

# High School Summer Scholars Program

## 2017 Course Listings

### Session B (July 16-August 18)

Please note the following:

1. These course listings are subject to change and cancellation without notice.
2. Students are permitted to enroll in a maximum of 7 units.
3. Students must meet all prerequisites listed in order to enroll in a course.

## AMERICAN CULTURE STUDIES

### **SOCIAL PROBLEMS AND SOCIAL ISSUES**

Through a sociological lens, this course examines the causes and consequences of pressing social problems in America, including drug abuse, crime, poverty, racism and sexism, the health care crisis, globalization and inequality, and environmental degradation. Interventions guided by sociology and other social sciences will be offered. This course will be of special interest to those with career goals in medicine and health care, social service, law, and public policy. Attendance mandatory during the first week.

**Prerequisite:** None

Session B  
L98 120 (3 units)  
MTuWThF 1:00p-2:45p

## ANTHROPOLOGY

### **INTRODUCTION TO CULTURAL ANTHROPOLOGY**

This course covers the basic concepts and theoretical principles of sociocultural anthropology. Course material is presented from Asia, Africa, Melanesia, Latin America, and North America.

**Prerequisite:** None

Session B  
L48 160B (3 units)  
MTuWThF 9:00a-10:45a

### **INTRODUCTION TO ARCHAEOLOGY**

Archaeology plays a critical and unique role in understanding the human past. Through study of the methods and theories of archaeology, and a survey of important firsts in the human past, this course introduces students to the way archaeologists use material culture to reconstruct and understand human behavior. Chronologically-ordered case studies from around the globe are used to look at social, ecological, and cultural issues facing humans from the earliest times to the present. Students gain practice reconstructing the past through hands-on participation in two 1-hour labs focusing on lithics and animal bones. By the end of the course, students are expected to be able to think critically about how the past is presented, and why, and the importance of the past as it relates to the present and future. This course may include off-campus field trips.

**Prerequisite:** None

Session B  
L48 190B (3 units)  
MTuWThF 3:00p-4:45p

## ART HISTORY

### **INTRODUCTION TO ASIAN ART**

Beginning with the birth of the Buddha and continuing through the present, this course introduces the most influential art and architecture from all across Asia.

**Prerequisite:** None

Session B  
L01 111 (3 units)  
MTuWThF 11:00a-12:45p

## BIOLOGY

### **INTRODUCTION TO PROBLEM-BASED LEARNING IN BIOLOGY**

Have you ever wondered how doctors and scientists diagnose and discover cures to modern human afflictions? In this course, students will be given a general topic and break up into small groups to research questions related to that topic. We will all report back to the group each week with what we've found, and provide each other with interesting facts about our topic, as well as hints for conducting inquiry-based research. The instructor will guide students on how to conduct in-depth research on problems of current biological importance using a variety of web-based search engines and library tools, with a strong emphasis on learning how to read and interpret primary research articles. Weekly topics from previous years have included psychological disorders, genetics of sleep regulation, reproductive therapies, alternative medicine, and human evolution. Students should have broad interests and background in general biology and chemistry and should be curious, exploratory, interactive, and willing to try an active, nontraditional educational experience. There are no exams, so grades

will be based on class participation, weekly group presentations, written outlines, and a final iSearch paper on a topic of their choice.

**Prerequisite:** high school honors or AP biology

Session B  
L41 112 (3 units)  
MWF 9:00a-12:00p

## **GENERAL BIOLOGY II**

Second semester of a two-semester sequence that provides a broad but rigorous introduction to basic biological principles and concepts. This course covers DNA technology and genomics, the genetic basis of development, the mechanisms of evolution, the evolutionary history of biological diversity, plant form and function, and ecology. Laboratories include traditional wet labs as well as inquiry-based on-line labs.

**Prerequisite:** high school honors or AP biology and chemistry

Session B (**this course is currently full**)  
U29 102 (4 units)  
MWF 6:00p-8:30p and TuTh 5:00p-9:00p

## **BUSINESS**

### **DESIGN THINKING: HUMAN-CENTERED APPROACHES TO MAKING THE WORLD**

This course provides an overview of approaches to design thinking: a process of identifying, creating, and implementing solutions. Through an experiential approach, students learn methods for understanding users' needs, synthesizing complex information, identifying directives for design, generating ideas, prototyping, and communicating solutions. Methodologies will reflect multiple areas, including design, engineering, business, and anthropology. The class operates collaboratively tackling a locally relevant problem, such as active transportation or waste management. Students also explore the role of this process in business, organizations promoting social change, and education through readings, case studies, lectures, guest speakers, discussion, and written exercises. No previous experience in design is required. Limited space available in this course.

**Prerequisite:** None

Session B (**this course is currently full**)  
U44 290 (3 units)  
MTuWThF 11:00a-12:45p

## **CHEMISTRY**

### **TOPICS IN GENERAL CHEMISTRY**

This course is designed to help students successfully transition from high school AP chemistry to the college level. It provides a general introduction to topics that entering freshmen typically find among the most difficult to master in a first-semester general chemistry course, including the nature and structure of the atom, quantum chemistry, and the nature of bonding. Students gain familiarity with the way in which a rigorous college chemistry course is taught and receive a realistic exposure to the nature of quizzes and exams. Problem sets, selected readings, and group problem-solving strengthen skills and facilitate learning.

**Prerequisite:** high school honors or AP chemistry and high school algebra

Session B  
L07 102 (3 units)  
MTuWThF 11:00a-12:45p

## **DANCE**

### **BODY CONDITIONING**

This course improves flexibility, alignment, muscle strength, and movement awareness through a combination of methods derived from yoga, Pilates-based work, and basic dance techniques. Includes comparison of breathing techniques in yoga and the Pilates method. Students should bring a mat and be prepared for rigorous work. This course is available Pass/Fail only.

**Prerequisite:** some dance/movement experience necessary

Session B  
U31 104 (1 unit)  
WF 5:30-7:15pm

## **DRAMA**

### **IMPROVISATION**

This course introduces students to the fundamentals of improvisation. Students are provided with the tools and techniques to develop their artistic voice, both individually and within an ensemble, through various theatre games, exercises, and techniques. Students will build self confidence, develop creativity, hone presentation skills, and have fun through working collaboratively in an ensemble. Both actors and non-actors are encouraged to take this class.

**Prerequisite:** None

Session B  
L15 233 (3 units)  
MTuWThF 9:00a-10:45a

## EARTH AND PLANETARY SCIENCES

### **INTRODUCTION TO GLOBAL CLIMATE CHANGE IN THE 21ST CENTURY**

Global climate and global climate change and their impacts on life and civilization. Integrated view of global climate and the diverse forces that can alter global climate. Historical and potential future consequences of global climate change on human life, our industrial civilization, and its sustainability.

**Prerequisite:** None

Session B

L19 111 (3 units)

MTuWThF 11:00a-12:45p

## ECONOMICS

### **INTRODUCTION TO MICROECONOMICS**

Determination of prices; distribution of national income; theory of production. For a thorough introduction to economics L11 1021 should also be taken, but is not required.

**Prerequisite:** None

Session B (**this course is currently full**)

L11 1011 (3 units)

MTuWThF 9:00a-10:45a

### **INTRODUCTION TO MACROECONOMICS**

Business fluctuations: inflation, recession; monetary and fiscal policy; economic development. For a thorough introduction to economics L11 1011 should also be taken, but is not required.

**Prerequisite:** None

Session B

L11 1021 (3 units)

MTuWThF 1:00p-2:45p

## ENGLISH COMPOSITION

### **PRINCIPLES OF RHETORIC**

The study of rhetoric, one of the original seven Liberal Arts, is perhaps more relevant today, in a world where diverse opinions reverberate 24/7 from television and the internet, than in ancient times when rhetors invented arguments to help people choose the best course of action when they disagreed about important political, religious, or social issues. How do we make our voices heard? How can we invent and present compelling written discourse. This course will introduce students to common rhetorical principles and to the disciplinary history of rhetoric and compositional studies. Assignments in this class include rhetorical exercise in invention and craft, imitations, and varied compositions, ranging from the personal to critical, from the biographical to argumentative.

We will examine rhetorical principles (audience, context, kairos, exigency, ethos, pathos, logos, and so forth) that are employed, for example, not only in literary analysis but in law, politics, education, and science. We will aim for a mastery of craft and a refinement of thought.

**Prerequisite:** None

Session B

L13 212 (3 units)

MTuWThF 3:00p-4:45p

### **PRINCIPLES OF WRITING**

This course is about reading well and writing deliberately and sees those two acts as intimately related. Students will read as writers, studying the strategies that writers use to write persuasively, and practicing those strategies in their own writing. The course offers a method for close reading (based on finding meaningful patterns); it offers practice linking claims with evidence for those claims and it offers practice organizing papers using such skills as well-written summaries, theses, transitions, topic sentences, and paragraphs.

**Prerequisite:** None

Session B

U11 101 (3 units)

MTuWThF 3:00p-4:45p

## ENGLISH LITERATURE

### **TOPICS IN ENGLISH AND AMERICAN LITERATURE: FUNNY PAGES: FROM COMICS TO GRAPHIC NOVELS**

Over the last twenty years graphic narrative has begun to be theorized as its own literary medium that combines sequential images with words to tell compelling stories, both fictional and nonfictional. In this course we will study the evolution of sequential art as it developed from comic strips into comic books, and, most recently, into graphic novels. Once reviled as pulp fiction, comics have received serious critical attention since the late 1980s and are finally recognized as both literature and a new medium. In our class discussions we will approach new ways of reading for this new medium. In order to grasp the range of graphic narrative, our readings will cover a variety of genres, including but not limited to autobiography, mystery, science fiction, and fantasy, including texts and creators such as: Krazy Kat, The Spirit by Will Eisner, selected works of R. Crumb, the Hernandez Brothers, Watchmen by Alan Moore and Dave Gibbons, The Dark Knight Returns by Frank Miller, Understanding Comics by Scott McCloud, Maus by Art Spiegelman, Palestine by Joe Sacco, Ghost World by Daniel Clowes, Fun Home by Alison Bechdel, Persepolis by Marjane Satrapi, and Jimmy Corrigan: The Smartest Kid on Earth by Chris

Ware. Through class discussions, close readings, and attention to the medium's shifting aesthetic sensibilities, this course offers students an understanding of the genesis of this nascent art form.

**Prerequisite:** None

Session B  
L14 246 (3 units)  
MTuWThF 1:00p-2:45p

## ENTREPRENEURSHIP

### ENTREPRENEURSHIP AND THE LIBERAL ARTS

It is a little known truth that more entrepreneurs come out of the Arts & Sciences than any other college. This course will begin by exploring why this is so, examining in particular the creative and innovative qualities developed in liberal arts that are crucial to the success of the entrepreneur. We will then move on to examine entrepreneurs in action, hearing from those in the field and reading of others, learning how the liberal arts proved instrumental in various ways to their development and ultimate success as entrepreneurs. Limited space available in this course.

**Prerequisite:** None

Session B  
L62 286 (3 units)  
MTuWThF 9:00a-10:45a

## INTERNATIONAL AND AREA STUDIES

### INTERNATIONAL PUBLIC AFFAIRS

We live in a complex, fast-paced world. Technological advances and economic interdependence bring us closer together, even as globalization creates new challenges that cannot be solved by one country alone. In this class you will examine the forces that affect competition and cooperation in a globalized world. Students will engage with influential social science theories to understand how public policy can help address these challenges. You will explore these theories through reading, discussion, and classroom simulations that allow you to put the theories into practice. In addition, students will work on a policy project to develop the leadership skills that are crucial for effective analysis, planning, team building, and communication in public affairs.

**Prerequisite:** None

Session B  
L97 103B (3 units)  
MTuWThF 9:00a-10:45a

## JOURNALISM

### PHOTOJOURNALISM

This course introduces students to the tools, techniques, and concepts of visual journalism; the mechanics of photography and its uses as a language of communication. Students develop an awareness of photography and a point of view through shooting assignments. The benchmark for success is understanding concepts, not photographic expertise. No darkroom work. Access to a digital or film camera with a flash is required. No disposable cameras. This course may include off campus field trips.

**Prerequisite:** None

Session B  
U49 330 (3 units)  
MTuWThF 1:00p-2:45p

### CURATING THE CITY

Students delve into five major themes that give them a deeper knowledge of the American city and prepare them to create projects ranging from blog posts to documentaries that share their knowledge with larger audiences. Students study the development of cities, with a special focus on St. Louis. They explore the city, learning how to see cities differently - as sites of study and ways of understanding the larger world rather than just as places to live and work. Students research the city, learning how primary sources and material culture can help them better understand and explain the city. Students narrate the city, gaining tips on how to write about the city in a way that makes their insights interesting and accessible to larger audiences. Finally, students present the city, proposing a project - an exhibit, a documentary, a mobile tour, or some other medium - that engages diverse audiences about the history of the American city. Taught by the Director of Exhibitions & Research at the Missouri History Museum, students leave the class with a better understanding of the American city and with the skills needed to present that understanding to the general public. This course may include off campus field trips.

**Prerequisite:** None

Session B  
U49 354 (3 units)  
MTuWThF 3:00p-4:45p

## LINGUISTICS

### INTRODUCTION TO LINGUISTICS

Language is one of the fundamental capacities of the human species, and there are many interesting and meaningful ways in which it can be studied. This course explores the core components of linguistic theory: speech sounds (phonetics and phonology), word formation (morphology), sentence structure (syntax), and meaning (semantics). It also provides an overview of interdisciplinary ideas and research on how language is acquired and processed, its relation to the mind-brain and to society, and the question of whether the essential properties of language can be replicated outside the human mind (specifically, in chimpanzees or computer programs).

**Prerequisite:** None

Session B  
L44 170D (3 units)  
MTuWThF 1:00p-2:45p

## MATHEMATICS

### **INTRODUCTION TO STATISTICS**

Data collection: sampling and designing experiments. Data organization: data, tables, graphs, frequency distributions, numerical summarization of data, and consumer price index. Inference: elementary probability and hypothesis testing.

**Prerequisite:** None

Session B  
L24 1011 (3 units)  
MTuWThF 11:00a-12:45p

### **FINITE MATHEMATICS: NUMBER THEORY, COMBINATORICS, AND GRAPHS**

Intro to number theory, combinatorics, graph theory, and their applications. Methods of proof and practical applications: calendars, scheduling, communications, encryption, etc. No knowledge of calculus, trigonometry, or geometry is required.

**Prerequisite:** high school algebra

Session B  
L24 220 (3 units)  
MTuWThF 1:00p-2:45p

### **ELEMENTARY PROBABILITY AND STATISTICS**

An introduction to probability and statistics. Discrete and continuous random variables, mean and variance, hypothesis testing and confidence limits, nonparametric methods, Student's t, analysis of variance, regression, and contingency tables. Graphing calculator with statistical distribution functions (such as the TI-83) may be required.

**Prerequisite:** AP Calculus AB with a grade of B or better

Session B  
L24 2200 (3 units)  
MTuWThF 11:00a-12:45p

## MUSIC

### **INTRODUCTION TO MUSIC II**

This course explores Western music from the time of Beethoven to works by today's composers. It covers music for piano, chamber music, symphonies and works for orchestra, vocal music and opera, and music for dance. Among the 19th-century composers studied are Mendelssohn, Chopin, Tchaikovsky, Brahms and Mahler. The discussion of 20th-century music includes works by Debussy, Stravinsky, Aaron Copland, George Gershwin, and Leonard Bernstein, along with music of contemporary composers Philip Glass and John Adams. The class will attend live orchestra concerts on campus. No previous musical experience is required for this course.

**Prerequisite:** None

Session B  
L27 102 (3 units)  
MTuWThF 1:00p-2:45p

## PHILOSOPHY

### **LOGIC AND CRITICAL ANALYSIS**

This course is an introduction to first-order logic. Logic is the study of the formal properties of arguments. In this course we learn how to make arguments precise by formalizing sentences and applying methods of deductive reasoning to prove conclusions. We also discuss the relations between logical reasoning and informal reasoning, and logic and rationality. Why study logic? Logic gives you principles and techniques to distinguish good forms of reasoning, helps you to construct correct arguments, and (to some extent) think orderly. Additionally, logic is essential in other fields that you might also be interested in studying (e.g., mathematics, computer science, linguistics, and analytic philosophy). And of course, logic is a fun and interesting subject in its own right. The course presumes no background in philosophy or logic.

**Prerequisite:** None

Session B  
L30 100G (3 units)  
MTuWThF 11:00a-12:45p

### **GREAT PHILOSOPHERS**

In this course we focus on some of the most important texts in the history of Western philosophy in order to discuss a wide range of central philosophical problems. We typically consider, for example, the existence of God, the justification of claims to knowledge, and the requirements of a good human life, including the demands of morality. Among the philosophers most likely to be studied are Plato, Aristotle, Descartes, Hume, Kant, Marx, Nietzsche, and Wittgenstein. Our goal is not just to appreciate the genius of some great philosophers but also to grapple with the current philosophical problems they have bequeathed to us.

**Prerequisite:** None

Session B  
L30 125C (3 units)  
MTuWThF 1:00p-2:45p

### **BIOMEDICAL ETHICS**

A critical examination, in light of contemporary moral disagreements and traditional ethical theories, of some of the moral issues arising out of medical practice and experimentation in our society. May include euthanasia, genetic engineering, abortion, medical malpractice, the allocation of medical resources, and the rights of the patient.

**Prerequisite:** None

Session B  
L30 233F (3 units)  
MTuWThF 9:00a-10:45a

## **POLITICAL SCIENCE**

### **AMERICAN POLITICS**

This course is meant to introduce students to the study of American Politics. We will analyze the origins, developments, actors, institutions, and processes of the American political system. In addition to the three branches of government, we will also cover topics such as public opinion, the media, campaigns and elections, political parties, civil right and liberties, and more. By the end of the class, students should become more careful and insightful consumers of political knowledge.

**Prerequisite:** None

Session B  
L32 101B (3 units)  
MTuWThF 3:00p-4:45p

### **AMERICAN CONSTITUTIONALISM AND THE LAW**

This course will introduce you to basic topics in American constitutional law along with the basic research programs political scientists are engaged in when studying the judiciary. In particular, we will pay attention to how judges make decisions. We will begin by looking at the structure of American government as it is set forth in the U.S. Constitution, paying particular attention to issues of federalism and the separation of powers. We will examine the specific powers delegated by the Constitution to each branch of the federal government, e.g. the power to regulate trade and the economy, as well as state governments. Then through an examination of case law, we will observe how the structure of government has evolved over the last 200 years. Finally, we will ask whether an 18th-century constitution--one with strong counter-majoritarian features--is adequate in the 21st century.

**Prerequisite:** None

Session B  
L32 3103 (3 units)  
MTuWThF 9:00a-10:45a

## **PSYCHOLOGY**

### **INTRODUCTION TO PSYCHOLOGY**

Survey and analysis of concepts, research, and theory covering the areas of learning, memory, motivation, personality, social, abnormal, clinical, and biological psychology. Introduces the diversity of questions, areas, approaches, research, and theories that compose the study of mind and behavior.

**Prerequisite:** None

Session B  
L33 100B (3 units)  
MTuWThF 11:00a-12:45p

## **SPANISH**

### **ELEMENTARY SPANISH LEVEL II**

This Spanish course is a language program stressing rapid acquisition of spoken ability with immersion teaching method covering more sophisticated grammatical skills.

**Prerequisite:** three years of high school Spanish

Session B  
L38 109 (3 units)  
MTuWThF 3:00p-4:45p