

Hands On Electives
Grades 6, 7, 8, and 9
In Person

Grade 6 Electives

Science in Popular Culture (only one of Mr. Michael's two classes will be offered, based on student interest)
Mr. Michael

Science does not exist in a vacuum. Culture influences science in what is studied, funded, and reported to the public. Likewise, science influences culture in both fiction and non-science -settings. In this elective, you will learn about the different ways that science and culture intersect and influence each other. Hands-on activities for this elective include creating science fiction props based on real phenomena and using them in scenes from your own science fiction film!

Build a Winter Garden (only one of Mr. Michael's two classes will be offered, based on student interest)
Mr. Michael

Do you enjoy gardening and wish it lasted all year long? Did you ever want to eat a fresh carrot right out of the ground in January? With a little planning and careful selection of plants, you can plan and build a winter garden. In addition to building one, you will also learn about their history and important role in sustaining ecosystems year round.

Outdoor Augmented-Reality Game Design
Mr. Danny

If you have played Pokemon Go, you already know something about location-based augmented reality (LBAR) games. Would you like to design and develop your own LBAR? Using the online TaleBlazer platform (with a Scratch-like coding environment), you will create and playtest mobile games of varying complexity for the Acera playground; your games will incorporate physical features of the play-space, both natural and human-made. At each stage of development, you

and your classmates will be able to playtest each others' games (on separate devices); both singleplayer and multiplayer modes are feasible. If technical resources allow, you may also translocate your game to be played in Davidson Park. Previous coding experience is not required, though some familiarity with Scratch is helpful.

Miniature-Odyssey Game Design

In the Ancient Greek epic story "The Odyssey", the protagonist goes on a far-flung adventure with many dramatic twists. In this elective, you will create a role-playing game for a miniaturized adventurer that takes place in an outdoor setting (the Acera playground or Davidson Park, tbd). You'll have a choice of game styles (obstacle course, treasure hunt, puzzle-solving, ...) and player size-scale (from cat-size to ant-size), incorporating both natural and manufactured features of the landscape. A little research may be necessary to plausibly (yet creatively!) justify your game's challenges for the player. Play-testing the game will pose yet more challenges in the development process!

Grades 7, 8, & 9 Electives

Connect and Protect: Designing Clothing with Purpose

Ms. Adrienne

Clothing has long been used to protect humans from environmental extremes: very cold weather, hot pots and pans, even the vacuum of outer space. When we use clothing to create a bubble of safety, how do we make sure that we are not cut off from one another? In our first project, we will hack face masks, develop our own sewing patterns, and collaborate with Human Circuits to create an electronic communication mask. Students will learn to create their own sewing patterns, use the sewing machine and add embroidery. We will also be experimenting with sublimation printing, photochromic and thermochromic pigments, and soft circuits. Our final project will be inspired by biomimicry and ways that organisms protect themselves and connect to one another.

Beautifully Broken

Ms. Camilla

Our current cultural mindset is obsessed with visual perfection, and to that end, any blemish, crack and missing piece is immediately covered or improved. This expectation is not only afforded to people's appearance, but to the structures, products, objects and artifacts they produce. But what if the state of being broken, incomplete, flawed or repaired were to become the most prominent and beautiful feature of a thing?

In the *Beautifully Broken* class you will be presented with intellectual and hands-on challenges that seek to answer that question. Can you put a shattered object back together and make it look beautiful? Can a drawing made of smudges and corrections be aesthetically pleasing? The class's culminating piece will be a group mural embodying the ideas and techniques explored in the elective.

Human Circuits: Connecting with each other through electronics**Mr. Tim**

Just like electronic circuits, human communities are made of individual components that must be connected together in order to function properly. We rely on electronics to connect to each other, but sometimes technology actually makes us feel more disconnected. In this class we will explore circuits and electronics while working on projects that connect us by deepening our communication with others and strengthening relationships within our community. For our first project, we will collaborate with Connect and Protect to hack face masks and create an electronic communication 'mood mask'.

Shifting Social Spaces**Ms. Estee**

Communities are made up of ideas, people, and places. They are also in a constant state of change, of reaching towards a new and uncertain shared future. In this hands-on elective, you will focus on two factors which shape how communities change and how art installations work: time and movement. You will take on the role of a 'social space influencer' to highlight environmental and social issues that matter to you. Each student will design a series of mini installations using a range of exciting materials, tools and techniques. As time goes by, and the weather or

circumstances change, your installations will change as well. These installations will act as visual conversation starters which prompt people to talk about the ways they interact with their communities and the connections they have with others. We will explore these connections between individuals and their communities in real-time through a partnership with Winchester Cultural Council and Massachusetts Cultural Council. Your final product will be a video/photo documentary tracking the development of your project and the community engagement with the mini installation series, and it will be projected at a community event.

One Plywood Sheet Boatbuilding Challenge

Mr. Josh

What happens when you get a class of beginner boatbuilders to each design and build their own small boat out of a single sheet of plywood? We'll find out! It may surprise you that it IS possible to build a working boat for a single person from a single 4-foot by 8-foot sheet of plywood. In this elective, students will research boat design principles and boatbuilding techniques and then design their own plywood-on-frame watercraft. You will explore boat design principles such as buoyancy and stability as you design and build a model of your boat. You will then modify the design as needed, and build the full scale version. You will also build oars or paddles. If the hull and oars/paddles are complete, and time avails, it is possible to rig the boat as a sailboat. We will launch and test these boats out at a local lake. We will likely move the launch date to Spring since most will not be ready until late Fall. Woodworking experience is helpful, but not required, for this class. There will be limited power tool use, including jig saw and drill/ driver.

Humanities Electives

Grade 7, 8, and 9

Remote

Economics

Ms. Debbie

What gives money its value? How should governments respond to a recession? What makes free trade so important? This class will lay a foundational understanding of basic economic principles, such as supply and demand, comparative advantage, and the role of government in the economy. We will play games that bring economic principles to life, so you can experience them for yourselves. We will compare different perspectives on economic theory, learning how different schools of thought reach very different conclusions. One main topic will be the Great Depression of the 1930's, as we try to figure out what caused it and derive lessons that apply to our world today.

World Geography

Ms. Ruma

This is essentially a unit on geographic literacy, which will help us build a deeper understanding of the challenges and opportunities of our interconnected world. We'll start off looking at maps and understanding what they tell us, not simply in terms of the information they convey, but also in terms of the insights they offer on the future. We'll learn how the constraints of geography - mountains, rivers, seas, even concrete - can limit the ambitions of leaders and the stability of nations. We'll look at newspapers and read behind the headlines for the back stories. We'll frame questions to help us understand how the geography of the world impacts historic and contemporary events.

Woman in the United States**Ms. Alyssa**

This class will explore the question “What does it mean to be a woman in the United States?” While we will touch on the history of women in the U.S., insofar as our history has shaped our present, the focus of the class will be on the concept and representation of “woman” in our current world. We will ask and (attempt to) answer questions like “Is gender socially constructed?” and “Could, and should, we have a world without gender?” In addition to primary sources, theoretical articles, and cultural artifacts that I provide, students should come prepared to investigate media that they share in their lives outside of school, and to evaluate that media with a critical eye.

U.S. Government**Mr. Bob**

The US Government elective will be somewhat different from what it has been in past years. All students are welcome to take it this session, including those who have already done so in the past. (For those who have taken it before, the majority of the material will be new, and the parts that are review will be worthwhile.)

We are in for a potentially wild ride electorally this fall, with numerous factors coming into play in our elections that have never come into play before. We will track as many of these factors as we can, as well as new ones that will probably spring up unexpectedly. Along the way, we will also learn about the basics of the Constitution, the structure and powers of state governments, and the history of voting rights and technologies in the United States. This class will also be an opportunity to dive into at least some of the questions you have that I may not have considered yet. By the end, you should have a reasonably solid foundation for understanding the results of the November elections.

The Civil Rights Movement: Through the Eyes of John Lewis and March**Ms. Vered**

In our current moment of racial reckoning, our country has to look beyond the racial divides that remain to achieve the racial equity and justice we know is possible. Looking to the civil rights movement is a helpful step in understanding what happened, and how we can take it farther. *March* is a graphic novel that explores John Lewis' experiences as a young man and leader in the civil rights movement, one who marched with Martin Luther King Jr., and was the youngest speaker at the historic march on Washington. He passed away in July, making it all the more relevant to hear his story in his own words. This elective will use the graphic novel as a jumping off point to explore the various social and political elements that led to the events we read about, as well as other contemporaneous events occurring and supporting the civil rights movement around the country and the globe. And of course we will look at the legacy of the movement, and consider what we can do to further Lewis' legacy, and that of all who have worked for racial equality.

Science Labs

Room 3 Science Labs

Remote

The Study of Why

Mr. Michael

How does an external stimulus illicit a response? What does it mean to regulate an action? If something changes, is there a decision to change course? If so, when does one become aware of that impulse to change? Have you ever looked at an organism doing something strange and wondered, “Why are they doing that?”

In this course, you will learn some of the reasons WHY organisms behave the way they do and what signals those behaviors on a genetic level. You will study a broad variety of behaviors in insects, plants, animals, and of course, humans, to learn about the intricate series of steps that lead a living organism from stimulus all the way up to its consequence in ecosystems. Get ready to dance like spiders, move like plants, play like cats, turn on and off genes, and uncover the unwritten rules that guide the many decisions and regulations of living organisms.

Harnessing Energy

Mr. Tim

Energy is a pretty big deal. As humans, we are constantly using energy whether we’re charging a phone, driving a car, or eating some delicious tofu. Without energy, truly nothing would exist. So what is energy anyway? And more

importantly, how can we harness energy to do useful things?

In this class we will explore the energy of motion and learn to control it through hands-on projects that challenge our understanding of the physical world. We'll dive into the design of roller coasters, cannons, clocks, and more!

Room 4 Science Labs

In Person

Watershed Investigations

Ms. Kelly

According to the Environmental Protection Agency, over \$450 billion in foods, fiber, manufactured goods, and tourism depend on clean and healthy watersheds. Why are watersheds so important? What ecosystem services does a watershed provide to our community? How can we protect our watershed? Through an ecocentric lens, this class will attempt to answer these questions. Through inquiry and investigation, we will explore the watershed where Acera is located--the Mystic River Watershed.

Medical Specialists

Ms. Tian

In this science class, we will play the role of medical specialists/diagnosticians and do a real case study of a 13-year-old girl, M'Kenna, who has recently started feeling sick all the time. And she was having a lot of alarming symptoms. We will diagnose her disease through hands-on projects and labs, collecting and analyzing medical data, and examining digestive system structure and function. We will also explore how a breakdown within the human body can lead to dysfunction.

