

Upper School Elective Selections, Trimester 1

Morning Electives

Atmospheric Chemistry, Natural Disasters, Mass Extinction Events, and Evolution

Natural Sciences/Math, offered by **Tory Campbell**

The intention of this class is to investigate the interplay between Earth's ever-changing environment and the evolution of life. We will be exploring some of the most recent natural disasters and how they relate to shifts in atmospheric chemistry, ultimately looking at how this impacts mass extinction events, the environment, and changes the shape of evolution. Students will learn about the vital link between atmospheric conditions, biodiversity, and evolution. Additionally, the hope is that it will foster a holistic understanding of Earth's dynamic history, the resilience of life, and the importance of scientific inquiry in comprehending the past, present, and future of our planet.

There are plans for a second trimester course to follow-up major curiosities discovered as we learn with a hard focus on the biological and chemistry-based science needed to understand a complex world.

Esperanto and the hope for a unified world

Humanities/Social Sciences, offered by **Viktor Grigoryan**

Esperanto is a planned auxiliary language, and (arguably) the most successful constructed language to date. In this class we will learn the language, and explore the social-historical context in which the language was born. Esperanto means "one who hopes," and the hope for an improved human communication is engrained in the unique cultural attributes of the language. The intentional simplicity of Esperanto makes it easy to learn, allowing one to reach working fluency within months. And having learned Esperanto, studies show, one is primed for an easier go of learning other languages, including continued improvement in our native languages. So whether you are fascinated with the hope for a unified world through a universal language, or are ready to embark on the joyful scholastic hobby of language-learning, come join as in this full-of-hope class of linguistic romantics.

Filmmaking

Art/Tech/Engineering, offered by **Jamie Schefen**

Learn the art of filmmaking through practicing the fundamentals of cinematography and editing. Students will spend the start of the trimester learning how to use professional equipment, learning how to craft a cohesive story through film, and studying screenwriting. Then, students will learn how to edit their creations in Adobe Premier. They will explore the art of editing, with different methods and techniques, to best tell their story. Open to any ages, and those who have not taken this course before!

Inside the creator's notebook: Technical Drawing Skills

Art/Tech/Engineering, offered by **Camila Garcia**

It may seem strange to champion hand drawing, especially in view of the universal triumph of digital graphics like CAD, and even more so as AI-generated content is becoming the norm. But there's something very human and almost counter-culture about manually-crafted creations: they're visually expressive, they help you to think through your hands, and though they do allow you to visualize concepts more quickly, they also force you into a slower, more considered process during the initial stage of a project. In this art elective, you will acquire and hone technical drawing skills necessary to produce two-dimensional illustrations of three-dimensional objects and structures, also known as pictorial sketches. You will learn about orthographic projections; oblique, isometric and perspective drawing; as well as tonal shading. There will be many drawing exercises, visual and spatial reasoning exercises, as well as some 3D paper prototyping. Though not really a "drawing for engineering and architecture" class, this elective will certainly give you tools to more accurately and expressively communicate your ideas on paper.

Sci-Fi & Medical Ethics

Humanities/Social Sciences, offered by **Renee Scherer**

Science fiction isn't "just" aliens and time travel. In fact, even aliens and time travel ask us to think about our own lives and the problems we encounter. This class considers how science fiction on the page and on the screen has thought about issues of medical ethics. In tales from Frankenstein to Star Trek to Spirited Away, the audience is encouraged to consider common medical ethics issues such as:

- What rights do patients have?
- How should we make decisions when resources are limited?

- How might patients be kept safe, and their conditions and treatment confidential?
- Do patients need to consent to treatment?

Our class will use these and similar questions arising from ethical issues to examine and consider a range of science fiction media from the 19th century to today. Expect to practice close reading, active discussion, analytical thinking and writing, and to learn and practice film analysis. Some readings/viewings will be whole-class, while others will be offered as student-selected options. Each student (or group) will complete a reflective project investigating an issue of medical ethics or subgenre of science fiction.

This course will offer in-class time to complete readings and viewings. Some outside time will be needed by the end of the course to complete your reflective project.

Social Impact of Artificial Intelligence

Humanities/Social Sciences, offered by **Danny Fain**

You may already have played with generative AI tools—such as ChatGPT or DALL-E—and wondered about their effects on schools and society. What about the effects of other kinds of AI, such as facial recognition, embodied systems (robots, self-driving cars), and medical research? Accelerating use of AI in many contexts is transforming our world, with all sorts of financial, social, and ethical implications. While learning a little about the creation and function of some current tools, we will examine their impact at levels ranging from the individual to the community, including consideration of benefits, problems, risks, and possible solutions. Depending on students' interests, we are likely to focus our investigations within the domains of education, law/justice, or health/well-being. Expect a moderate amount of weekly homework utilizing digital media, including some collaborative project work.

(Can you tell whether this course description was generated by ChatGPT?)

Physics: Statics and Dynamics

Natural Sciences/Math, offered by **Alexis Hibbler**

In this course we will learn to describe how things move and why they move. We will use the process of science to discover and discuss how fundamental forces shape our world, bridging the gap between the physics of the past and the research of today.

Afternoon Electives

A History of Public Education in the US

Humanities/Social Sciences, offered by **Vered Brooks**

What is the purpose of public education? Is it to create an educated population? Is it to teach civic education so that we have an engaged citizenry? Is it to provide social mobility, or inversely to emphasize and codify social class distinctions? Is it to create a cooperative workforce? Is it to provide socialization and assimilation for children so that they fit into our society regardless of their family backgrounds? Or is it maybe just to provide child care? These purposes and more have all been driving influences behind America's public education system. All of this begs yet another question: does education look different if it is trying to achieve a different end? This course will explore the history of education in the US, critically examining the system we have today, the purposes it serves, and what purpose we believe it should serve. We will then consider what changes to our system would help promote the purpose we believe to be paramount in the 21st century.

Audio Production, Design, and Engineering

Art/Tech/Engineering, offered by **Linwood Harper**

This course is geared towards the aspiring and curious audio engineer, musician, and lover of all things sound! Students will be introduced to the Digital Audio Workstation (DAW) worlds of Soundtrap and Ableton. We will also use guided lessons from the Berklee College "Take Me to the River" curriculum which explores the cultural roots of New Orleans music. Through this and a series of exercises, students will become proficient at recording, mixing, EQing, scoring short films, and producing a podcast.

Boatbuilding

Art/Tech/Engineering, offered by **Josh Briggs**

In this energetic, hands-on class, we will embark on building a design for a plywood-on-frame boat for rowing/paddling and sailing. We may add a sailing rig if there is student interest and time. We will hold a launch event upon completion, and then each boat will be raffled off to interested families.

Geopolitics

Humanities/Social Sciences, offered by **Ruma Dutta**

We will be focusing on the politics of geography and the newspaper will be at the core of everything we will be doing. Looking at a diverse range of publications (e.g., The New York Times, The Financial Times, The Wall Street Journal, and The Economist), we will be discussing what it would mean to start learning the back-story to any news article of global significance. What questions would we ask to learn more? How do we decide on the credibility of sources? How do maps enlighten us as we learn? We will also be using software tools and coloring books to gain important content knowledge, and to gain an understanding of how maps and borders have contributed to decades of tension, insecurity, or collaboration.

Henry Molaison, Hebb's Theory, and Action Potentials

Natural Sciences/Math, offered by **Tory Campbell**

This interdisciplinary course offers an exciting journey into the realms of biology and neuroscience. Students will explore the mysteries of life at the cellular level while delving into the intricacies of the human brain. The neuroscience segment of the course delves into key topics such as neuron function, action potentials and the brain's remarkable ability to adapt (neuroplasticity). Engaging hands-on activities, including mirror tracing, will allow students to experience these complex concepts firsthand. The curriculum also introduces famous case studies like Henry Molaison and incorporates Hebb's rule to illustrate how experiences mold our brains. The goal is that at the end of the course, students will have ignited their curiosity about the biochemistry of life and the inner workings of the human brain.

There will be a second trimester course titled *Ion Channels and Neural Signaling: Biochemistry of Action Potentials* that will build on these principles.

Makerspace Engineering

Art/Tech/Engineering, offered by **Alison Earnhart**

A course for highly motivated makers in Room 2 and above. We will come together as a group to master the skills and tools specific to the Acera Makerspace. Choose your specialties and level up to achieve "Expert" standing on the laser cutter, 3D printers, vinyl cutter, CAD design software, and more. Along the way, engage in stimulating building and design challenges that focus on the essentials of engineering habits of mind, including: persistence in the face of failure, collaboration and peer teaching, and thorough documentation. Students who especially excel in this course will be invited back to be teaching assistants for T2 when the course is offered again to the rest of the Upper School.