



**ACADEMY HIGH**  
CHAMPAIGN URBANA

# ACADEMIC CORE CURRICULUM GUIDE

# ACADEMIC CORE SEQUENCE

	9	10	11	12
<b>MATH</b>	<u>MATH I</u>	<u>MATH II</u>	<u>MATH III</u>	<u>CALCULUS</u>
<b>SCIENCE</b>	<u>BIOLOGY</u>	<u>CHEMISTRY</u>	<u>PHYSICS</u>	<u>ENVIRONMENTAL SCIENCE</u>
<b>SOCIAL SCIENCE</b>	<u>HISTORY OF EVERYTHING</u>	<u>U.S. HISTORY</u>	<u>GLOBAL STUDIES</u>	
<b>ENGLISH</b>	<u>THE HUMAN EXPERIENCE I</u>	<u>THE HUMAN EXPERIENCE II</u>	<u>THE HUMAN EXPERIENCE III</u>	<u>THE HUMAN EXPERIENCE IV</u>
<b>Q1</b>	<i>THE QUEST</i>	<i>COMING OF AGE</i>	<i>NATURE</i>	<i>ROLES AND EXPECTATIONS</i>
<b>Q2</b>	<i>LOVE AND HATE</i>	<i>JUSTICE AND INJUSTICE</i>	<i>IDENTITY AND SELF</i>	<i>WAR AND PEACE</i>
<b>Q3</b>	<i>WARNINGS</i>	<i>RELATIONSHIPS</i>	<i>COST AND SACRIFICE</i>	<i>HOPE</i>
<b>Q4</b>	<i>HEROES AND VILLAINS</i>	<i>SURVIVAL AND PERSISTANCE</i>	<i>TRUTH</i>	<i>DISCOVERY AND CREATION</i>
<b>WRITING</b>	<u>WRITING I</u>	<u>WRITING II</u>	<u>WRITING III</u>	<u>WRITING IV</u>
<b>Q1</b>	<i>DESCRIPTIVE</i>	—————●		
<b>Q2</b>	<i>EXPOSITORY</i>	—————●		
<b>Q3</b>	<i>PERSUASIVE</i>	—————●		
<b>Q4</b>	<i>NARRATIVE</i>	—————●		
<b>WORLD LANGUAGES</b>	<u>SPANISH I</u>	<u>SPANISH II</u>	<u>SPANISH III</u>	<u>SPANISH IV</u>
	OR			
	<u>MANDARIN I</u>	<u>MANDARIN II</u>	<u>MANDARIN III</u>	<u>MANDARIN IV</u>

## **MATHEMATICS**

The Academic Core mathematics sequence at Academy High consists of four courses (Math I, Math II, Math III and Calculus) intended to prepare students for further study in college-level mathematics. In addition to appropriate topical elements, our courses are distinguished by the following:

- Extensive use of technology – including graphing calculators, applications such as Geogebra and Desmos, and full-featured computational programming environments such as Wolfram|Alpha and Mathematica – as a vital component of instruction and student work
- Emphasis on applied problem solving and mathematical modeling consistent with principles and guidelines established by the Association of Computational and Mathematical Modeling (AoCMM) and the Consortium for Mathematics and Its Applications (COMAP).
- A focus on teamwork, collaboration and effective mathematical communication

### **MATHEMATICS I**

Math I includes complete topical coverage of a traditional high-school geometry course during the first semester, as well as an introduction to trigonometry, trigonometric functions, and the unit circle. The second semester of Math I focuses on the introduction of algebraic, graphical and numerical techniques for simplifying and evaluating linear, polynomial, exponential, logarithmic and rational expressions, and for solving linear, polynomial, exponential, logarithmic and rational equations and inequalities. Each quarter of Math I features an extended project relating course topics to the development of a mathematical model.

### **MATHEMATICS II**

Math II builds upon, and extends, the algebraic, graphical, and numerical/computational techniques for solving linear, polynomial, exponential, logarithmic and rational equations and inequalities introduced in Math I, and introduces trigonometric and conic equations and inequalities. Furthermore, the concept of limits is introduced primarily through discussion of asymptotic behavior of functions. In addition, a full quarter of the academic year is devoted to probability and statistics, including statistical inference and hypothesis testing. Quarterly mathematical modeling projects are also a feature of Math II.

### **MATHEMATICS III**

Math III extends treatment analytic geometry from Math II and introduces vectors, polar coordinates, plane curves, and parametric equations in addition to extended study of trigonometric functions and continued study and application of linear, polynomial, exponential, logarithmic and rational expressions. The concept of limits (already introduced in Math II) is explored in greater depth with a focus on the application of limits to the development of differential and integral calculus.

### **MATHEMATICS IV**

Calculus is the capstone mathematics course for all students at Academy High, and follows the College Board scope and sequence for Advanced Placement Calculus (AB).

## **SCIENCE**

### **BIOLOGY**

In this laboratory-based course, students will study the cell, the molecular basis of heredity, biological evolution, interdependence of organisms, matter and energy, and organization in living systems and the behavior of organisms.

### **CHEMISTRY**

This laboratory-based science course focuses on the structure and properties of matter as well as chemical reactions, the structure of atoms, conservation and interactions of energy and matter.

### **PHYSICS**

In this laboratory-based course, students study the fundamentals of the physical world of matter, energy, basic mechanics and particle physics.

### **ENVIRONMENTAL SCIENCE (TAUGHT WITH SOCIAL SCIENCE)**

This laboratory-based, capstone course emphasizes the application of scientific concepts from the three major disciplines (biology, chemistry, and physics) to the understanding of past, present and future environmental problems as well as potential solutions.

## **SOCIAL SCIENCE**

### **HISTORY OF EVERYTHING**

Our freshman social studies course utilizes the Big History Project's online learning management system and curriculum to explore the progression of history from the beginning of time to the present day. Through videos, readings, in-class activities, and discussions, students learn to connect the many disciplines that explore the unfolding of the Universe, including natural history, physics, chemistry, astronomy, anthropology, geography, environmental science, and sociology. This class hones students' connective thinking, analytical, writing, and classroom discussion skills - the perfect introduction to a high school learning environment.

### **US HISTORY**

By exploring U.S. History thematically rather than linearly, students are encouraged to draw connections between "history" and the present day. By thinking deeply about how Democracy, states' rights, capitalism, militarism, and social movements unfolded over time, a more cohesive and inclusive narrative of U.S. History emerges. Students finish this class with first-hand experience engaging primary historical documents and analyzing contemporary arguments on wide ranging topics - making them stronger thinkers, readers, writers, and ultimately, citizens.

### **GLOBAL STUDIES**

This course encourages students to recognize the global forces that both unite and separate world citizens, and to develop the global competencies, skills, and understanding to make sense of the highly integrated and interdependent contemporary world. Students will analyze various kinds of "borders"—geographical, political, economic, social, and cultural—and delve into the specific challenges that each introduces.

### **ENVIRONMENTAL SCIENCE (TAUGHT WITH SCIENCE)**

This inquiry-based, capstone course reflects upon a central challenge of our times - the environment. Topics such as climate change, global warming, protection of biodiversity and endangered species are global in nature and require social, political, economic and cultural solutions from the global community.

## **ENGLISH**

Our mission in teaching literature is for students to have a strong sense of themselves and the world they live in. We offer a curriculum that combines classics with current significant works so students can examine a variety of important life themes as represented by different voices. Students will read works written by people who look like and live like they do, as well as people who are very different from them. Students will also read from a wide range of genres so they can develop preferences and personal taste in reading.

### THE HUMAN EXPERIENCE I

The objective for first year literature is for students to examine and engage with big themes and ideas that appear in thousands of works. Ideas like the "Hero's Journey" and "warnings" are core to entire genres, while big themes like "love and hate" or "heroes and villains" are central discussion points in almost any work. The pieces we examine are classics that any college will expect them to have read (Romeo and Juliet, Fahrenheit 451, The Great Gatsby) as well as more unusual texts that show these ideas in new light (Marvels, Norse Mythology, The Sleeper and the Spindle).

### THE HUMAN EXPERIENCE II

The objective for second year literature is to delve into areas of life that are universally significant. Humans have written about nature, injustice, relationships, and survival for thousands of years and second year students will begin looking at what a variety of authors have to say about each. Diversity is core in the works selected (Citizen, The New Jim Crow, Life of Pi, "The Grey-Eyed King") and includes a wide range of American classics to complement their American history class ("Nature," Walden, "Seeing," "Desiree's Baby," A Tree Grows in Brooklyn).

### THE HUMAN EXPERIENCE III

*To be developed*

### THE HUMAN EXPERIENCE IV

*To be developed*

## **WRITING**

### DESCRIPTIVE

Descriptive writing is the clear, written description of people, places, objects, or events using appropriate details. An effective description will contain sufficient and varied elaboration of details to communicate a sense of the subject being described. Details used are usually sensory and selected to describe what the writer sees, hears, smells, touches, and tastes. Classes are organized around pre-writing, drafting, and revising, and includes discussions, workshops, and tutorials with the instructor as well as peer-editing.

### EXPOSITORY

Expository writing introduces and develops student proficiency in formal academic argument. Classes are organized around pre-writing, drafting, and revising, and includes discussions, workshops, and tutorials with the instructor as well as peer-editing. In addition to its central focus on the elements of academic argument, each quarterly expository writing class teaches students to document sources correctly and provides its own topic or theme to engage students' writing and thinking.

### PERSUASIVE

This course aims to examine how various texts influence audiences to think and act in certain ways. Samples of texts covered in this course include commercial and political advertising, film documentaries, historical speeches and war propaganda. Students will engage with research as they uncover how the contexts of time, audience, genre, and others affect persuasive effect.

### NARRATIVE

Narrative writing focuses on the development of short-form essays featuring first- or third-person accounts of real life events. The course introduces a writing process which includes description, characterization, plot development, conflict, climax and resolution and incorporates brainstorming and pre-writing into the construction of a personal narrative designed.

## **WORLD LANGUAGES**

Our World Languages program offers instruction in Spanish and Mandarin to all students. The study of Spanish and Mandarin, two of the most commonly spoken languages in the world, will provide ample opportunities for students to weave history, literature, and art together as our program brings these languages and cultures to life. Students will also have opportunity to study Latin as it influences languages, come to appreciate word roots in ways that enhance their overall command of English (and many other languages), their sense of wordplay, and their understanding of legal and scientific terms.

### SPANISH I & II / MANDARIN I & II

In the first two years of language study, equal emphasis will be placed throughout the courses on the four basic skills of all language learning: speaking, listening comprehension, reading and writing. Specific attention and focus is given over to the development of conversational fluency; consequently, the courses are largely immersive despite their introductory nature.

### SPANISH III & IV / MANDARIN III & IV

Building on skills from the first two years of study, third-year language courses expand on grammatical structures and vocabulary to broaden and enhance communicative skills. Students write analytical and creative essays and participate in substantial classroom discussions on topics ranging from culture to literature to current events.

Importantly, student self-expression in the target language is a key component of the III and IV level courses. Newspapers and other media resources expose students to a variety of materials produced by native speakers from many different countries. The class discussions and activities will be based on different themes such as family and friendship, media and technology, childhood and generational differences, travel and transportation, and nature and the environment.

In the World Language courses, all of the fundamental language skills (speaking, listening comprehension, reading, and writing) are extensively reviewed and practiced while vocabulary and grammar are appropriately expanded. A variety of topics will be presented and discussed with an emphasis on speaking and expressing opinions about important contemporary issues of as well as students' own personal experience.

In addition, students expand their knowledge of literature and culture and their language proficiency improves. Students are encouraged to speak confidently through a variety of individual and collaborative presentations; to develop grammatically accurate and coherent writing; to analyze literary texts and films with pre-viewing and vocabulary building activities beforehand leading to comprehension and analysis questions; and to communicate through writing via short pieces of around 300-500 words in a variety of styles, including descriptive, argumentative, and creative.