



CAMBRIDGE HARVARD SUMMER ACADEMY
Inquiry In The Disciplines



COURSE LISTING FOR SUMMER 2018

Courses run from Thursday, July 5th through Thursday, August 9th.

The CHSA Exhibition is on Wednesday, August 8th.

Morning Exhibition: 10:30am-12:20pm

Evening Exhibition: 5pm-7pm

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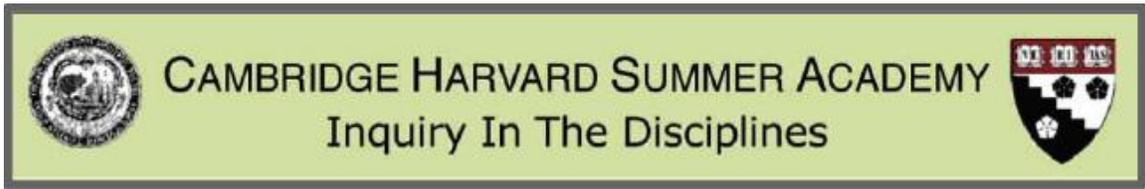


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CHSA COURSES AT-A-GLANCE

	Course Title	Equivalent
ENGLISH	The 10 Minute Play that Changed the World	English 9
	When They Were Young: Exploring Family History through Narrative	English 9
	Back to the Afrofuture: Imagination's Role in the Fight for Racial Justice	English 10
	The Evolution of Identity: Understanding Others and Ourselves through Storytelling	English 11
	CHSA Newsroom: Finding Truth	Elective
HISTORY	Identity and Human Rights Through Art	World II
	My Voice in the World	World II
	Whose Rights Are These?: An Examination of the U.S. Constitution	US1
	How to Make Change in America	US2
SCIENCE	Going Viral: A Study of Infectious Disease and How to Stop It	Biology
	Invasive Species: What happens when something disrupts the ability of an ecosystem to meet the needs of the organisms in it?	Biology
MATH	Mathematics of Social Justice	Algebra I
	Designing Communities Through Geometry	Geometry
	"How long would it take the school to eat a Mount Washington of ice cream?" and Other Not-Fake-World Problems	Geometry
	Saved by the Sun: Pasteurizing Water with Parabolic Solar Cookers	Algebra II
	Maps, Measurement, and Motion: Trigonometry	Pre-Calculus



ENGLISH COURSES



THE 10 MINUTE PLAY THAT CHANGED THE WORLD [↑](#)

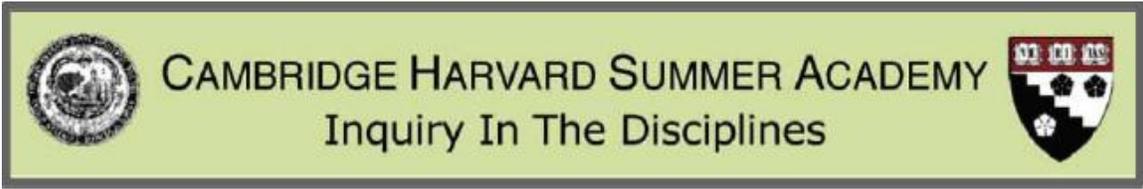
Art is a response to real events happening in the world and especially in our country today. In this class, students will have the opportunity to speak to their identity and sense of place in our country. They will read, watch, and analyze different plays that center around a response to our country's pains and the ways in which all Americans, but specifically people of color, deal with what is happening. Is the American Dream real? Does being black or brown in America today pre-determine your life? Can education really change the outcome of a community and in turn a country? Along with these questions we'll also analyze how one can answer these questions in 10 minutes through specific writing and plot structure. Students will then have the opportunity to capitalize on these themes by writing their own 10-minute play that reflect their personal reactions to important questions of justice and growth in America through art. Students will complete a final project during the five weeks of the course. The project will be presented at the CHSA Exhibition on Wednesday, August 8th.

WHEN THEY WERE YOUNG: EXPLORING FAMILY HISTORY THROUGH NARRATIVE [↑](#)

As students enter high school and prepare for the future, students are often asked to examine their own defining moments, dreams, and aspirations. But before they began to think about these things and how they shaped their identities, their extended families and close mentors had their own experiences that shaped who *they* became. Students will generate a thoughtful compilation of narrative nonfiction stories, which tell family coming of age stories. They will use journalistic methods of research, such as interviews and primary documents, as well as creative writing techniques. Along the way, students will address specific questions that help them understand how their family members grew up in different times or different places. Students will complete a final project during the five weeks of the course. The project will be presented at the CHSA Exhibition on Wednesday, August 8th.

BACK TO THE AFROFUTURE: IMAGINATION'S ROLE IN THE FIGHT FOR RACIAL JUSTICE [↑](#)

For many, the struggle for social justice is deadly serious; fighting for rights is often literally a matter of life and death. In this course, students will critically analyze Ta-Nehisi Coates' *Black Panther* series as a means to explore the role imagination plays in the fight for racial justice. We will use analytical and imaginative practices in creating our own comic books that reflect our understanding of the principles of afrofuturism and the use of imagination as a tool of transformation and empowerment. Students will complete a project for this course and participate in the CHSA Exhibition on Wednesday, August 8th.



THE EVOLUTION OF IDENTITY: UNDERSTANDING OTHERS AND OURSELVES THROUGH STORYTELLING [↑](#)

Each of us embodies an entangled mesh of identities, which coexist and evolve throughout our lives. Often, we lack the time or the space to explore these essential elements of ourselves. Storytelling, though, provides us with a unique opportunity to not only reflect on our journeys, but also share them with others. In this course, we will study mentor texts such as Moth-style live storytelling, podcast narratives, graphic novels, and memoir. We will critically analyze these texts, meaningfully interact with our own identities, and eventually craft a live storytelling piece or a podcast narrative. All students in this course will participate in the CHSA Exhibition on Wednesday, August 8th.

CHSA NEWSROOM: FINDING TRUTH [↑](#)

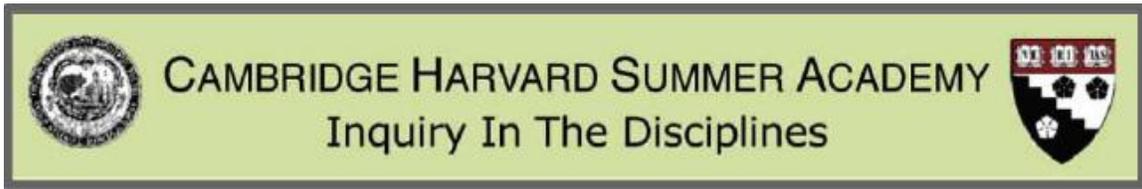
We live in a world where much of our news and information often comes from social media and other online sources, resulting in a debate over truth and neutrality in an ever polarized country. Journalism has shifted and morphed as quickly as our social climate. Throughout this course, we will examine different forms of journalism from traditional newspapers to Twitter feeds while also honing our journalistic skills of writing and critical thinking. We'll explore critical issues today such as the investigation into Trump's campaign, ISIS, police brutality, and Black Lives Matter, considering how these issues have been shaped by the media and in turn shape our perception of the world. Through writing for a variety of purposes and audiences, we'll start to think about the current war on the media, and determine its necessity and purpose in our democracy. We will find a medium to tell the world what is important to us. As journalists, our culminating assignment will result in a mock newsroom where we will share our own recorded news broadcasts and our online and print newspaper. All students in this course will participate in the CHSA Exhibition on Wednesday, August 8th.

HISTORY COURSES



IDENTITY AND HUMAN RIGHTS THROUGH ART [↑](#)

Students will learn about the development of human rights in the 20th and 21st centuries, as well as the role of artists as activists. After some initial exploration of human rights movements and artist-activists, students will research both a movement and an artist of their choice in order to hone their scholarship skills and to gain a deeper understanding of the past century in world history. Finally, students will create artwork, in whatever medium they choose, that speaks to their own identity and passions as human rights activists. Students will complete a final project over the course of the summer that will be presented at the CHSA Exhibition on Wednesday, August 8th.



MY VOICE IN THE WORLD [↑](#)

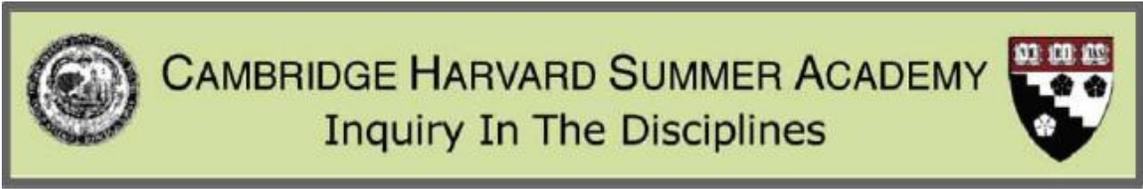
Student voice and choice will guide work in this course, as students explore world issues and the development of the United Nations as a peacekeeping organization in the post WWII era. After learning about the structure and purpose of the UN and UN-related organizations such as UNICEF, UNESCO and WWF, learners will choose either a country or an organization to represent. They will investigate all aspects of this country and prepare a resolution, speech, or other written/visual/oral artifact that displays the views of this country on a particular issue. As a learning community, we will prepare a debate, following the style and structure of Model United Nations. In this light, students will become delegates, or political representatives, of the countries they chose to investigate. All students will participate in the CHSA Exhibition on Wednesday, August 8th.

WHOSE RIGHTS ARE THESE?: An Examination of the U.S. Constitution [↑](#)

In this course, students will explore how major events in U.S. history as they are connected to the United States Constitution. Using the full text of the Constitution, documentary film, debate, and role-play, as well as other mediums, students will examine the origin and intentional structures of the U.S. government, as well as the Rights protected by the Constitution. Over the course of CHSA, students will use the Davenport note taking method to identify and document major themes in the U.S. Constitution. These themes will be used to develop a radio essay. Students will share their work during the CHSA Exhibition on Wednesday, August 8th.

HOW TO MAKE CHANGE IN AMERICA [↑](#)

How does America change its mind? What is the role that people have played in U.S. history to make this country change its policies and practices? What lessons can we take from past social movements to create change in the U.S. today? In this course, students will examine the ways in which people have agitated for social change in recent U.S. history by focusing on the protest movements that captured attention in the U.S. in the 1960s: the Civil Rights Movement, Women's Movement, and Anti-Vietnam War Movement, among others. Particular focus will be given to primary source analysis, differing perspectives, making evidence-based claims, and applying lessons of past movements to modern activism. The course will culminate in a final project, which asks students to investigate a modern social movement and analyze how people go about making change in the United States today, compared to the past. Students will complete the final project over the course of the summer and present it at the CHSA Exhibition on Wednesday, August 8th.



SCIENCE COURSES



GOING VIRAL: A STUDY OF INFECTIOUS DISEASE AND HOW TO STOP IT [↑](#)

Infectious diseases, like Ebola and Zika viruses, have made national headlines in the past several years because of their widespread impact. In this course, we will study the biology of infectious disease, in light of political, ethical, and scientific debate around disease management. Students will learn the genetics and evolution of bacteria and viruses, especially in a time of antibiotic overuse and mismanagement. Students will study the immune response to infection, including the development and debate around vaccinations. As a final project, students will interview health professionals and research an infectious disease of their choice. They will produce a project plan for dealing with the outbreak of a major infectious disease in the United States. Their final project could include an infection management plan (including math models of spread rates), new vaccine designs (including analysis of costs to develop and distribute), treatment and/or quarantine plans, and public education through video, campaign, etc. All students will share their work during the CHSA Exhibition on Wednesday, August 8th.

INVASIVE SPECIES: What Happens When Something Disrupts the Ability of an Ecosystem to Meet the Needs of the Organisms in It? [↑](#)

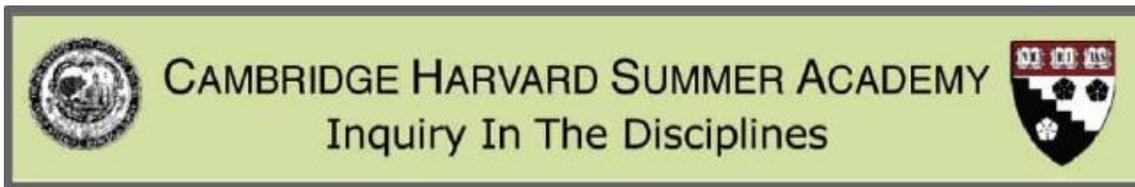
Invasive species threaten ecosystems and communities around the world, but what is the biology that allows these non-native species to impact entire communities? In this course students will explore: the diversity of life, the complex relationships and role energy and matter play in a stable ecosystem, as well as human impacts on ecosystems. Throughout the course students will apply their knowledge to understanding the impact of an invasive species on a specific ecosystem. At the CHSA Exhibition on Wednesday, August 8th, they will share information about their invasive species and propose a method to control/remove the species from the area.

MATH COURSES



MATHEMATICS OF SOCIAL JUSTICE [↑](#)

Throughout our society there exists great social inequity. Proving that these biases and prejudices exist is even easier using mathematical and statistical tools. This course will focus on elements of Algebra, but it will also include some statistical content that relates to scientific research and the proving of a hypothesis. The course will explore some examples of modern prejudice, and give students the chance to develop their argumentative and concise writing skills. Students will complete a social justice-focused mathematical group project as the conclusion of this course. They will work



with their peers and follow the Meeting Wise process to ensure professional development. Additional study will focus on Algebra I related SAT and ACT content material, with daily practice of actual test problems. Students will be given a chance to grow in their mathematical content knowledge base, write about their own college and career goals, and discuss and mathematically analyze social-justice issues within a welcoming community. All students will share their work during the CHSA Exhibition on Wednesday, August 8th.

DESIGNING COMMUNITIES THROUGH GEOMETRY [↑](#)

This geometry course provides the opportunity to finally answer, "When will this ever help us?" Using mathematical themes such as proportions, transformations, and volume, we will improve the community in our neighborhoods through design. We will practice drafting, editing, and formal critique as well as apply everything we learn to create a professional, scale drawing! Students in this course will share what they learned at the CHSA Exhibition on Wednesday, August 8th.

"HOW LONG WOULD IT TAKE THE SCHOOL TO EAT A MT. WASHINGTON OF ICE CREAM?" AND OTHER NOT-FAKE-WORLD-PROBLEMS [↑](#)

Too many of the word problems in a mathematics textbook claim to be "real-world" problems, when in reality, they are more appropriately labeled as "fake-world" problems. By having students pose what-if questions that they are curious about, no matter how ridiculous-sounding, we can begin to think like engineers, scientists, and mathematicians to solve real-world problems. This course uses proportions, area, volume, dimensional analysis, critical thinking, and problem solving to pose and solve Fermi-type what-if problems. Students will complete a final project that will be presented at the CHSA Exhibition on Wednesday, August 8th.

SAVED BY THE SUN: PASTEURIZING WATER WITH PARABOLIC SOLAR COOKERS [↑](#)

Millions of people worldwide live without access to safe water. The dangers of unsafe drinking water cannot be overstated. The World Health Organization estimates that there are roughly 1.7 billion cases of diarrheal disease annually, resulting in the death of nearly 760,000 children under the age of five every year. In this course, students will be challenged to design the most efficient, inexpensive, portable parabolic solar cooker that will attain a temperature needed to pasteurize contaminated water and make it healthy to drink. All students will share their work during the CHSA Exhibition on Wednesday, August 8th.

MAPS, MEASUREMENT, AND MOTION: TRIGONOMETRY [↑](#)

I can't imagine that the word "trigonometry" evokes a warm feeling in most people; it does not seem to be loved. Maybe you've already had some exposure to "trig" – SOHCAHTOA in Algebra 2 or



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perhaps the Unit Circle in Precalculus. Did it go well for you?; it didn't for me; I hated it. Imagine my surprise then, when I discovered that trigonometry is delightful. In this course we will build a framework with right triangle trig and the unit circle that we will employ as we engage in the analytic trigonometry of rotary, periodic, and harmonic motion. We will play with transits, sextants, springs, lasers, tuning forks, pendulums, water, and sand. We will make our own tools, we will use them to measure space and behavior, and we will use our measurements to map and model places and phenomena in the real world. All students will share their work during the CHSA Exhibition on Wednesday, August 8th.