



2017 Missouri Scholars Academy List of Majors

Major: Alternative Facts--How Media Skews or Views In a society that is plagued with people who are racist, sexist, homophobic or just plain mean; do you ever feel like screaming, “Can we all just get along?” Have you wondered why we look at other people the way we do? In this course we will explore how the history of social movements in the United States have sought to bridge the cultural divide that seems to prevent Americans from living up to our creed, “...with liberty and justice for all”. We will examine the movies, television shows, music and social media that you enjoy to analyze if they have positively or negatively added to the marginalization of different cultures. Ultimately, we will develop plans to promote cultural diversity that can be implemented in our homes, schools and communities when we return. Together we will learn “whose eyes” we have been seeing others through.

Major: An Enquiry Concerning Why You Can(not) Has Cheezburger Animals live within our communities as roommates, as therapists, as guides, as laborers, as entertainers, as research subjects, and as sources of food and raw materials. Many more animals share the planet with us. Human activity has a profound and often lethal impact on all of these animals. In this major, we will use philosophical tools such as deductive argumentation, critical thinking, and reflective equilibrium to examine ethical issues related to the animals with whom we share our planet, our communities, and even our homes. Scholars will tackle moral questions in concrete cases such as large-scale food production, hunting, zoos, and animal experimentation. Scholars will also get the chance to dive into more abstract questions such as whether animals have the same “intrinsic moral status” as humans, what features of an entity determine its moral status, and what implications this might have for how we arrange our societies. Should dolphins in captivity be able to sue? Should pigs on feeding lots have a right to be rescued by the government in cases of natural disaster? Should your dog get a vote? Let’s find out!

Major: Bio-ography: Story of a Life Scholars will learn basic elements of memoir and biography writing, beginning with how to find a person’s “story” and culminating with the publishing of an actual biography (well, a mini one). Delve into who you are – and *why* you are – through narrative non-fiction, and take your observation skills to an entirely new level as you learn so much about fellow scholars that you could write a book about them. Then we’ll write a book about them, weaving together in-depth interviews, analyses and images to publish skillfully crafted portraits of each other that are surprising, enlightening and endearing. Expect to produce your best writing, painting pictures so vivid, so poignant that they create intimate and eternal connections with your readers.

Major: Finding Your Voice: Explorations in Writing “For last year's words belong to last years language / And next year's words await another voice.” These lines, famously penned by T.S. Eliot, speak to our ever-shifting understanding of literature. T. S. Eliot, William Shakespeare, Toni Morrison, Ernest Hemingway, Sylvia Plath, e. e. cummings, J. K. Rowling, and countless other writers have expressed their voice through the written word. In doing so,

they have created literature that is equal parts timeless, enchanting, and transformative. No author is born with the skill to publish. Through diligent practice and dozens of worn out pens and keyboards, they honed their craft and refined their voice to become the legends we know them as today. Students in this major will make will spend three weeks doing just that, exploring the traits and styles of great authorial voices as we attempt to discover our own. Whether you are a regular participant in National Writing Month or spend more time writing Tweets than essays, all writers are welcome to join us as we scribble out stories the world can't possibly ignore.

Major: Introduction to Philosophy: Great Thoughts Worth Thinking Utilizing sections of *The Republic*, the class will explore questions of ethics, epistemology, religion, government and economics and finally aesthetics. Learn why Socrates claimed that knowledge of the self is paramount, why Plato distrusted democracy and why Aristotle believed that excellence is a habit, like riding a bike. Different schools of philosophy and philosophers will be discussed in dialogue with Plato's ideas and see why it is important to question everything.

Major: It's pHun. It's a gas. It's Chemistry Chemistry is all around us. It's in the food we eat, the air we breathe, the homes in which we live. Chemistry is in us! This course will take scholars on a journey from atoms to acid, from enthalpy to electrolysis, from ions to indicators, and from the nature of gases to the gases in nature. Each topic will evolve rapidly from fundamental to theoretical, and this course will appeal most to students who have experience with chemistry, but everyone is welcome. Throughout the course, special emphasis will be placed upon topics that don't make it into the normal high school curriculum. Scholars enrolled in this course should be prepared to experience chemistry through challenging, exciting, and fun activities designed to show the underlying edict of chemistry: chemistry is everywhere!

Major: It's the End of the World as We Know It: Exploration of -isms It's not easy being green, and it's definitely not easy living in a world of varied tastes, mixed opinions, and random ideas. Using the arts and philosophies of the past 100 years, the Romantic, the real, the modern and the post, we will be able to research the past and use it to find out where we are, artistically and philosophically speaking. With background research ranging from jazz to rap, from watercolors to splatter art, from Dr. Seuss and Shel Silverstein to Langston Hughes and Steve Martin, from Picasso to Calvin and Hobbes, from cartoons to the Muppets, and from Albert Einstein to Martin Luther King Jr., we will jump into all of the different-isms (cubism, impressionism, absurdism, etc.) of literature and arts and philosophies of today. We will explore these -isms with various and sundry art and writing projects, we will discuss and enact the philosophies underlying cultural change, and we'll create some groovy art . . . all in the trek to figure out where we are, why we are, and where we are going.

Major: Japanese Language and Culture The United States, China, and Japan are three of the largest economies in the world, and together they are responsible for 50 percent of the world's gross national product. The economic relationships among the three countries are so closely inter-twined that there is a tremendous need for people who possess expertise on Asia. In fact knowledge on Japan and China—including language and culture—will be a key to advancement in business, law, industry, and government in the next century. Today's youth should focus attention on the "Century of the Pacific" because of the rise of Asia as major economic and political players. Top "Asia Hands" will be called upon to help make policy decisions and will

be sought after as problem solvers. There are mounting tensions now between China and the U.S. The recent tensions between Japan and China are causing serious political problems, so we need to look at the dynamics and the dimensions of relationships among these three nations with regard to confrontation, competition, and cooperation. Young people have the responsibility to be well informed and must not be misled by stereotypes and misinformation. Understanding this as a background, this course will have a major emphasis on Japanese language (Kanji, Hiragana, Katakana; incidentally Japanese kanji are the same as Chinese characters), scholars are also provided with a broad exposure to culture, customs, religions, arts, and the educational system of Japan. We will study Shodo, Anime, Kirigami, Bonsai, Ukiyoe, some Japanese films, a brief history of Japan. We plan to make three field trips to appreciate “nature” and gardens, and then you are encouraged to write Haiku.

Major: Lightning Bugs or Lightning? "Write" Words in the Natural World Does being outdoors gets your brain buzzing? Get ready. We're going to take boats on the Missouri River, splash in its tributaries, hike through forests and prairies, and learn what's wild in developed landscapes. Take notebooks along to jot down questions, and learn basic ecology to start a lifelong journey of discovery. To make sense of what nature can teach us about our interior and social lives, we'll dive in to classic and contemporary essays, literary environmental journalism, poetry, art and more. We'll journal, we'll ask questions, and we'll be outdoors every day. Firefly jars not required, but definitely never discouraged.

Major: Physics: Wave Fun In this class students will explore all types of waves and oscillations. Students will engage in authentic inquiry learning and use real-world science data analysis techniques and community review to develop physical rules and equations. The class will begin by looking at the physics of oscillations and waves. Students will then explore sound waves and build a working musical instrument out of PVC. Next the class will delve into light waves and explore things like how rainbows are made and why a rainbow can be seen in a parking lot puddle after it rains. Students will learn about how lenses bend light and they will build and test their own telescopes. The students will turn the classroom into a gigantic pinhole camera to explore the optics of the situation and will explore how prisms bend light. The class will explore light as it pertains to modern physics concepts including exploring its particle nature and applying its properties to Einstein's special theory of relativity.

Major: Prophetic Writings: SF as a Way of Understanding the World Like modern-day prophets of sorts, science fiction writers have plumbed psychology, sociology, history, and biology to explore the possibilities and limits of human knowledge. Even though they often look to the future, science fiction writers have just as much to say about the past and present. Not only does their fiction ask us to confront questions about the world we live in today, but it also—and perhaps more importantly—interrogates what kind of creatures we are: What are we capable of? How do we produce, guard, and employ power? How do we respond to social and ecological change? Are we stewards, masters, or subjects of the universe? This class will explore all of these complicated topics, and many more, by reading some terrific science fiction. We will read a variety of short fiction and watch several films that stretch the imagination, blur the realistic and fantastic, and problematize what we believe to be true.

This course will entice anyone interested in psychology, history, creative writing, or technology, though it will be equally alluring to avid readers of any kind of literature. Readings, films, discussions, writing workshops, and occasional research projects will account for diverse interests and backgrounds

Major: Sperm and Oocytes and Embryos, Oh My! Exploring the Mysteries of Domestic Mammalian Reproductive Physiology from Gametogenesis to Parturition In this course, scholars will delve into the complex and mysterious world of reproductive physiology in an attempt to understand just how remarkable it is that we are all here. In other words, scholars will first investigate the intensely complicated systems that direct production of sperm and oocytes and then analyze how these gametes must undergo multi-faceted processes to produce a successful fertilization, conception, and parturition. Don't expect this education to occur only at a desk. This course is designed to have the scholar actively engaged in order to learn about the area of domestic mammalian reproductive physiology. Specifically, scholars will utilize the domestic bovine, porcine, and murine as models to study the realm of mammalian reproductive physiology. Those scholars with veterinary or graduate school aspirations should consider this major course. There are no pre-requisites for this course, however, classes in agriculture, biology and/or chemistry will be beneficial to the school.

Major: The Thinking Brain A little electricity and some floating chemicals allow us to remember the past, perceive the present, and imagine the future. In this major, we will explore the field of cognitive psychology from its roots in medicine and philosophy to current trends in neuroimaging. By tying together classic experiments with modern brain scans, we will learn about concepts such as sensory perception, attention, and memory. Then we will discuss how these concepts relate to larger questions such as consciousness, free will, and decision making.

Major: To Infinity and Beyond We'll start at zero, and we won't stop until we get there. The concept of infinity pervades so much of mathematics that we will have plenty to do in this course. What happens when a process is repeated over and over again, changing only a single parameter each time? Does infinity come in different levels, or is it one size fits all? Is infinity a number or is it something else? How can we prove a statement about all the numbers without proving it individually for every number? Can infinity be arrived at or can we even get close to it? Will these questions never end? Take the course and find out.)

Major: Understanding the Modern Middle East Conflict and crisis in the Middle East have been regular events on the nightly news in recent decades. This course will consider the origins and major events in several areas of the Middle East, including the rise of ISIS, the Syrian Civil War and refugee crisis, and the conflict between Israel and Palestine. Students will consider many factors that contribute to the conflicts, including political, economic, and religious issues. Students will also be challenged to propose ways to address each situation, considering what role the United States and/or international organizations and coalitions can and should play.

Major: Where There's a Will, There's a Way: Shakespeare Today: What's the big deal with Shakespeare? The language can be confusing. He's been dead for years. But for some reason he is still important in today's world. This course will look at how Shakespeare still impacts our lives and entertainment through film, television, and even comic books. Have you read all the

different types of Shakespearean plays? Do you like romance, murder, mystery, shipwrecks, and fantasy? They are all there calling out to us. Hamlet, Macbeth, Iago, Lear, Henry, Puck, and Bottom. We will meet them, act the parts, and find how they work themselves into our lives. But we won't stop there. While we lose ourselves in the magic of drama and theater, we will find a way to become more acquainted with Shakespeare and his works and determine how each and every one of us has a little bit of Shakespeare inside.

Major: With Friends like These, Who Needs Hegemonies? Employing the Sociological Imagination What makes you who you are? Are we just a collection of free-floating individuals? Do our histories and experiences matter? What's all this "privilege" business about? Using a sociological perspective, we will examine the categories of race, gender, class, religion, and much more in the contemporary world. We will discuss important local, national, and global news while exploring topics such as inequality, social construction, universal human rights, and cultural relativism. It's a big world with diverse perspectives. Let's explore a few. When we use the sociological imagination, things get real.

Major: You Can't Do That: Laws, Rights, Prohibitions, and Consequences What are we empowered to do, and what are we prohibited from doing? We understand that we enjoy a freedom of speech, but what am I allowed to say? Where am I allowed to say it? What is speech? Why can my school principal limit what I say in school, or dictate what I wear? Can my boss fire me for something I say? This course looks for those answers. *You Can't Do That* is an examination of sources and limits of laws, power, why we are allowed to do what we do, and the results of doing what we can't. This course will examine power, rights, prohibitions, and consequences of human actions, focusing one issue at a time on the legal issues that most affect teenagers.

Major: "You got a problem with that?!" How would you fix the world's problems? Could you do it just with shoe strings, spaghetti, scissors, staples, screws, and salad tongs? In this course, scholars will be challenged to find solutions to real-world problems. Focusing on using the engineering design method, scholars will take a hands-on approach to applying science, technology, engineering, and mathematics, to find, design, and create solutions for various problems. If you could solve any problem in the world, what would it be and what would you need to do it?