide variety of English materials and are expected to understand and respond to course materials that include, but are not limited to, American literature–based texts across a broad range of genres, films, articles, and nonfiction. Classes are small (typically 12 students) and highly interactive. It is not unusual to find eight or more cultures represented in any given group.

**ELL: A Multimedia Approach to American Culture**  
**Grades 9–12 | PERIOD 2**
This intermediate/advanced course takes a close look at American culture through important historical events and documents of popular culture. Various media are investigated to gain a more complete understanding of the United States and its people. We examine American newspapers and see the United States through a number of films that focus on specific themes in American culture. Students should be comfortable expressing themselves in both written and spoken English.

**ELL: Preparing for the TOEFL**
Grades 9–12 | PERIOD 2
The purpose of this class is to help students improve their performance on the Test of English as a Foreign Language (TOEFL). Four different means of language skill acquisition and improvement are utilized: reading, writing, listening, and speaking. After a general introduction to the test format, each section of the TOEFL (Listening Comprehension; Written Expression and Speaking Ability; and Reading Comprehension) is considered in detail. Working individually and in groups, students read selections from various newspaper and magazine sources and practice extensively in a test preparation text. This course is designed for high-intermediate–level students whose goals include studying at a U.S. college or university.

**ELL: Speak Up!**
Grades 9–12 | PERIOD 2
In this ELL course, students engage in a variety of exercises to improve their proficiency in conversational English. Discussions, role-play skits, poetry, debates, and extemporaneous and prepared speeches place students at the center of the learning process and expand both the breadth and depth of their spoken English. In order to increase students' comfort in a broad range of situations, topics for the various activities range from the mundane to the profound. Some exercises revolve around practical everyday situations, while others involve discussing topics on a deeper intellectual level. Students are challenged to employ new vocabulary, converse using complex sentence structures, and express difficult ideas. They work on pronunciation skills. Recognizing the key role of listening in any meaningful conversation, the course also focuses extensively on listening skills. This course is designed for students who are not comfortable speaking with native speakers of English and/or those who have not had many opportunities to speak English.

**ELL: Writing, Presenting, and Defending Your Work**
Grades 9–12 | PERIOD 2
Reading, writing, and speaking fluently in complex academic English are essential skills in which any advanced ELL student needs to excel. This course is designed to give students the analytical reading and writing skills required for success in the pre-university scholastic environment. Assignments involve researching various topics, composing papers, and extensive presenting and defending of oral arguments. At the end of this class, students will have successfully defended their oral presentations to the class on numerous occasions and developed the skills to confidently speak before the class in English in an academic setting.

**ELL: Writing the Essay**
Grades 9–11 | PERIOD 2
Designed for intermediate-level learners, this course assists students in becoming familiar with the standard five-paragraph essay structure. The course aims to explore writing through analysis of relevant topics and themes. Students learn and practice different forms of the essay, including, but not limited to, persuasive, compare-and-contrast, and cause-and-effect styles. Constructive feedback on both organizational and grammatical structures is provided. Students also may be asked to present their work orally, but the focus of this course is on the improvement in the expression of ideas in clear written English.

**HISTORY AND SOCIAL SCIENCE**

**Global Health and Impacts in Society and Culture**
Grades 9-12 | Period 2
Explore how the World Health Organization of the United Nations along with other health agencies from various countries as well as non-government organizations (NGO’s) address crisis, conflict and education when faced with health impacts on individuals and populations throughout the global community. This course will explore how ideas become policy and initiatives in serving the needs of the community and developing communication in the prevention of outbreaks/pandemics, health threats and the direction of current United Nations World Health Organization projects in the 21st century. Participants in the course will review cases and reports that will help lend to class discussions, research papers, presentation and integrating technology with communication based projects. Anyone who is interested in creating community projects and or programming within in their own home setting or looking to explore global perspectives may be interested in this course.

**Great Issues and Controversies of the Modern World**  
**Grades 10–12 | PERIOD 1 and PERIOD 2**  
This course takes an in-depth look at important global issues by using the critical skills of reading, writing, and analysis to view a specific topic as well as utilizing on-campus resources such as the Peabody Museum of Archaeology and the Addison Gallery of American Art. Students improve their writing skills through exams, essays, and papers; their speaking skills through in-class discussions; and their analytical skills through readings and debates. They not only increase their knowledge of contemporary issues, but also sharpen the learning tools that are necessary in any discipline. The overarching goals are to learn more about the world, apply the material to improve their skill objectives, and continue to follow world events beyond this Summer Session course.

**History of Terrorism**  
**Grades 9-12 | PERIOD 2**  
From the assassination of Archduke Franz Ferdinand, which lead to WWI, to 9/11, which lead to the current wars in Afghanistan and Iraq, terrorism has helped to shape the modern world. Almost every country has experienced terrorism, and the topic commands headlines and political campaigns. This course is designed to look at the past and present of terrorism, and to help students understand what terrorism is, why it exists, and where the world should expect to see terrorist acts in the future. Students will learn about the history of terrorism, will study the groups and major campaigns of the past 200 years, and will use current events to better grasp this complex topic. This course will be reading and writing intensive, and will use student lead discussions. This is an intense topic, and some of the material will be upsetting. However, knowledge is the only way to confront terrorism, and students will leave this course better able to understand the world they live in, and events to come.

**Law and Society**  
**Grades 9-12 | PERIOD 2**  
In this course, students will learn about the foundations of the American legal system and how they apply to social, economic, political, and individual issues. We will delve into issues of law, crime prevention, conflict resolution, advocacy, and human rights through a combination of case studies, legal analyses, and mock trials. This class will study several landmark cases from the American legal system’s history and explore their impact on our society, while considering how the precedents set in these cases apply to current issues. If you love discussion, if legal issues intrigue you, if you’re thinking about studying law, or if you just want to look at society from a new point of view, this is the class for you.

**Money, Economy, and Society**  
**Grades 9–12 | PERIOD 2**  
Have you ever considered how the laws of economics affect you? Study these laws and you have at your disposal a powerful tool for making personal decisions and understanding the world around you. Why does LeBron James earn tens of millions of dollars and the president of the United States only a tiny fraction of that? Can we eliminate poverty by writing checks to the poor? Should companies be allowed to buy and sell rights to pollute? Should you put your college money in a savings account or in the stock market? This course provides a nonmathematical overview of macro- and microeconomics theory and a forum for lively and provocative debate.
**Personal Finance**  
Grades 9–12 | PERIOD 1  
Cross-listed under Mathematics, this course aims to develop students’ financial literacy skills, emphasizing real-world applications of mathematics in the areas where students will need to be most skilled when they become financially independent. Budgeting, learning to borrow and invest wisely, understanding the stock market and basics of investing, and planning for major purchases and life events will all be covered. Through a combination of reading, research, simulation activities, projects, and data analysis, students will learn to prepare for their financial futures.  
Prerequisite: successful completion of one year of algebra

**Psychology: Current Issues**  
Grades 9–12 | PERIOD 2  
The goal of this course is to introduce students to the fundamental concepts, theories, and branches of psychology. Through a combination of student-centered activities, readings, discussions, and contemporary films, we investigate topics such as adjustment, personality traits, psychological disorders, and group dynamics. Students also explore psychological ideas that are directly relevant to their adolescent experiences, such as developing healthy relationships and identity formation. No previous background in psychology is required.

**Social Psychology**  
Grades 9-12 | PERIOD 1  
This course is an introduction to the theories and applications of social psychology in research, academic and social settings. Through class activities and discussions, students experience and reflect on constructs of social psychology that they will have read about in scientific settings. Students are also involved in discussing the relevance of gender and ethnic diversity in the construction of social values, with specific focus on their own lives and experiences. Topics include group dynamics, conformity, self-knowledge, attitude formation and change, interpersonal attraction, prejudice, and aggression.

**MATHEMATICS**

**Calculus***  
Grades 10–12 | PERIOD 1 and PERIOD 2  
This course is for students who have successfully completed two years of algebra and a yearlong precalculus course that includes trigonometry. It is an accelerated mathematics course for strong math students and covers many of the topics in the Advanced Placement curriculum, including limits and continuity, derivatives and their applications, indefinite and definite integrals, techniques and applications of integration, and the Fundamental Theorem of Calculus. Prerequisite: two years of algebra and one year of trigonometry

**Geometry***  
Grades 9–12 | PERIOD 2  
For students who have had a strong elementary algebra course but no geometry, this course is a thorough study of the fundamentals of geometry. The development of logical, structured proofs and deductive reasoning is emphasized. Along with numerical solutions to problems, topics include basic postulates of geometry, lines and angles, congruent triangles, parallel lines in the plane and in space, quadrilaterals and polygons, circles, similar triangles and other figures, and the Pythagorean Theorem.  
Prerequisite: a yearlong course in elementary algebra

**Personal Finance**  
Grades 9–12 | PERIOD 1  
This course is cross-listed. See full course description under History and Social Science.

**Topics in Algebra***  
Grades 9-10 | PERIOD 1
This course reviews and reinforces math skills found in the pre-algebra and Algebra I curriculum. It should provide a solid foundation for Algebra II and Intermediate Algebra. Topics include several fundamental concepts of Algebra, graphing and solving linear and quadratic functions, solving systems of linear equations and properties of exponents.

Prerequisite: successful completion of a year of algebra

**Topics in Intermediate Algebra***
Grades 10 and 11 | PERIOD 1 and PERIOD 2

This course reviews and reinforces math skills found in the Algebra II curriculum. It should provide a solid foundation for pre-calculus. Topics include solving linear equations and inequalities and absolute value equations and inequalities. A study of linear functions will be followed by polynomials and rational expressions. An in-depth study of quadratic functions may be followed by exponential and logarithmic functions, time permitting.

Prerequisite: successful completion of a year of algebra

**Topics in Advanced Algebra and Precalculus***
Grades 11 and 12 | PERIOD 2

This course focuses on pre-calculus topics, which are prerequisites for calculus and necessary for success in subsequent mathematics courses. Topics covered will include linear systems of equations, linear functions, quadratic functions, polynomial functions, logarithmic functions, and radical functions. Additional topics may include sequences and series, counting and probability, matrices, and partial fractions. A graphical calculator will be used in class, enabling students to gain both a graphical and an algebraic understanding of concepts.

Prerequisite: two years of algebra

* Students requesting a math course will be required to take an online placement exam to assess math level ability

**PHILOSOPHY AND RELIGION**

**Introduction to Philosophy**
Grades 10–12 | PERIOD 1

This course serves as a survey of some of the major questions with which students, philosophers, and others have wrestled throughout the course of Western civilization: What exists and how do we know its nature? What can we know and how can we know it? Are there moral absolutes and how do we know them? Students engage one another and the authors in conversation and are challenged to express their own ideas on subjects, in addition to articulating those of the authors. They also develop their abilities to think, speak, write carefully and critically, and reflect on their beliefs. All texts used in this class are primary sources. Students also enjoy the close proximity of Walden Pond, where H.D. Thoreau wrote his masterpiece, Walden, and take a field trip there in conjunction with one of the readings.

**SCIENCE**

**Anatomy and Physiology**
Grades 11 and 12 | PERIOD 1

This course focuses on the anatomical and physiological workings of the human body. Among the anatomy and physiology topics introduced are histology, kinesiology, cardiology, and genetics. Students learn to identify anatomical structures and their functions in relation to daily bodily activities. Student work is assessed through written reports, examinations, lab practicals based on dissection, and research topics. Students have the opportunity to leave this course with their own portfolio materials that are focused on topics introduced in the class setting.
**Biology: First Year**  
Grades 9–12 | PERIOD 1 and PERIOD 2  
This is an intensive introductory lecture, laboratory, and field course designed to investigate and explore biological concepts and principles. Units covered include ecology, plant biology, animal diversity, concepts of animal structure, and cellular biology. Scientific writing also is emphasized. The framework of the course is a student’s conceptual understanding of biology; however, an emphasis is placed on biology as a process rather than an accumulation of facts.

**Biology: Prep for Advanced Placement**  
Grades 10–12 | PERIOD 2  
This course is designed for highly motivated students who have taken a year of biology and want to delve deeper into the subject matter and for students who will be taking AP Biology in the coming school year and want to be better prepared for the rigors of that course. This fast-paced course involves classroom discussion and problem solving as well as practical lab work. Utilizing a college-level textbook, the course covers topics at a depth equivalent to that of an introductory college biology course.  
Prerequisite: one year of biology

**Chemistry: First Year**  
Grades 10–12 | PERIOD 1 and PERIOD 2  
This course is geared toward highly motivated students who show an interest in science and have demonstrated strong mathematical and conceptual abilities. As an introduction to chemistry, this intensive course teaches students essential chemical principles, such as stoichiometry; atomic and molecular structure; chemical bonding theories; and the properties of gases, liquids, solids, and solutions. The very fundamental concepts of chemical equilibrium and acid-base chemistry also are presented, and students are introduced to the topic of electrochemistry. The course is balanced by a combination of lectures, problem-solving exercises, and laboratory work, providing a strong foundation in chemistry.  
Requirement: Texas Instruments TI-84 graphing calculator or its equivalent  
Prerequisite: one year of algebra

**Environmental Science**  
Grades 9–12 | PERIOD 1  
Climate change, species extinction, devastating tropical storms, and nuclear disasters—all of these topics and more will be explored through our introduction to the interdisciplinary field of environmental science. Students learn scientific methodology through hands-on biology- and ecology-based lab investigations using the 500-acre Phillips Academy campus as well as the rich diversity of ecosystems within a short drive of the school. Students also will use class time and field work to study the environment in terms of history, social context, economics, and sustainability. Students will identify and analyze environmental problems (both natural and human-made) and examine possible solutions for resolving and/or preventing them.

**Introduction to Astronomy**  
Grades 10–12 | PERIOD 1  
Modern astronomy is a quest for a greater understanding of the evolution and diversity of the universe, as well as an application of critical thinking skills to broader questions in physics, chemistry, biology, and environmental science. This class examines the current state of the science as well as future avenues of research and discovery. Topics include traditional areas of emphasis, such as the electromagnetic spectrum, light, telescopes, navigating the night sky, solar system formation, the planets, global climate change, comets and asteroids, the sun, and the lifecycle of stars. We also apply a critical analysis to the broader questions that include the search for life in the universe and connections to life on this planet. We keep a close eye on current research and examine the history of science through the eyes of non-conventional thinkers, including Einstein and Galileo. Lastly, we examine some of the more exotic subjects that are stretching the limits of modern science, such as black holes, ion propulsion, dark energy, and life in extreme environments. We make use of the extraordinary imagery and resources available here at Phillips Academy, including the state-of-the-art observatory in Gelb Science Center. Throughout the session, students engage the science critically and capture a snapshot of this emerging field of science.
Marine Biology
Grades 9–12 | PERIOD 1
Students are introduced to several different aspects of marine biology through lectures, laboratory investigation, and field trips. Topics include, but are not limited to, oceanography, marine invertebrate and vertebrate zoology (including physiological adaptations to a marine environment), aquaculture, and ecology of the various habitats within aquatic ecosystems. We examine the physical and chemical properties of seawater, organisms that have evolved to an aquatic environment, the physiological and behavioral adaptations those organisms have developed, and the different ecosystems within different oceanic zones. Students should have a background in biology and chemistry.

Physics: First Year
Grades 9–12 | PERIOD 1 and PERIOD 2
This course covers the main ideas of mechanics and provides a solid foundation of concepts, confidence in problem solving, and exposure to laboratory techniques. Although this course does not cover a full year’s worth of material, the techniques learned serve as excellent preparation for all introductory physics topics. Requirement: Texas Instruments TI-84 graphing calculator or its equivalent
Prerequisite: one year of algebra

Robots: Design! Build! Program!
Grades 9–12 | PERIOD 1 and PERIOD 2
The future is robotics! Science, math, engineering, creativity, and logic are combined in this exciting introductory robotics and robotics programming course. Designs incorporate Lego Tetrax, HiTechnic sensors, and RobotC programming. Students work in small groups to design, build, and program robotic solutions to challenges selected at the start of the program. As a culminating activity, students participate in the Summer Session Tech Challenge. If you have never worked with robots, come get your first taste. If you are experienced in robotics, come strengthen your skills.

The Solar System and Space Exploration
Grades 9–12 | PERIOD 2
This course looks at the planets and the exploration of the solar system from the perspective of the past 50 years of human spaceflight. By making use of the rich array of images returned from the moon, Mars, and beyond, students explore and critically analyze these worlds in the context of their geologic evolution and the search for extraterrestrial life. The class examines the processes that have shaped the planets and moons of our solar system. Students explore the fundamentals of geology and meteorology on Earth and apply them to the rest of the solar system. Critical thinking is stressed in the context of comparative planetology. This class specifically looks at the formation of the solar system, the history of space exploration, missions to the moon and Mars, and the search for life.

UPPER SCHOOL HYBRID OFFERINGS

A Voice of Her Own: Fiction Workshop for Young Women
Grades 11 and 12 | HYBRID
A hybrid creative-writing course for young women interested in rethinking the possibilities of fiction-writing in a supportive workshop environment. The course begins with a two-week residency at Phillips Academy, where students will review and redefine conventional fiction-writing terms, experiment with generative and collaborative writing exercises, learn new editorial skills, participate in literary and social events on campus, and leave with several story drafts in progress. During the final three weeks of the course, students will expand, workshop, and revise their stories from home via an online platform. As students shift from an academic mindset to an independent one—from question-answers to problem-makers, from student writers in the classroom to writers working as professionals do from home—they will cultivate sustainable writing habits and learn to recognize risk-taking and mistake-making as essential aspects of the creative process. By the end of the course, all students will have several polished pieces of fiction ready to share or submit to
publications, new contacts in the literary world, and an expanded sense of how and why to challenge the conventions of both fiction-writing and publishing.

**On campus: Students will reside at Phillips Academy from July 3 to July 15.**

**Online: Students will work independently from their homes from July 16 to August 4.**

*A Voice of Her Own* is open to rising 11th and 12th-grade students who identify as female. While the course assumes basic familiarity with fiction-writing terms like *plot, point of view,* and *characterization,* the only prerequisites are a willingness to work hard, take risks, and be an active, open-minded member of a literary community. A laptop is required.

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**Literary Beats: Tapping into the Shared DNA of Music and Literature**

**Grades 10 – 12 | HYBRID**

With the great musician Bob Dylan winning the Nobel Prize for Literature in 2016, the question "What is Literature?" has gotten even more complicated. Going back to Ancient Greece, there has been a long-standing kinship between music and literature, and in the "Literary Beats" course, a personalized five-week hybrid program, students have the opportunity to explore some of the following questions rarely asked in an academic setting: Do our favorite songs have "literary merit?" Can the study of pop music, often cited as the "people's poetry," be an important intellectual pursuit? Who might be the next musician to win the Nobel Prize? The only course prerequisites are a love for music, a willingness to explore how sounds contribute to meaning in literature, and an adventurous curiosity about connecting the two disciplines.

Literary Beats starts with a three-week online experience as students introduce themselves to their classmates with their own musical playlists and use that repertoire to launch into discussions and collaborative projects. Although the instructors will spotlight hip hop artists and Harlem Renaissance poets, the course will be powered by personal interest as students will collect and analyze their own songs and poems from a variety of musical genres and literary periods. Students will also learn about the role of music and songs in classic literature such as Shakespeare's plays and in excerpts from great modern fiction, including Ralph Ellison's *Invisible Man.*

**On campus: Students will reside at Phillips Academy from July 23 - August 5**

**Online: Students will work independently from their homes July 3 - July 22**

The course concludes with a two-week experience on Phillips Academy's campus, where students apply and enhance their online learning with classroom discussions, field trips to the Boston music scene, and collaborative projects. This five-week program promises to be a fun, intellectually-challenging experience with the development of your critical-reading and listening skills. A laptop is required.