Grades 8-10: Seven Morning Course Choices for 2016

Anatomy and Physiology Boot Camp
Doppelgangers & Disguises in Golden Age Spanish Theater
Engineering: Storm Monitoring Systems
Math Logic: A Universe Built on Axioms
Changing Humanity: Ethics of Emerging Technologies
Social Media and #sociology
3D Monumental! Preserving the Past with Technology

Anatomy and Physiology Boot Camp
Can you tell the difference between your zygomatic bone vs. your sphenoid bone? How about your orbicularis oris muscle vs. your sartorius muscle? Do you know if a person can function properly with a split corpus callosum? Do you know what stratified squamous epithelium looks like under the microscope? If you are interested in the answers to these questions and are hungry to gain a better understanding of the human body, then this course is for you! We will not only answer your many questions, we will also learn basic principles of histology, anatomy and physiology of the human body. We will explore the integumentary, skeletal, muscular, digestive, cardiovascular and nervous systems and learn the names, locations, and functions of bones and muscles in the human body. We will dissect and explore models of the brain and heart to learn how your nervous system and cardiovascular system function. In this fast paced tour of the human body, modeled from a real pre-health professions course, you will get a better understanding of anatomy and physiology from the microscopic level to the anatomical level. No experience or prior knowledge necessary!

Doppelgangers and Disguises in Golden Age of Spanish Theater
Disguises can be instrumental in the search for the truth, but can also obscure the truth. In this course we will consider the questions: To what lengths will humans go to find the truth or to hide the truth? Is it always a good thing to reveal the truth? Can hiding the truth ever lead to positive ends? To help answer these questions, we will read a classic drama of Spanish theater that addresses stolen identity, morality and asks the philosophical question: What is the nature of the “truth”? We will also explore a classic comedy of Spanish theater that deals with disguises and misdirection in attempts to sway people’s minds. In this course, you will learn basic theater techniques like costume design, set design, and directing. You will then use these skills to stage a scene from one of the plays we read and, in doing so, seek to answer these enduring questions and enliven your own interpretation of “truth.”

Engineering: Storm Monitoring Systems
With climate change, storm events are becoming more extreme, increasing the threat on expensive infrastructure and human safety. In this course, we will focus on community resilience toward storm events, with an emphasis on monitoring systems. You will learn the basics of stormwater data collection, transmission, and management. Using this knowledge, you will deploy a variety of stormwater sensors such as rain gauges, stream gauges, soil moisture sensors, early warning systems, etc. This process will include DIY-style electronics assembly and some basic computer coding. With this technology as a tool, you will translate physical processes into digital data, transmit the data, and communicate and display the data in meaningful ways. You will also be introduced to the growing field of cyber-physical systems. This course will exemplify how technology can be used in a practical way to benefit society, specifically, by increasing community resilience toward storm events.

Grade 8 - 10 courses continue on next page
Math Logic: A Universe Built on Axioms

What do the fields of Computer Science, Economics and Statistics have in common? Each is based on logical arguments steeped in mathematics. In this interactive course, we will explore set theory, probability, and theory of computation. Through logic games, challenge questions, and probability experiments you will practice critical thinking in an environment offering clear and precise answers rooted in logical, mathematical arguments. As a result of this course, you will develop a rich understanding of some of the major ideas behind modern mathematics while, at the same time, developing and honing the way you approach challenging questions.

Changing Humanity: Ethics of Emerging Technologies

Human aspiration to invent is endless. We have manipulated the world around us, sometimes wonderfully, sometimes dreadfully. But should humans begin to manipulate our own bodies outside their ‘normal’ biological specifications? Scientists say that it’s no longer just science fiction that the human body could one day be altered dramatically in ways that might make humans stronger, faster, cleverer, more creative, or even longer lived. What about developments in cybernetics? Should robots play a role in war or in medical care? Could you have a robot friend? You will consider these and other issues that have the potential to radically reshape what it means to be human. How far could we go? How far should we go? What risks might be involved? Do we have a clue what we’re doing? You’ll decide!

Social Media and #sociology

How is Twitter changing the world? What does your Facebook status have to do with the economy? Is Instagram affecting our relationships? Social media is playing an ever-increasing role in our daily lives, and yet we rarely stop and think about the implications of these sites for society. In this course we will dive into the world of social media by tapping into our "sociological imagination" - a way of understanding the relationship between our individual experiences and the larger social context. We will examine the effects that social media is having on politics, culture, economics, and interpersonal relationships. Throughout the course, you will both generate and analyze content on social media, engaging as scholars in the emerging field of "digital sociology." Topics covered in the class will include: social movements, friendship and intimacy, inequality, and crime and social control.

3D Monumental! Preserving the Past with Technology

Have you heard about the destruction of art and historical monuments lately in the news? Did you know that there is a way for YOU to help reconstruct them? In this course, we will explore how technology offers a critical opportunity for artists, scholars, and preservationists to reconstruct lost artifacts and preserve threatened ones. You will learn how to compile simple photographs into a 3D model so we can participate directly in a world-wide project to digitally preserve the treasures currently threatened in the Middle East. You will also learn how to compile and alter your own models, locate open access resources, crowd-source materials, and even 3D print a design of your own! No technological knowledge required! We will learn the basics collaboratively and have the opportunity to talk with other scholars in the area about their own research using these digital tools.