WRA | Western Reserve Academy

Western Reserve Academy
ACADEMIC COURSE DESCRIPTIONS 2019–20

COURSE DESCRIPTIONS

ENGLISH

Foundations of Text: Required of freshmen, this course introduces students to the study of composition and literature at WRA. Teachers encourage and promote active reading, including but not limited to paying attention to details and recognizing how those details contribute to the overall story. In connection, this class emphasizes effective annotation, class discussion, textual analysis, and thematic and aesthetic appreciation. Writing instruction is centered on grammar, compelling statements, and logical development — all in the context of students' own expository paragraphs. Students regularly engage in the writing process, including revision. In the spring, they take a common grammar assessment that tests their mastery of language skills covered over the course of the year.

Explorations in Analysis: Required of sophomores, this course continues the study of composition, with focus on the use of paragraphs as building blocks of essays. Students extend the work of the freshman year, with sustained study of how to develop, coordinate, and organize ideas. Students also learn to format essays and integrate and cite evidence in MLA style. Students submit an essay every two to three weeks; most essays present analysis of the literary text under consideration. Students continue to work on developing their close reading and discussion skills. Readings include, but are not limited to, human fallibility and resilience. Students develop the vocabulary to handle the course's increasing literary and rhetorical sophistication. In the spring, students take a common assessment that tests their mastery of writing skills covered over the course of the year.

Angles in Writing I: (half credit/Fall) Required of juniors, new seniors, and post-graduates, this course emphasizes a variety of approaches to critical thinking and effective communication. All aspects of Angles in Writing I revolve around the discussion of the choices authors make, and the value/impact those choices have on the text. Readings feature notable works in fiction, nonfiction, poetry, and American Drama. Although narrative and descriptive writings are assigned, students mainly respond to the text in the form of analytical essays. For the Semester Final, students participate in the Junior Writing Exam (an analytical essay written about a work of prose or poetry).

Angles in Writing II: (half credit/Spring): This course is a continuation of Angles in Writing I. Students continue to explore and examine perspective and bias, and they engage in frequent conversations about craft and style; the goal being to inform their writing. Readings feature notable works in fiction, nonfiction, and poetry that underscore and examine the frame of the storyteller/speaker and on the nuances of the presented text. Student writing is assessed every cycle. For the Semester Final, students either compose a research essay that focuses on scholarly literary criticism or they respond to a department-approved prompt regarding a contemporary text.

STUDIES IN ENGLISH

Studies in English: (half credit/Fall & Spring/both semesters are required) These offerings are open to all returning seniors. The department offers several half-year electives, giving students a choice of an array of writing, writers, texts, and themes (seniors must enroll in English both semesters in order to graduate). Teachers design offerings that present compelling perspectives on the human experience and on writing in the world. Each of these electives will foster attentive reading, engaged discussion, critical analysis, and other forms of composition. Moreover, students will gain experience with other forums for the presentation of their ideas about literature.

Possible offerings are listed below:

SE/Fall: Detective Fiction: A Hard-Boiled Study of Sleuthing and Storytelling: This course is an exploration of

the development of and alteration to the genre of detective fiction. Most interesting will be studying the origins, techniques, and characterizations that have made this one of the world's most read forms of literature. In this course, students will read, analyze, and respond to the texts often and in different ways. This is not a course for the faint of heart; murder and the human heart can be messy, disturbing, and often grotesque. We will examine archetypes like Dupin, Holmes, Spade, and Marlowe, and we will explore the seedier side of human nature and detecting. Potential texts: "Murders in the Rue Morgue," Edgar Allan Poe; *The Big Sleep*, Raymond Chandler; old-time radio programs; *The Sherlockian*, Graham Moore; Sherlock Holmes stories; Sir Arthur Conan Doyle; and *LA Confidential*, James Ellroy.

SE/Fall: Shakespeare: Page and Stage: Unlike novels and poems, play texts are not finished artistic creations; they are guidelines for building a new and collaborative work of art. Every production rewrites its play. In this class, we will study the most canonical author of all, Shakespeare, from the perspective of performance: We will put ourselves in the shoes of audience members and study theatrical practices both in early modern London and in 21st-century America; we will view films and recordings of plays, and (hopefully) attend a live, professional production. We will discuss how cutting, doubling, gender reversals, race-blind casting, and changes of time and place allow us to see new things in these old plays. We will think of ourselves as actors, as designers, and as directors (and our final project will bring together all these ways of thinking) in order to explore how every performance choice is at heart an interpretation of the play. The only requirements for this class are to be open, to be experimental, and to be ready to play with Shakespeare. Texts under consideration: *Henry IV, Part 1*; *Measure for Measure*; *A Midsummer Night's Dream; Othello; The Tempest*; and *The Winter's Tale*.

SE/Fall: Visual Rhetoric: Aristotle defined rhetoric as the faculty of observing (or discovering) in any given case the available means of persuasion. The phrase "available means" suggests that rhetoric includes modes beyond those of speech or writing, yet much rhetorical scholarship and instruction, particularly in the last century, concentrated on one or the other of these two modes. Certainly, the study of rhetoric has always featured some emphasis on visual modes albeit under such guises as delivery (how a speaker or text "looks," use of visual aids, and visual demonstration) and style (creating pictures in the minds of audience members or readers). Our culture and daily lives are increasingly inundated by images—physical and digital, moving and static—that influence how we make meaning and how we make value judgments and decisions. We are forced, then, to "read" images, unpack their arguments, and navigate their complexities just as we do a traditional written text. In this course, we will spend time analyzing and writing about film, TV, music videos, visual art, graphic novels, advertisements, and other visual media to understand how to better engage with and unpack the arguments presented therein.

SE/Fall: American Nature Writing and Environmental Issues: There will be two types of readings for this course. One will be what is known as "nature writing," personal writing that typically explores the natural world for truths that apply to one's own life, encouraging you to evaluate your individual definition of nature and to think carefully about what we can learn from our natural surroundings. The other type deals with ethical issues related to our natural world. These essays will tend to be expository in style and help us better understand the political and cultural pressures that can influence our environment. As part of this latter set of readings, we will take a look at some of the "hot" issues and explore a bit of ethical theory. Writing for this course is exclusively personal in form. Finally, the plan is to take a 3-day, 2-night camping trip to the Allegheny National Forest some weekend in October or early November; however, the trip is never 100% guaranteed.

SE/Fall: Lift Every Voice: A Literary Survey of the Complex and Ever-Changing African American Identity: In this half-year course, students will chronologically explore the African American literary tradition and examine how pieces by authors such as Frederick Douglass, W.E.B. DuBois, James Baldwin, Maya Angelou, and Ta Nehisi Coates reflect the complex and ever-changing African American identity. Students will begin with readings from the colonial era and go on to read pieces tied to pivotal moments in African American history including slavery, the Reconstruction Era, the Harlem Renaissance, and the Civil Rights Movement. In reading about each era, students will explore how Africans brought as forced laborers to America have been able to survive, adapt, thrive and ultimately establish a new and distinct identity as African Americans. Our final unit will cover pieces by several contemporary authors who delve into current issues such as the Black Lives Matter movement. Students will be expected to generate essays that indicate careful literary analysis as well thoughtful examination of the social

and political issues brought to light in these pieces.

SE/Spring: Human Struggles: How does the way one handles adversity define who they are? How differently do people interact and treat others who are going through something difficult? How do the ways we process (embrace, face, avoid) our frustrations reveal character? In this course, we will explore many of those questions and more in an effort to understand what the human struggles are and what it means to struggle as humans. We will examine some of the ways physical, emotional, and moral struggles are depicted in literature, and we will take an especially close look at the impact that group behaviors and social relationships has on an individual's mental health. Students will be asked to read, analyze, and discuss literature often in an effort to grow and develop as writers and communicators. Collaboration and participation are key to this course, and students must be willing to engage daily. Assignments will vary in length, scope, and frequency, and we will conclude the semester with a final project.

SE/Spring: Then and Now: Explorations of Context in American Literature Post 1900: In the study of literature, context is a layered and complexing concept. It is the background, environment, setting, framework, and/or surroundings of events or occurrences; it is also the overall makeup of circumstances that form a background of an event, idea, or statement. To put it another way: it's Gatsby's childhood *and* Fitzgerald's childhood. In this class, we will explore the literary, social, and historical contexts of key American texts in an effort to engage with the work on various and arguably more fruitful levels. Additionally, many of the texts we read are often used in education (some that you may have already read), and we will consider both the merits and qualities of a work's placement within the academic canon as well as how a work changes due to a reader's personal and ever-expanding context. Texts under consideration: *Fahrenheit 451*, Ray Bradbury; *To Kill a Mockingbird*, Harper Lee; *The House on Mango Street*, Sandra Cisneros; *Slaughterhouse Five*, Kurt Vonnegut.

SE/Spring: Is There Life on Mars? Speculative Fiction as Social Critique: For millennia, people have told fantastic stories for many reasons: to entertain, to explain the inexplicable, to seek divine understanding. But then or now, the fantastic has always had a vital role: using the unreal to show us the flaws of our real world, and the possibilities that exist for our futures and selves. This class will take speculative fiction seriously as a genre. We will read texts that show us the range of humanity and how we might respond to our challenges and our hopes. While we will read a selection of classic speculative fiction stories, we will focus mostly on recent and contemporary texts that ask us to think about ourselves as we are right now; we will pair our readings with studies of contemporary social issues and ask what light the fictional tales we read shed on these very real problems. Lenses through which we will examine both real and fantastical worlds include ethics, ecocriticism, postcolonialism, ideology and identity, race, gender/sexuality, and satire. We will write our own stories, too—because there are no limits to what we might see about ourselves when we step away from mere reality. We will conclude the term with an independent reading and research project based on a novel or collection of short stories of each student's own choosing. Possible texts include, in addition to essays and short stories, *The Parable of the Sower*, Octavia Butler; *Never Let Me Go*, Kazuo Ishiguro; *The Left Hand of Darkness*, Ursula K. LeGuin; *Small Gods*, Terry Pratchett; and *Who Fears Death*, Nnedi Okorafor.

SE/Spring: A Few of My Favorite Things: In this class, students will read a handful of pieces that I enjoy and that I hope you might also enjoy. There's nothing thematically holding these together; they're simply really good stories and respected pieces of literature. All but one have been turned into films, one is on the NYT list "The 20th Century's 100 Best Books in English," and one won the Pulitzer Prize. A note of caution here—our first novel will take at least five weeks to read (but it'll be a great story!). Your own writing will be a mix of analytical and personal essays, and we will address grammar issues as they arise in your writing. Texts may include *The Book Thief*, Markus Zusak; *A River Runs Through It* (novella), Norman Maclean; *Shoeless Joe*, W.P. Kinsella; *The Road*, Cormac McCarthy; and *Deliverance*, James Dickey.

SE/Spring: Shuffle Along: A Survey of African Americans on Stage: In this half-year course, students will examine the progression of 20th-century representations of African Americans on stage beginning with the controversial minstrel shows of the early 1900s and then moving on to groundbreaking pieces such as the musical *Shuffle Along*, August Wilson's *Fences* and Lorraine Hansberry's *A Raisin in the Sun*. The course's final unit will examine several contemporary African American playwrights including Tarell Alvin McCraney, Antoinette Nwandu and Ga-

brielle Fulton. Most assessments will include quizzes, tests, and essays; however, presentations and projects may also be assigned.

COLLEGE LEVEL COURSES IN LITERATURE, COMPOSITION AND RHETORIC

College Level Studies in English: (half credit/Fall & Spring/both semesters are required) CL studies are designed to challenge and engage the most proficient and passionate WRA English students at the college level. Exploring literature, composition, and rhetoric on deep and profound levels, CL courses are offered in half-year electives, and seniors must enroll in English both semesters in order to graduate. All CL offerings will engage a range of literary expression—from fiction to poetry to nonfiction to text in performance—and assume facility with literary and rhetorical terms. The creativity, research, and synthesis necessary for such exploration will demand that students go well beyond the conventions of standard literary essays. Students will write in a variety of modes, including argumentative, reflective, and persuasive forms. Independence and initiative are essential (and assumed) for success in this course. Students—having demonstrated a serious commitment to and interest in the advanced study of English—wishing to enroll in the CL seminars must have earned the recommendation from their teacher in Angles in Writing and must have earned at least a 6 or better for the year in Angles in Writing. Students who are not initially recommended may petition with the English Department Chair and current teacher to register for the course. Students will register for their specific CL course electives in late spring, after teachers have developed their courses for the upcoming semester.

Possible offerings are listed below:

CL/Fall: Postcolonial Literature and Film: What happens when people fight over land? Violence! Upheaval! Chaos for decades! The oppressed masses battle back against monsters, magicians, cannibals, arsonists, war veterans, capitalists, communists and angry women – then they write about it. We will consider literature from before, during, and after colonization in Africa, America, the Caribbean, and India. How do the colonized struggle for autonomy, justice, and voice in literary history? How do indigenous communities and natives deal with invasion and natural disaster? What are the perspectives of the native and the Empire in terms of an ever-shifting power struggle? In addition to one play, short novels, and poetry, students will watch and analyze the documentary *Keep the River on your Right,* and the 1979 epic *Apocalypse Now*. Student writing is mostly text-based, literary analysis. However, we will also experiment with writing poetry, short fiction, and personal-critical hybrid essays. Texts under consideration: *Things Fall Apart*, Chinua Achebe; *The Tempest*, Shakespeare; *Heart of Darkness*, Joseph Conrad; *Disgrace*, J.M. Coetzee; *Ceremony*, Leslie Marmon Silko.

CL/Fall: The Effects of Memory: We are amalgamations of our remembered experiences. Memory shapes our understanding of who we are and what the world is around us. Memory can be hard to quit. Sometimes, we cradle sweet memories. Other times, we mull over sad, even traumatic memories. Either way, the effects can be crippling. Yet it is often productive to not forget, to learn from what has happened. To complicate matters, memory is not infallible. If anything, it is woefully marred. This course examines the effects of memory. We will read fictional characters that process private memory and non-fictional voices that shape public memory. In these latter instances, we will ask who is remembering, and why. Zadie Smith borrows from Shakespeare in her epigraph to *White Teeth*: "What's past is prologue." Let's decide if we agree with her. Texts include "Imaginary Homelands," Rushdie; *Beloved*, Morrison; *We Were Eight Years in Power*, Coates; *The Sense of an Ending*, Barnes; "My Father's Brain," Franzen; *A Room of One's Own*, Woolf; *The Hours*, Cunningham; "Brokeback Mountain," Proulx; *The Crucifixation of Matthew Shepard*, Thernstrom. Films include *Eternal Sunshine of the Spotless Mind*, Gondry and *Brokeback Mountain*, Lee.

CL/Fall: Aesthetics and Ethics of Encounter: "Although literature is one thing and morality a quite different one," Jean-Paul Sartre asserts in "Why Write?", "at the heart of the aesthetic imperative we discern the moral imperative." Sartre understands that one writes with the intent of communicating and collaborating with a reader—a perfect union of production and consumption that creates meaning. Reading and writing are then neither purely personal nor political acts; instead, we locate these related actions in a third space: the social. This seminar will explore the social role of reading and writing through studying the aesthetics and ethics of a wide range of texts. These pursuits and considerations are as classical as Aristotle's Poetics, and we'll examine work that is urgent and

timely as well as canonical. We'll continuously ask essential questions to revise our understandings of texts and the processes that allow us to construct meanings. This course assumes that reading and writing (and seeing and thinking) have the capacity to build connections between people, regardless of background, or at least analyze the differences that remain. Most importantly we'll ask how we live, speak, and construct conceptions of the self and others in a way that is peaceable, pragmatic, and (dare I say it) pleasurable. Texts under consideration: *Literary Theory: A Very Short Introduction*, Culler; *Poetics*, Aristotle; *Feminism Is for Everybody*, bell hooks; *Sister Outsider*, Audre Lorde; *Autobiography of Red*, Anne Carson; *Fun Home*, Alison Bechdel; *Giovanni's Room*, James Baldwin; *Choir Boy*, Tarrell Alvin McCraney; *Orlando*, Virginia Woolf; *How to Survive a Summer*, Nick White.

CL/Spring: Argument and the American Self: The mantra that "Everything is an Argument" allows scholars to uncover the identities and agendas of a wide variety of American writers from the 20th and 21st centuries. Students examine all types of imaginative and nonfiction literature, including, but not limited to: editorials, news articles, film, blogs, essays, letters, speeches, plays, memoirs and autobiographies. We will discuss audience appeal, argument, purpose, and effectiveness of language strategies. The course allows students the option of taking the AP Language and Composition exam in May. In-class writes on which students evaluate style and effectiveness of language are based on personal writing from the last three centuries and these exercises also specifically prepare students for the May AP. Writing creatively and argumentatively are a means to access secrets locked away in America's checkered past. Barbara Ehrenreich goads the proletariat into class uprising in *Nickel and Dimed*. Students will wonder, how successful are her rally cries? Tobias Wolff's upbringing under a tyrannical step father in *This Boy's Life* contrasts with Lucy Grealy's image obsession as she undergoes thirty-nine surgeries to fix a facial deformity in *Autobiography of the Face*. Analysis of 1970s American film dialogue helps us draw comparisons between the political and the personal when we compare *Jaws* to Henrik Ibsen's *Enemy of the People*. Students seek to analyze film scripts and make their own argumentative, multimedia presentation about a current issue. What is each author really trying to do and to what extent does each accomplish his or her goal? How does identity intersect with argument in personal narrative?

CL/Spring: America: A Matter of Class? America is the land of opportunity. If you can dream big and work hard, it'll all there for the taking. Really? This class examines the "pull yourself up from the bootstraps narrative" to consider to what extent America really is the land of opportunity. We'll look at narratives of the filthy rich and the dirt poor, and we'll think about the middle classes in between. How fixed are these divisions of social class? Is there any chance of upward mobility? Or are the "haves" and "have nots" socially determined? Alongside these questions, we will think about high- and low-brow culture. Is the Metropolitan Opera more tasteful than the rap stylings of Jay Z? Let's discuss. Texts include: "Art in The Age of Mechanical Reproduction," Benjamin; *Evicted: Poverty and Profit in the American City*, Desmond; *Hillbilly Elegy*, Vance; *Bastard out of Carolina*, Allison; *The Tortilla Curtain*, Boyle. Films include: *Winter's Bone*, Granik; *I, Tonya*, Gillespie.

CL/Spring: On the Margins: Queer Literature and Theory: Queer is by definition whatever is at odds with the normal, the legitimate, the dominant. There is nothing in particular to which it necessarily refers. It is an identity without an essence. 'Queer' then, demarcates not a positivity but a positionality vis-à-vis the normative.—David Halperin, in *Saint Foucault: Towards a Gay Hagiography*. We are often asked to define aspects of ourselves according to limited terms; often, the boxes don't fit, and the labels won't stick. In a world that privileges and perpetuates limiting (and potentially oppressive) binaries that enforce a "regime of the normal," queer theory seeks to dismantle the oppressive notions of stable identities, rigid essences, and stifling categories, especially relating to gender and sexuality. Queer theory acknowledges, embraces, and points out instability in human experience and is more concerned with what a subject (person) "does" than what a subject "is." Performance, then, trumps essence. We'll read shorter works by the major theorists associated with this camp—Foucault, Butler, Sedgwick, and more. We'll also explore texts that invite "queer" readings that challenge the ideas of gender norms and heteronormativity. We'll constantly be asking how to define a slippery term like "queer" and ask what the implications—textual, sexual, linguistic, political, social—may be for such a positionality.

CREATIVE WRITING ELECTIVES

Creative Writing: Fiction and Playwriting: (half credit/Fall) This course is a half-year introductory creative writing

class. Students produce, experiment, and react to a range of creative forms as a means of developing different imaginative approaches to experience. The emphasis will be on generating raw material specific to short stories and playwriting, on getting familiar with some of the essential strategies for reading and discussing the writing of others, and on understanding and recognizing the techniques and tools of effective writing and editing. To ground our study, students will be expected to read 1-2 full-length novel(s) and/or collection(s) of short stories (selections change yearly). For the final, students are required to submit for publication a polished work of any genre. Though open to sophomores through seniors, any interested rising sophomore wishing to enroll must have a conversation with the instructor in advance of course registration.

Creative Writing: Nonfiction and Poetry: (half credit/Spring) In this class, students immerse themselves in the writing life, focusing on poetry and creative nonfiction. With the notion that good writers are great readers, students read a wide selection of primarily contemporary and primarily American poets and nonfiction writers. Students will learn to read and view literature as writers with a focus on understanding what makes a poem or a piece of nonfiction "work" as a successful, compelling piece of writing. This course employs the "workshop method" in which students will edit and discuss communally each other's creative work in a professional, constructive manner. Additionally, students will be engaged in an intensive revision process -- taking risks as they seek to refine their own points of view as writers and their own particular (and, perhaps, peculiar) voices as artists. The culmination of the course is a portfolio of revised work representative of the best student writing. Though open to sophomores through seniors, any interested rising sophomore wishing to enroll must have a conversation with the instructor in advance of course registration.

FINE & PERFORMING ARTS

VISUAL ARTS

The aim of the studio art courses is to encourage all students to develop their creative aptitude and to heighten their sensitivity to the visual world. By solving problems dealing with line, form, color and space, students are actively involved in the process of seeing. By exploring varied possibilities of material and technique as means of expression, students are challenged in their inventive ability. Examples from art history and contemporary issues are used to help students relate their studio efforts to the basic human concerns that all art addresses.

Foundational Art: This course includes both two-dimensional and three-dimensional art. Students get involved with drawing, color, painting, relief printing, two-dimensional design and typography. Plaster, clay, pottery, wood fabricating, plastics, sheet metal, 3D CAD design and prototyping are introduced for student investigations with form, shape, volume and three-dimensional structure. Full credit open to freshmen only.

Foundational Art: (half credit/Fall) This course includes both two-dimensional and three-dimensional art. Students get involved with drawing, color, painting, relief printing, two-dimensional design and typography. Plaster, clay, pottery, wood fabricating, plastics, sheet metal, 3D CAD design and prototyping are introduced for student investigations with form, shape, volume and three-dimensional structure. Half credit is not open to freshmen.

Environmental Art: (half credit/Fall/Spring) Any student who is willing and interested in exploring the natural world to create unique pieces of art should take this class. Students will be outdoors using materials such as: rocks, sticks, leaves, pebbles, mud, ice and snow to design, build and construct different art forms and installations. Experimentation and group work will be emphasized along with discussions and sketchbook entries. This class is globally relevant because students are learning how to appreciate the natural world, how to use organic materials to create art and it is a sustainable class. This will be a class you won't want to miss! Prerequisite: Art I.

Art 2D: (half credit/Fall/Spring) In this course students build on what they learned in Art I. They develop more in-depth drawing, painting, printmaking and design skills in the two-dimensional area. Mold making, stone and wood carving, steel fabricating and clay throwing skills are introduced while students devote extended periods of time to three-dimensional areas of their choice. Prerequisite: Art I, instructor's permission, and Machine Permission Form required. Offered both semesters.

Photography: (half credit/Fall) The photography course includes camera controls using DSLR cameras, studio lighting and special effects/applications. Students use Adobe Lightroom for post-processing and will create both print and digital portfolios. Originality, concept development, design qualities and craftsmanship are emphasized. Prerequisite: Art I, and permission of the instructor.

Ceramics Handbuilding I: (half credit/Fall) This class focuses on a variety of fundamental skills and techniques for constructing objects out of clay by using your hands and various tools, as well as exploring different types of surface possibilities. Student will experience direct hands-on learning, while working together to give peer feedback throughout the creative process. Along the way students will be exposed to the history of the processes being used in the class. This class is perfect for people who are interested in the three-dimensional possibilities that clay presents, and will leave the class with a new found knowledge and appreciation for the medium. Prerequisite: Art I.

Ceramics Handbuilding II: (half credit/Spring) In this class students will explore the next level of handbuilding. We will explore more complex forms and surfaces expanding on what we have learned in Handbuilding I. Students will engage in group discussions about the conceptual ideas behind their work, and explore how to create objects that express those ideas. Prerequisite: Ceramics Handbuilding I.

Ceramics Wheel Throwing I: (half credit/Fall) In this class students will explore the fundamental skills needed for creating objects using a potter's wheel. We will focus on the techniques used in the process for creating functional vessels. Students will work closely with each other to share feedback about the various objects that are created. Students will explore different types of surfaces and glaze applications used on functional wares. Student will leave this class with a lifelong skill, as well as objects they have created and will be able to use. Prerequisite: Art I.

Ceramics Wheel Throwing II: (half credit/Spring) This class is an expansion on Wheel Throwing I. Students will explore more complex and detailed forms, as well as more advanced types of vessels. Using what you have learned in Wheel Throwing I and building upon it we will open up new avenues for creating functional wares and expand upon those techniques. Prerequisite: Ceramics Wheel Throwing I.

DANCE

Dance: This course is for students who have no, minimal or intermediate dance experience. Dance is a performance art that incorporates mind and body. It takes discipline, dedication and hard work. The main focus of the course will be technique, which gives students a strong foundation for dance. Students will be given the opportunity to work on their technique in the areas of ballet, modern, jazz and hip hop. There will also be opportunities to experience other forms of dance such as tap and contemporary. While studying technique, the learning, understanding and practice of dance vocabulary is stressed. Students are required to participate in two performances, which are in the end of the first and second semester. Over the course of the year, students will study other areas of educational dance such as kinesiology, history, composition and how to analyze/critique.

Honors Dance: Students must audition prior to enrolling in this course, which is a full-year course. Honors Dance is for students with substantial dance experience, which includes strong technical ability and training in the areas of ballet, modern and jazz. Dance is a performing art that incorporates both mind and body. It takes discipline, dedication, and hard work. The main focus of the course will be technique, which gives students a strong foundation for dance. Students will be given the opportunity to work on their technique in the areas of ballet, modern, jazz and hip hop. There will also be opportunities to experience other forms of dance such as pointe, tap and contemporary. While studying technique, the learning, understanding and practice of dance vocabulary is stressed. Students are required to participate in the two performances, which are in the end of the first and second semester. Over the course of the year, students will study other areas of educational dance such as kinesiology, history, composition and how to analyze/critique.

MUSIC

Music students find ample opportunity for the study and performance of music at all levels at Western Reserve Academy. Courses are offered in choir, string orchestra, symphonic winds and music theory. Students may elect to take our performance courses — choir, string orchestra and symphonic winds — repeatedly for credit and are strongly encouraged to do so.

Choir: The Academy Choir is WRA's traditional mixed chorus and is open to all students regardless of level of experience. While emphasis is placed on developing vocal skills and independent music reading, the primary focus of this group is performance. The choir performs music of many style periods and genres and is particularly proud of its history of multicultural works. Performance opportunities include a mid-winter Madrigal Feaste, Vespers, a major work with chamber orchestra, singing at numerous WRA events and occasional off-campus opportunities. Students seeking a more selective opportunity may also audition for Chamber Choir and/or unReserved, our a capella group.

String Orchestra: The Academy String Orchestra brings together students who play violin, viola, cello and bass. The ensemble primarily plays classical repertoire for string orchestra, occasionally combining with members of Symphonic Winds to play music written for full orchestra. String players will also have the opportunity to play chamber music and partner with The Academy Choir.

Symphonic Winds: The Reserve Symphonic Winds is WRA's ensemble for students who play brass, woodwinds or percussion instruments. This group plays standard concert band repertoire as well as occasionally working in jazz or contemporary music. Band members will also have the opportunity to participate in small ensembles and pep band. WRA has a small cadre of instruments for students who may not have their own. While most members have prior experience, it's never too late to learn!

CL Music Theory: This course is intended to help students master the tools necessary for understanding the building blocks of music; they will gain fundamental understanding in musical notation, rhythm and meter, scales and chords. Some prior music experience (playing an instrument or singing) is helpful; students will gain expertise in active listening and do some composing as well as focusing on building aural skills. During the second half of the year, the focus will be on extensive work in harmonic analysis and writing music using the rules of the Common Practice Period.

Studio Music: (half credit/Fall/Spring) Open to serious musicians looking to develop their skills and explore performance in a sophisticated way. Students will work on repertoire illustrative of developing excellence in their particular instrument/voice. Students must be able to practice independently and will be expected to demonstrate exemplary progress towards their targeted goals through performance. A final program/recital to showcase progress will be expected during each semester of participation. Prerequisite: Permission of instructor, demonstrated expertise via audition or participation in WRA's ensembles.

THEATER

Acting for the Stage: This course uses both improvisational work and scene study to teach the student-actors how to effectively prepare for and perform a theatrical role. It introduces the basic idea of acting being grounded in utilizing an individual's inner and outer resources. Coursework will focus on the same characterization development as explored in Stanislavski's method of physical action. The course is also grounded in textual analysis and the development of certain physical techniques to create a character.

Stagecraft: (half credit/Fall/Spring) This course blends theory with practice regarding the technical aspects of live events, and provides an opportunity to learn skills in carpentry, painting, lighting, sound, shop safety and design techniques. Students will explore the similarities and differences of mounting and enhancing performances of theatre, dance and music, and then experience these distinctions first hand as they help prepare for events in the Knight Fine Arts Center.

TECHNOLOGY ARTS

Engineering and Fabrication: (half credit/Fall/Spring) This course builds upon the principles and applications of engineering and fabrication. It is an immersive hands-on class designed around rapid prototyping and fabrication machinery. The course focuses on, but is not limited to computer aided design, computer controlled cutting, 3D printing, molding and casting, electronics production and design, CNC milling, water jet cutting, robotics, microcontrollers and welding. Each student will complete a series of projects illustrating their competence in each process.

Graphic Design and Illustration: (half credit/Fall) This course focuses on graphic design and designing innovative digital media using Adobe Photoshop, Illustrator and InDesign. Students will engage in a peer based interactive design curriculum that will focus on the skills essential to graphic design. The course will split time working on projects in Photoshop, Illustrator and InDesign and then applying those designs to the machines in the Wang Innovation Center. Photoshop is the industry leader in digital photo manipulation. Illustrator is the industry leader in vector based graphic illustration. InDesign is desktop publishing software used to create professional posters, brochures, magazines, newspapers and books. Students will be prepared to take the Adobe certification exam at the completion of the course.

3D Printing and Design: (half credit/Spring) This course introduces students to the principles of designing and printing 3D models using additive manufacturing. The course provides an in-depth understanding of the tech-

nical and advanced design principles that make up additive manufacturing while exploring the fundamental materials, technologies and applications of 3D printing and scanning. The course will also spend time learning design principles and considerations for 3D printing. The class will allow students to print on fused deposition, stereolithography and selective laser sintering printers. They will also assemble their own 3D printer. Students will be prepared to take the industry additive manufacturing certification exam.

E-textiles and Fabrics: (half credit/Fall) This interdisciplinary course exposes students to the world of fashion through sewing, embroidery, weaving, textiles, wearables and e-textiles. Using the resources in the Wang Innovation Center, students also will explore embedded electronics with textiles and fabrics to create interactive wearables and e-textiles. The course will spend time learning about fashion and fabrications role. Students will learn the fundamentals of a sewing machine, fabric types, seams, stitches, looms, electronics, microprocessors and programming as they complete projects demonstrating their understanding of each. Offered in the 2020-2021 school year.

Artificial Intelligence and Machine Learning: (half credit/Spring) This course explores the principles and underpinnings of artificial intelligence and automated manufacturing. The course will introduce students to the basics of artificial intelligence. Students will cover machine learning, neural networks, visual recognition, speech recognition and processing and object manipulation. They will gain exposure to Python programming languages. Students will also learn how to program an industrial robot and its integrated vision. The course will spend considerable time on learning the fundamentals of robotic programming and operations. Students will be prepared to earn their industry recognized robotic operations and programming certifications after the completion of the course. Offered in the 2020-2021 school year.

Idea to Product: How to Start a Business: (half credit/Fall or Spring to be determined) This course uses the entrepreneurship process to teach and reinforce a wide range of academic skills. In small groups or solely, students will identify their own innovative product idea and then follow all the steps to product launch using the resources in the Wang Innovation Center. They will develop the idea, design the product, and finally market it. The class will focus on an introduction to innovation and entrepreneurship, securing your intellectual property, patents, product research, collaborative brainstorming, engineering, 3D printing, packaging, graphic design, product modeling, marketing and presentation. A product will be produced by each student. Guest speakers and visits to local businesses will connect the students to other entrepreneurs and innovators in Northeast Ohio.

MODERN & CLASSICAL LANGUAGES

FRENCH

French I: This is the foundational course in French. It introduces students to grammar essentials and basic vocabulary with conversation, oral composition, reading and some writing. Emphasis is placed upon comprehension, pronunciation and self-expression. It also provides an introduction to Francophone culture.

French II: This course is the continuation of the foundational course. It introduces students to complex grammatical structures and focuses on strengthening communication skills through written compositions, readings, oral reports and discussions. The cultures of Europe, Africa and the Caribbean will be explored. Prerequisite: WRA French I/placement test.

French III: The focus of the third-level course is the development of proficient expression in the language and the review of essential grammar structures. This goal is achieved through the reading of French and Francophone literature and the use of authentic materials from electronic and audio-visual resources. Prerequisite: WRA French II/placement test.

Honors French III: This course concentrates on the development of reading, writing, speaking and listening skills. Through class discussion, oral presentations, and written compositions, students will learn how to interpret the materials critically and continue to improve their oral and written expression in French. While fluency is of utmost importance, students are expected to be precise in their use of grammar and vocabulary. The development of vocabulary and grammatical sophistication will also be cornerstones of the course. The class will be taught entirely in French. Prerequisite: WRA French II and departmental permission/placement test.

Topics in French Language and Culture I: (half credit/Fall) and **Topics in French Language and Culture II:** (half credit/Spring) This course explores how current global challenges, and social, technological and environmental issues are treated and experienced in the French-speaking world. Authentic materials include essays, short stories, novels, radio programs, films, podcasts, newspapers and magazine articles. Students collaborate on research and evaluation of the sources, form and express opinions, discuss these issues with their peers and make presentations to the community. May be taken for half credit in the fall or spring. Prerequisite: French III/placement test.

CL French Language and Culture: This course explores how current global challenges, and social, technological, and environmental issues are treated and experienced in the French-speaking world. Authentic materials include essays, short stories, novels, radio programs, films, podcasts, newspapers and magazine articles. Students collaborate on research and evaluation of the sources, form and express opinions, discuss these issues with their peers and make presentations to the community. Prerequisite: WRA Honors French III/placement test and departmental permission.

LATIN

Latin I and Latin II are spent in mastering the vocabulary, forms and grammatical structure of Latin, and in reading sentences and extended passages of graded difficulty. Toward the second half of Latin II, students make the transition from a predominantly grammar-centered class to a predominately reading-centered class, and students of all sections finish their second year in reading genuine Latin authors, usually either Caesar or Vergil. The reading of Latin authors of different genres continues into Latin III, in which students move beyond simple translation to the understanding and appreciation of the several poems, orations and histories as works of literature set in specific historical contexts. After completing Latin II, students move on to Latin III/Honors Latin III. Students receiving instructor permission may enroll in CL Latin Literature.

Latin I: The fundamentals of vocabulary, forms and syntax are stressed to promote accurate reading compre-

hension and translation.

Latin II: The course begins with a review of the material covered in Latin I. The remaining vocabulary, grammar and syntax required to read Latin authors are introduced during the remainder of the first semester. The second semester is spent reading extended passages of Latin. By the end of the year students will begin reading work by a Latin author. Prerequisite: WRA Latin I/placement test.

Latin III: Students read a selection of authors from the Late Republic and Early Empire and make the transition from simple translation to the close reading of the texts as works of literature set in specific historical contexts. Prerequisite: WRA Latin II/placement test.

Honors Latin III: Students in Honors Latin III will spend the first semester reading and analyzing a diverse array of selections from the canon of Latin literature, prose and verse alike. Authors will include Caesar, Cicero, Pliny the Younger, Tacitus, and Apuleius, among the prose authors, and Catullus, Horace, Vergil, Ovid, and Martial, among the poets. The second semester will be devoted to a close and careful study of one author in particular, with the intention of achieving a strong familiarity with the work of that author and its place in the history of Western literature generally. This course is intended for students who hope to move on to CL Latin Literature. Prerequisite: cumulative average of 6 or above in WRA Latin II and/or teacher recommendation.

Topics in Latin Literature I: (half credit/Fall) and **Topics in Latin Literature II:** (half credit/Spring) This course is designed for those students who wish to pursue the study of Latin beyond a third year, but who are disinclined to commit themselves to the rigors of CL Latin Literature. Students in this course will continue their exploration of Latin texts, with emphasis given to the exploration of the historical and cultural backgrounds to those texts. As they engage with Caesar's commentaries of the Gallic and civil wars, for instance, they will supplement those texts with more contemporary accounts of the fall of the Roman Republic. May be taken for half credit in the fall or spring. Prerequisite: Latin III.

CL Latin Literature: This course will focus on a particular genre, e.g., history, philosophy, epic poetry. Representations of that genre will be explored in great depth. Prerequisite: 6.0 or higher in Latin III or teacher permission.

MANDARIN CHINESE

Mandarin Chinese I: The first year of Chinese study introduces Hanyu Pinyin and basic characters as well as simple grammar structures. It helps learners build solid communicative skills as they discuss a wide variety of topics. Graded activities on essential topics such as greetings, dates and times, family, food and sports are quickly introduced. Students will study Hanyu Pinyin, the internationally recognized system of phonetic spelling for Chinese, above Chinese character texts, as an aid to speaking and pronunciation. Films, songs, Chinese cuisines and culture activities are part of the curriculum to foster the Chinese culture awareness.

Mandarin Chinese II: This course is a continuation of Mandarin Chinese I designed for students who have a command of the material in the first-year textbook Integrated Chinese (Level One). The course introduces 450 more characters and contains topics such as family life, social issues, and aspects of Chinese culture. It expands learners' understanding of Chinese grammar by focusing on important linguistic structures. It introduces the more formal written-style expressions, which are used in news broadcasts and speeches. Films, songs, Chinese cuisines and culture activities are part of the curriculum to foster the Chinese culture awareness. Prerequisite: WRA Mandarin Chinese I/placement test.

Mandarin Chinese III: This course continues the development of the skills and focuses on reading, writing, speaking and listening, with special emphasis on effective oral communication with native speakers of the language. Video clips, news and authentic materials created for native Chinese speakers will be frequently used in class. Chinese art, history, films, music and culture will also be discussed. Prerequisite: Mandarin Chinese II/placement test.

Topics in Chinese Language and Culture I: (half credit/Fall) and **Topics in Chinese Language and Culture II:** (half credit/Spring) The emphasis of this course is on communicative skills and cultural exposure. Formal expressions and structures will be introduced through class discussions, oral responses, presentations, and email responses as well as short story writing. Topics studied include college life, Chinese holidays, geographic, relationships and

performance art. May be taken for half credit in the fall or spring. Prerequisite: Mandarin Chinese III.

CL Mandarin Chinese: The emphasis of this course is on communicative skills and cultural exposure. Formal expressions and structures will be introduced through class discussions, oral responses, presentations, and email responses as well as short story writing. Topics studied include college life, Chinese holidays, geographic, relationships and performance art. Prerequisite: Mandarin Chinese III/placement test and department recommendation.

SPANISH

Spanish I: This is the foundational course in Spanish. It introduces students to grammar essentials and basic vocabulary with conversation, oral composition, reading and some writing. Emphasis is placed upon comprehension, pronunciation and self-expression.

Spanish II: This course is the continuation of the foundational course. It introduces students to complex grammatical structures and focuses on strengthening communication skills through writing, readings, and dialogues. Prerequisite: WRA Spanish I/placement test.

Honors Spanish II: This course is the continuation of the introductory course, which builds on the grammatical structures and vocabulary previously learned and completes the presentation of all rudimentary elements of the Spanish language. The focus in the course is on strengthening communication skills through writing, readings in literature, and dialogues. The cultures of the Spanish speaking world will also be explored. As an honors course, it is differentiated from the standard course in the pace, breadth and selection of materials used. This course is taught entirely in Spanish. Prerequisite: WRA Spanish I/placement test and department approval.

Spanish III: This course involves an intensive overview of prior grammar as well as introduction of the remaining tenses and compound structures. The communication skills are further refined through short essays, oral presentations, and readings of well-known Hispanic authors. Prerequisite: WRA Spanish II/placement test.

Honors Spanish III: This course concentrates on the development of reading, writing, speaking and listening skills. Students read literature in Spanish. Through class discussion, oral presentations, and written compositions, students will learn how to interpret the materials critically and continue to improve their oral and written expression in Spanish. While fluency is of utmost importance, students are expected to be precise in their use of grammar and vocabulary. The development of vocabulary and grammatical sophistication will also be cornerstones of the course. This course is taught entirely in Spanish. Prerequisite: WRA Honors Spanish II/placement test and departmental permission.

Topics in Spanish Language and Culture I: (half credit/Fall) and **Topics in Spanish Language and Culture II** (half credit/Spring): This course examines a wide variety of geographic, cultural and historical settings, as well as current topics and important figures in Latin America and Spain. Students will explore the roles of men, women and children in different societies, immigration, human rights and issues of social justice. Students will also learn grammar in context, and complete writing activities related to their daily lives and the world around them. To meet the course objectives, the class will draw upon Spanish-language movies and videos, short stories, novels and many other sources. May be taken for half credit in the fall or spring. Prerequisite for Topics I and II: Spanish III or Honors Spanish III.

CL Spanish - Spain: This course will focus on the culture and civilization of Spain. History, politics, literature, art, and social structures will be explored to help understand the contemporary world in Spain. Students in this course will discover treasured works of Spanish prose, poetry and drama. Critical analysis of texts will follow the historical and sociopolitical contexts that formed the backdrop of each author. Students will be required to take turns leading class discussions and conduct research on authors. Students will be required to write regular compositions, give oral presentations and lead class discussion. This course is taught entirely in Spanish. Prerequisite: Honors Spanish III and departmental permission. This course will alternate with CL Spanish Latin America and will be taught in even numbered graduation years (2020, 2022, etc.)

CL Spanish - Latin America: This course will focus on the culture and civilization of Latin America. History,

politics, literature, art, and social structures will be explored to help understand the contemporary world in Latin America. Students in this course will discover treasured works of Spanish prose, poetry and drama. Critical analysis of texts will follow the historical and sociopolitical contexts that formed the backdrop of each author. Students will be required to take turns leading class discussions and conduct research on authors. Students will be required to write regular compositions, give oral presentations and lead class discussion. This course is taught entirely in Spanish. Prerequisite: Honors Spanish III and departmental permission. This course will alternate with CL Spanish Spain and will be taught in odd numbered graduation years (2021, 2023 etc.)

ELECTIVES IN CLASSICAL AND MODERN LANGUAGES:

(Courses do not count towards language graduation requirements)

Ancient Greek: (full credit) This course is designed for those Latin students who wish to broaden their Classical horizons by engaging in an intensive study of ancient Greek. Its pace is akin to that of any intermediate Latin course, with the ultimate objective of achieving a comprehensive and thorough understanding of the grammatical rudiments and vocabulary of Attic Greek. In the final quarter of the academic year, students will read short works or selections from Herodotus, Xenophon, Aristophanes, Plato, et al. Prerequisite: departmental approval

Introduction to Ancient Greek: (half credit/Fall) This course is designed for students with an interest in learning the ancient Greek language. Emphasis will be given to achieving an introductory understanding of the language, together with the civilization and culture in which it was spoken. Students in this course need not have studied Latin prior to enrollment.

Introduction to German: (half credit/Fall or full credit) This course is designed for students with an interest in learning German. It will introduce students to grammar essentials, conversation practice and oral production, as well as an introduction to writing and reading practice in German. Students have the choice of many topics from culture and civilization.

HISTORY

Introductory History Seminar: Exploring Global Foundations: This course, required for freshmen, provides students with an introduction to topics relating to the origins and developments of today's global societies while building the essential seminar skills of reading critically, asking insightful questions, presenting and speaking gracefully and writing effectively. The histories of great civilizations will be viewed through various lenses. Our approach will encourage students to understand seminal texts - religious, philosophical, political, and literary - as an expression of universal human aspirations and cultural development. The seminar format will encourage students to find their voices and express their views on the essential questions the course will pursue. Furthermore, they will work collaboratively to discover a better understanding of the foundations of the past that shape our world today as well as the responsibilities of global citizenship.

Intermediate History Seminar: Building the Modern World: This course, required of sophomores, begins its historical focus circa 1750, moves through the 19th and 20th centuries, and finally, ties into current events today. It seeks to develop students' abilities to think and question analytically through the study of the crafting of modernity in religious systems, developing political structures, artistic expressions, and emerging economies, industry and technologies. Students focus on political, economic and social concepts in association with a selective survey of world cultures and also apply a comparative lens. The teaching of skills will include the analysis of both primary and secondary sources, to acquiring geographical knowledge and learning research methodology. Students will conduct a major research project culminating in a research paper, teaching session, and participation in a poster conference featuring their research topics.

United States History: This course, intended for juniors but open to upperclassmen, employs the inquiry method and a thematic approach to studying the history of the United States. Each marking period students will explore a different theme that has influenced the development of our nation's history across time periods. Possible themes include migration, religion, gender/race, personal liberty vs. civic responsibility, and industry. The investigation into each theme will be organized around the asking of a number of central questions that will help guide students through their study. Students will examine essential moments and/or crucial problems within the American experience from colonial times through to the current era. In addition, the U.S. History course will seek to have students better understand the global forces and interactions that have affected our nation's people, influenced its institutions, and shaped its ideals. Emphasis will be placed on gaining a better understanding of the notion of citizenship and the incumbent responsibilities of a citizen within a democratic republic.

CL United States History: This course, intended for juniors but open to seniors, requires departmental recommendation. Unlike the regular United States History course, this course is designed to provide a chronological survey of the history of the country, starting from the early colonial settlement of British North America through to the end of the 20th century. The broad aims of this course are twofold: first, it aims to introduce students to some of the major themes, events, and people that together comprise the history of the United States of America; second, it is designed to get students to begin to think as historians do. The aim here is to have students start to ask themselves some meaningful questions about the society in which they presently find themselves and thereby more fully appreciate how it came to be as they now see it. In addition to trying to gain a better working knowledge of key historical events and a greater familiarity with individuals and groups who have had a significant impact on the nation's development, emphasis will be placed on analyzing primary source documents and understanding the nature of historical causation. A major independent research project will take place in the spring semester and will count as the final exam for the course. Prerequisite: 6 or higher in Intermediate History Seminar and departmental permission.

Introduction to Arabic and Arab Cultures: (half credit/Fall) Introduction to Arabic and Arab Culture, is an exposure to the Arabic language similar to a first semester university Elementary I course. Using the first text of the popular Al-Kitaab Arabic language program entitled Alif Baa: Introduction to Arabic Letters and Sounds students learn the alphabet, both by writing Arabic script and correct pronunciation. Emphasis is placed on the development of basic listening, speaking, reading, and writing skills. Classroom teaching is accompanied with online

drills and exercises in addition to cultural notes. With the introduction of new vocabulary simple conversations and dialogues will be practiced. The second component of the course focuses on the culture of the Middle East through viewing films and popular media, attending a Friday prayer service at a local mosque, tasting the regional cuisine, and listening to popular music artists from Egypt and Lebanon.

Middle East Studies: (half credit/Spring) A survey of Middle East/North African history from the advent of Islam to the present day with particular emphasis on the period since 1900. A comprehensive review of the emergence and expansion of Islam and its impact on the region will be an integral component of the course. Selected topics such as Arab nationalism, the impact of western expansionism and colonialism, and the strategic and economic importance of this region will also be examined. In order to gain an understanding of the varied and rich cultures, complex history, and tensions in this region of the world, current events, art, film and poetry will also be introduced. Students will be assigned secondary and primary source readings in history and current events. They will also select a particular issue related to a Middle Eastern country to explore in depth, which will culminate in a final presentation to the class.

Art History: Raphael to Renoir: (half credit/Fall) This course focuses on the Western Canon established in the early Renaissance and follows the development of various art mediums through the Impressionist Masters. The arrival of the artist as personage/celebrity will be one of the themes as students examine famous "masters" (both male and female) through the lens of how they worked, their styles, and the way in which they lived and crafted their image as professional artists. The course will seek to look at movements and their masters in depth, studying their lives and the evolution of their catalog of works. Students will have the opportunity to read and study artist sketchbooks and manuscripts and to undertake creative projects. Students will watch documentaries detailing the artistic process and artists' lives, and examine issues such as collection, theft, restoration and art curation. Additionally, guests — such as alumni working in the art world/industry — will be invited to interact with our class in person or digitally.

Art History: Paint, Build, Shoot! (half credit/Spring) This course focuses on art, architecture and photography of the 20th century. Beginning with the post-impressionists, students will explore how the art world explodes with new schools of art (futurism, abstract expressionism, minimalism and pop art). Students will also look at innovations in architectural design from Art Deco to Art Nouveau to the groundbreaking work of Frank Lloyd Wright and Frank Gehry. Finally, students will explore photography as art using the lenses of photographers such as Ansel Adams, Annie Leibovitz, Margaret Bourke-White, Dorothea Lange, Robert Mapplethorpe and Sally Mann. Students will delve into the catalogs, the collections and the writings of these photographic pioneers. Documentaries, museum visits and guest speakers, as well as creative projects and presentations, will form part of the experience of "Paint, Build, Shoot!"

CL Art History: During the first half of the year, this course focuses on the Western Canon established in the early Renaissance and follows the development of various art mediums through to the Impressionist Masters. The arrival of the artist as personage/celebrity will be one of the themes as students examine famous "masters" (both male and female) through the lens of how they worked, their styles, and the way in which they lived and crafted their image as professional artists. The course will seek to look at movements and their masters in depth, studying their lives and the evolution of their catalog of works. Students will have the opportunity to read and study artist sketchbooks and manuscripts (such as Brunelleschi's Treatise on Perspective, Vasari's Lives of Artists, Da Vinci's diaries, Gauguin's Paradise Found, and memoirs and letters by artists such as Claude Monet, Berthe Morisot and Emily Carr). Students will watch documentaries detailing the artistic process and artists' lives, and examine issues such as collection, theft, restoration and art curation. Additionally, guests — such as alumni working in the art world/industry — will be invited to interact with our class in person or digitally. During the second half of the year, the course focuses on art, architecture and photography of the 20th century. Beginning with the post-impressionists, students will explore how the art world explodes with new schools of art (futurism, abstract expressionism, minimalism and pop art). Students will also look at innovations in architectural design from art deco to art nouveau to the groundbreaking work of Frank Lloyd Wright and Frank Gehry. Finally, students will explore photography as art using the lenses of photographers such as Ansel Adams, Annie Leibovitz, Margaret Bourke-White, Dorothea Lange, Robert Mapplethorpe and Sally Mann. Students will delve into the catalogs, the collections and the writings of these photographic pioneers. Documentaries, museum visits and guest speakers will also form part of the experience of this course. CL students will have higher requirements of content mas-

tery and will undertake a research project.

CL Economics: The aim of this course is to provide an advanced introduction to the basic principles of micro and macroeconomics. The course will begin with a general overview of the nature of "economic thinking." It will then relatively quickly transition into an investigation of the basic microeconomic concepts of demand, supply, market equilibrium, market regulation, market failure, the effects of taxation and subsidies, the four basic product markets, and the operation of resource markets. After this, the remainder of the course will be devoted to gaining understanding of the workings of the macroeconomy: GDP, unemployment, inflation, the banking system, the operations of the Federal Reserve System, fiscal and monetary policy, and international exchanges of currency, capital, and goods. Students will also acquire understanding as to how various schools of economic thought have arisen, and competed with one another over time, to explain the driving forces at work within the macroeconomy, guiding it either to stability or erratic behavior. Much of the course will entail gaining a working knowledge of the basic graphic models used to describe and explain all of the aforementioned concepts.

International Relations: (half credit/Fall) This course is an introduction to the field of international relations by examining the most prominent issues in world politics –e.g., international law, cooperation, diplomacy, human rights, war and terrorism. The course aims to introduce students to the basic principles and concepts of political science in general and international relations in particular. This will be done through analyses of various theories, actors, and issues relating to international politics. Utilizing a variety of conceptual and theoretical tools of analysis, we will study current events and the recent history that has shaped how states and other actors interact with each other across national borders. For students who are interested in understanding the causes of war, the underpinnings of international trade or the role of NGOs in fostering (or undermining) international peace, this course is for you!

CL United States Government and Politics: (half credit/Fall) This course examines various concepts and key institutions in the United States government and political system. Students completing the course will understand and be able to critically analyze such concepts. The following topics are covered in depth: constitutional democracy; republicanism; political beliefs and behaviors; political parties, branches of government; interest groups and mass media; institutions of government; branches of government; bureaucracies; courts; public policy; and civil rights and liberties. Emphasis will be put on exploring the rich diversity of American political life, showing available institutional alternatives, and explaining differences in processes and policy outcomes.

Space Race: Fighting Cold War on New Frontier: (half credit/Fall) Open to juniors and seniors interested in exploring the American reaction to the Soviet's launching of Sputnik I in October of 1957 and the historical context of the subsequent establishment of NASA and this agency's development of the Mercury, Gemini, and Apollo space programs designed ultimately to land men on the moon and bring them safely back to earth. The course will entail a close reading of Tom Wolfe's epic piece of New Journalism, The Right Stuff, as well as a detailed study of a more conventional narrative history of the early American space program. The viewing of documentary films will, likewise, be a principal feature of the course. Students will be asked to take a lead role in planning and conducting some of the group discussions centered on the aforementioned source material. Finally, students will complete an independent research project based on a related topic of their own choosing that will serve as the final "exam" for the course.

CL Comparative Politics: (half credit/Spring) This College Level course is an introduction to the study of Comparative Politics. Comparative politics is the study and practice of comparing different political worldviews, units and systems, either in whole or in part. This seminar is designed to provide students with comprehensive knowledge of the political realities in countries around the world in an interactive learning environment. In addition to comparing political processes of two or more states, the comparative political approach helps address other politically relevant questions. These include the formation of modern nation-state, democracy and authoritarianism, political cultures, nationalism and globalization, political violence and social instability, revolutions and so on. For students who are interested in such questions as, why democracies endure, why all revolutions succeed or why countries engage in propaganda, this course is for you!

Vietnam: Humbling a Superpower: (half credit/Spring) Open to juniors and seniors, this course seeks to study

the causes and consequences of the United States' post-World War II involvement in the Vietnamese civil war. Through an exploration of various media—a formal historical monograph, films, contemporary music, art, fiction and primary sources—students will come to appreciate better both the international and domestic politics and cultural impacts of this seminal event in modern American history. Students will be asked to take a lead role in planning and conducting some of the group discussions centered on the aforementioned source material. Finally, students will complete an independent research project based on a related topic of their own choosing that will serve as the final "exam" for the course.

The American Presidency: (half credit/Spring) What does it mean to be considered "the leader of the free world," and what character traits does the holder of said position need to possess? The President of the United States is said to be the "most powerful man" (so far) on Earth. And yet, it is the legislative branch that is created in Article I of the U.S. Constitution; the executive is created in Article II. This course will analyze a number of the most influential presidencies in the history of the office. Emphasis will be placed on the economic, cultural, and social patterns of the respective eras, in an attempt to understand how the power and influence of the presidency has changed throughout the nation's history. The state of Ohio – home to no fewer than eight of America's presidents – will serve as the backdrop for our studies, and may allow us the opportunity to travel as a class to one of the memorial locations.

CL Philosophy: This course will serve as an introduction to philosophy, and students will have the opportunity to read how some of the greatest thinkers throughout history grappled with the most important questions. Professor Andreas Teuber stated about his own introductory philosophy course: "In its aim and format, the course is more an invitation to do philosophy than an introduction. Introductions seek to map out a territory or lay the groundwork for more detailed study. There will be some of that here, but insofar as invitations beckon and introductions point, the course beckons students to the study of philosophy rather than points the way." The aim of this course is the same. Students should view the class as an invitation and opportunity to engage in critical thinking: reading and studying philosophy is not a passive activity. The course will begin by explaining a few fundamentals about logic and critical thinking so that the class has the tools to engage in academic discussions about philosophy. Although students will read articles from many different branches of philosophy, they will spend the bulk of the year studying metaphysics, epistemology and ethics, which will open the door to some of life's most interesting questions. Here are a few examples: 1) What is existence? Does a higher power exist? In what sense, do humans exist outside of themselves? 2) How do we acquire knowledge? How do we know if our beliefs are true? 3) What is the meaning of life? How do we find happiness? 4) How should humans act towards one another? This course will examine how thinkers from Plato to contemporary philosophers have tried to answer these questions. Prerequisite: 5.5 or higher in both United States History and Angles in Writing or 5 or higher in CL United States History.

MATHEMATICS

Math 11 Algebra I: This first-year course is designed for students who would benefit from greater focus on the fundamentals of algebra needed for more rigorous high school mathematics. Topics may include numerical and algebraic operations, linear equations and graphs, exponents and radicals, linear systems, displaying univariate and bivariate data. The focus is to create a solid foundation and to develop good habits in preparing students for future success at WRA. Placement is based on previous coursework, standardized test scores, and/or a WRA placement test. Prerequisite: departmental permission.

Math 21 Geometric and Algebraic Reasoning: This course is designed for students who have successfully completed an algebra course, and demonstrated proficiency on the appropriate placement test. Combining geometry, statistics, probability and spaced-interval practice of algebra, this course draws upon the abstract reasoning and spatial visualization skills necessary for future success. Students develop and apply basic theorems and constructions in geometry, discern details and applications of visual displays for quantitative and categorical data in statistics, and apply basic counting methods of probability. Development of basic algebra will be spiraled into the daily practice and built upon as a final springboard towards the next year's course in mathematics. Prerequisite: Math 11 or departmental permission.

Math 22 Honors Geometric and Algebraic Reasoning: This course is designed for students with a strong background in mathematics. Students have the opportunity to study topics in greater depth, and encounter more challenging problems. In addition to offering more challenging problems, the course is designed to develop students' ability to learn independently, setting the stage for future work at the honors level. A previous course in geometry is helpful, but not required. Prerequisite: departmental permission.

Math 31 Intermediate Algebraic Reasoning: This course allows students to expand their view of algebra while adding depth to connections with geometry, trigonometry, and statistics. Topics include composite and inverse functions, quadratic and radical functions, exponential and logarithmic functions, basic trigonometry, areas of polygons, and volumes of solids. Emphasis will be placed on understanding the behavior and graphs of the various "toolkit" functions. Extensive use of the graphing calculator is expected. Not open to freshmen. Prerequisite: Math 21 or departmental permission.

Math 32 Honors Intermediate Algebraic Reasoning: This course and Math 31 have similar descriptions, though this course demands more from students. They will be expected to synthesize understandings independent of teacher instruction, transfer ideas to new contexts, and prepare more rigorously for class meetings. Collaboration and inquiry during class are especially important. Prerequisite: Math 21/22 and departmental permission

Math 33 Accelerated Algebraic Concepts: This course is designed to meet the needs of students ready to excel in a very challenging high school curriculum. As such, the course is often more problem-centered than topic-centered, where students encounter math in context, enabling them to draw their own conclusions. Students must be capable of critical assessment and the ability to thrive in an atmosphere where they and their classmates drive the discussion each day. Topics may include manipulating, graphing, and modeling with polynomial, rational, exponential, logarithmic, and trigonometric functions, analytic trigonometry, sequences, linear regression and probability. Prerequisite: Math 22 and departmental permission.

Math 41C: Precalculus Intensified: This course is designed for students who have developed a foundation of the algebra skills taught in Math 31. This course provides an in-depth study of elementary functions, with an emphasis on the mathematics of change, in preparation for calculus. As such, students work in new ways with familiar topics, honing the algebraic skills needed for continued study with our familiar families of functions: polynomial, rational, exponential, logarithmic, and trigonometric. Students will extend their study of statistics and probability as well. Building on those understandings gained in previous courses, students will now analyze the data they know how to depict and collect and they will explore margin of error, sampling, and the normal distribution. Prerequisite: Math 31 and departmental permission.

Math 41S: Precalculus and Statistics: This course is designed for students who seek more emphasis in preparation for CL Statistics than for Calculus. Building on understanding gained in previous courses, students will now analyze the data they know how to depict and collect and they will explore margin of error, sampling, and the normal distribution. To round out their study of algebra, this course will also feature essential algebraic skills and understandings with elementary polynomial, rational, exponential, logarithmic, and trigonometric functions. Prerequisite: Math 31 and departmental permission.

Math 42 Honors Precalculus: A rigorous precalculus course designed to prepare students for Honors Calculus. This course examines polynomial and rational functions and their applications, trigonometric functions, exponential and logarithmic functions, conic sections, polar coordinates and complex numbers, and introductory limit theory. Prerequisite: Math 31/32/33 and departmental permission. Not open to freshmen.

Math 43 Accelerated Precalculus: This course examines the elementary functions in depth, with an emphasis on graphing and modeling applications. Particular attention is paid to the trigonometric functions. In addition, a study of conic sections, sequences and series, polar coordinates, parametrics, probability and statistics, vectors, matrices, and limits will round out the precalculus syllabus. In the spring, students will begin their study of differential calculus in preparation for Calculus BC the following fall. Accelerated Precalculus is designed for students who have successfully completed Math 33 and have demonstrated the ability to learn independently at an accelerated pace. Prerequisite: Math 33 and departmental permission.

Calculus: This introductory calculus course provides students with an in-depth treatment of limits, continuity and derivatives, as well as an introduction to integrals. Working with a variety of applications, this course is appropriate for students likely to study business, economics, or social sciences, as well as those preparing to study science or engineering. In both cases, this course is not meant as a substitute for college calculus, but rather to prepare students for more rigorous study of the subject at the university level. Prerequisite: Math 41/42.

CL Calculus AB: This course is intended for students who have successfully completed an honors precalculus course and have demonstrated proficiency with algebraic manipulations including trigonometry. This course will focus on limits, derivatives and integrals. Topics will include a calculus-based analysis of graphs, computation and applications of the derivative (graphing functions and calculating rates of change), computation and application of the integral (Riemann sums and accumulated change), and differential equations. Prerequisite: Math 42 and departmental permission.

CL Calculus BC: Primary topics include a calculus-based analysis of graphs, computation and applications of the derivative (graphing functions and calculating rates of change), and computation and applications of the integral (Riemann sums and accumulated change). Other areas of study include slope fields, differential equations, sequences and series, Taylor series, and the analysis and calculus of parametric, polar and vector functions. Prerequisite: Math 43 and departmental permission.

CL Statistics: This course is comparable to a typical non-calculus based introductory college statistics course. Topics covered include data exploration, sampling and experimentation, probability and simulation, and statistical inference. Technology will be incorporated for simulation and calculation. Prerequisite: Math 41/42/43. Math 42/43 may be taken concurrently.

CL Calculus-based Probability and Statistics: Statistics is the art and science of drawing conclusions from data. Probability is the study of chance behavior, while Calculus provides a methodological basis in both disciplines. This course blends probability theory and mathematical statistics with real-world applications. Students will apply the principles of data analysis, probability models, and inference in a variety of settings; use calculus and other mathematical techniques to develop key results; and communicate statistical and probabilistic reasoning both orally and in writing. Prerequisite: CL Calculus AB or BC and departmental permission

CL Multivariable Calculus: (half credit/Spring) Multivariable Calculus is a course intended for students who have successfully completed CL Calculus BC. While designed in part to maintain skills developed in CL Calculus BC, CL Multivariable Calculus also extends the calculus to higher dimensions and further explores connections to

the sciences, in particular physics. The course deals primarily with the techniques and applications of multivariable differentiation and integration, differential equations, physics applications and problems in three-space. Prerequisite: CL Calculus BC and departmental permission

CL Linear Algebra: (half credit/Fall) Linear algebra is a branch of mathematics that studies vectors. Linear algebra has a concrete representation in analytic geometry and is central to modern mathematics and its applications. It has extensive applications in engineering, computer science, physics, the natural sciences and the social science. Topics include systems of linear equations, matrix theory, linear transformations, basis and eigenvectors, and vector spaces. Prerequisite: Math 42/43 and departmental permission.

COMPUTER SCIENCE

Web Development: (half credit/Fall) This course will focus on web development as a context for learning about a range of topics in computer science, such as data representation, computational thinking, coding and debugging, algorithms and more. Students will develop critical thinking and basic programming skills. Upon completion of this course, students will be able to build websites and web applications from scratch using HTML, CSS, and JavaScript.

Computer Programming: Python: (half credit/Spring) This course will focus on the fundamentals of computer programming in Python and will build on previous experience in computer science. Through design study, testing, and implementation, students will develop problem-solving skills in a project-based environment.

CL Computer Science: This course emphasizes object-oriented programming methodology, with a concentration on problem solving and algorithm development. It also includes the study of data structures, design, standard algorithms, program analysis and abstraction. This course is open to students who have completed Computer Science II or who have previous programming experience and receive the permission of the instructor.

SCIENCE

Biology: This is a life science course designed for underclassmen, the first science course most students will take upon entering Western Reserve Academy. This course introduces students to the study of living things at many different levels of organization. Overriding biological themes include continuity and change over time, the complementary nature of structure and function, and energy relationships. Major topics included are biochemistry, cellular structure and function, metabolism, genetics, evolution and ecology. Additionally, topics are connected to current events throughout the year. Classroom activities combine learning and doing; including laboratory exercises and investigations, data collection and analysis, laboratory report writing, and varied hands-on activities. Upon completion of this course, students should be able to understand and confidently use the vocabulary and methodology of modern life science in their everyday life.

Biotechnology: (half credit/Fall/Spring) This course covers basic methods in biotechnology. Emphasis is placed on techniques commonly employed in most research institutions including prokaryotic and eukaryotic cell culture, nucleic acid technologies, and protein purification along with the use and care of common laboratory instruments. Upon completion, students should have an understanding of the theory, practice, and application of these techniques. Students will demonstrate competency in these objectives by performing experiments in the laboratory, by performing well on laboratory practicals, and by participation in class discussions. Prerequisite: Biology.

Cancer Immunology I: This course covers basic methods in biotechnology during the first semester. Emphasis is placed on techniques commonly employed in most research institutions including prokaryotic and eukaryotic cell culture, nucleic acid technologies, and protein purification along with the use and care of common laboratory instruments. During the second semester, students will apply these skills to a research project involving cancer immunology. Upon completion, students should have an understanding of the theory, practice, and application of these techniques in research. Students will demonstrate competency in these objectives by performing experiments in the laboratory, performing well on laboratory practicals and participation in class discussions. Open to sophomores and juniors.

Cancer Immunology II: During the second year as investigators, students will continue to work on their research projects and on the further sharpening of the basic laboratory skills learned in Cancer Immunology I. These include but are not limited to bacterial, cancer, nucleic acid and protein work. These young investigators will also be expected to help teach these skills to first year students. They will develop their scientific communication skills through assigned research articles and an end of the year PowerPoint presentation. Prerequisite: Cancer Immunology I and a well-established research project.

Cancer Immunology III: During the third year as investigators, students will continue to work on their developed projects and on the maintenance of the basic laboratory skills learned in Cancer Immunology I and II. These investigators will also be expected to help teach these skills to other students and assist with the development of their new research projects. They will continue to advance their own scientific communication skills through assigned research articles, PowerPoint and poster presentations. Prerequisite: Cancer Immunology II and a second-year research project with propitious data submitted for evaluation.

CL Microbiology: Students explore the world of microbes, including the diversity of microbes and the impact of microbes on the world around them within this course. CL Microbiology is a hybrid course; part in-depth exploration of specific topics, part survey, with a significant emphasis on research, projects, presentations, and laboratories. Students develop an appreciation of microbes while revealing the complexities of these supposed simpler life forms and how this information has allowed us to better understand more complex forms of life. Students learn the foundational laboratory skills employed by microbiologists and build a toolbox of laboratory skills throughout the year while also learning how to mine and interpret primary sources of scientific literature. Many concepts familiar to students from biology class are deeply explored on both a molecular and organismal level, focusing on their pertinence to bacteria, viruses, and their hosts. Immunology, antibiotics, antibiotic resistance,

biotechnology, and the ethical concerns specific to microbiology are also studied. Students do a substantial amount of independent work within this course and hone their presentation skills throughout the year. Prerequisite: 5.5 or above in Biology and 5.5 in Honors Chemistry or 6.5 in Chemistry.

CL Pathobiology of Human Disease: In this course, students are taught the basic principles of biology through a hands-on experience using human disease as a model. Students are introduced to the organization and structure of the human body, its development, and evolution. Topics include the various body systems, structures, cells, tissues, and the principles of homeostasis. Through the dissection of cats, fetal pigs, mice and various organs, common diseases such as Type 2 Diabetes, cancer and parasitic infections are explored. Prerequisite: Biology and Honors Chemistry with 5 or above.

Ecological Sustainability: This course explores the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. Students will examine and analyze environmental problems both natural and human-made, and evaluate the relative risks associated with these problems. Students in this course are exposed to the social and environmental implications of consumer and sustainable development behaviors, population patterns and associated geopolitical implications, and the impact these have on climate change. Students will evaluate the relative risks associated with these problems, and examine alternative solutions for resolving and/or preventing them. Additionally, course concepts and skills are applied to campus, regional, national, and international contexts. Prerequisite: Biology and Chemistry.

Chemistry: The purpose of this course is to provide students a strong scientific experience through the reading, writing, problem solving and practice of chemistry. Students will become more literate in the sciences and extend their understanding of science as an important component of our world. The educational goals of Chemistry include learning the processes of chemistry, chemistry's connections to other disciplines, and how chemistry relates to life. All fundamental chemistry concepts regarding the structure and function of matter and its energy are studied. Laboratory work emphasizes laboratory techniques, concept application, and chemistry problem solving. Open to sophomores, juniors and seniors not intending to pursue extensive math and science studies at the college level. Prerequisite: Biology. Students taking Math 32 or higher should enroll in Honors Chemistry.

Honors Chemistry: This course offers a theoretical approach to the structure of matter, the changes it undergoes and the energy involved. The course provides a scientific experience through the reading, writing, and problem solving of chemistry. Laboratory work emphasizes conceptual application and advanced chemistry problem solving. This course is typically taken during the sophomore year. Open to sophomores, juniors, and seniors intending to pursue extensive math and science studies at the college level. Prerequisite: Math 32 or higher (may be taken concurrently) and Biology.

CL Chemistry: This course builds upon the chemical principles learned from Honors Chemistry. Students will experience a variety of college-level chemistry topics (kinetics, equilibrium, electrochemistry, and introduction to organic chemistry) to apply their knowledge of chemical principles to real-world scenarios. Laboratory work will focus on experimental design, inquiry based learning, and the conceptual application of chemistry. This course is open to juniors or seniors who are intending to pursue math, science, or pre-med in college or beyond. Prerequisite: Math 42 or higher (may be taking concurrently) and 6.5 in Honors Chemistry.

Physics: This course is an algebra-based introduction to the study of physics that emphasizes for conceptual understanding, problem solving skills and laboratory exposure. Students will study topics in mechanics including one and two-dimensional kinematic motion, Newton's Laws, force, work, energy and momentum. Modern physical ideas such as electricity and electronic circuits may be covered during the second semester. Through in-class lectures and discussions, nightly homework sets and frequent laboratory experiments, students will receive a solid introduction to the study of physics.

Honors Physics: This is an advanced introductory physics course. Algebra will be used extensively in this course and basic calculus concepts will be introduced and utilized with appropriate topics. Lab work is integrated throughout the curriculum as necessary. Physics topics include: kinematics (1 and 2 dimensions); Newton's Laws; dynamics; work and energy; linear momentum; rotational motion; gravitation; simple harmonic motion and waves; electric charge and fields; electric potential; electric circuits (DC). Math topics include: differential

calculus; integral calculus; vectors and vector operations. Honors Physics is recommended for students who have a firm grasp of algebra and an interest in the sciences. The student who plans to take CL Physics should select this course. Prerequisite: 6 or higher in Math 33, or Math 42 or higher.

CL Physics: A college level calculus-based course that emphasizes the fundamental laws and basic concepts of physics. The use of calculus will be explored and utilized where appropriate. Labs are integrated throughout the curriculum where and when appropriate to aid understanding of the concepts explored. There will be a strong theoretical component to this course. This course will cover various topics from classical and modern physics. The topics covered include: kinematics in one- and two-dimensions; dynamics; work and energy; impulse and momentum; rotational motion and angular momentum; gravitation; simple harmonic motion; electric forces and fields; electric potential; electric circuits; magnetic forces and fields; electromagnetic induction; special relativity; basic quantum physics and mechanics. Prerequisite: CL Physics is open to juniors and seniors who have received the recommendation of the Science Department, have completed Honors Physics and have completed or concurrently enrolled in CL Calculus BC. Students enrolled in CL Calculus AB may take the course with the instructor's permission. This course will be ideal for students with the appropriate mathematics background who are interested in studying the natural/physical sciences, mathematics or engineering.

Robotics: (half credit/Fall or full year) Robotics is focused on the building and programing of a robotic structure. Students will use problem solving strategies to build and program their robots to complete specific challenges. The VEX EDR build set will be used as the platform for this course. Students will develop skills with tools, equipment and programing strategies to aid in their goals for the specific challenges. Once students have developed sufficient skills, they may be able to compete interscholastically with other schools and the robots they build.

Astronomy: (half credit/Fall) Astronomy is designed to develop a basic understanding of the universe from the small to the very large. The main emphasis of this course will be in understanding astronomical processes and the basic science involved in these processes. An emphasis will also be placed on the history of science and how to use scientific evidence to answer questions. Topics covered include the constellations and motion of the sky, the solar system including our planet and the sun, light and telescopes, the lives and deaths of stars, neutron stars, black holes, galaxies and cosmology. Students will have the ability to use the telescope at the school's Frost Observatory during stargazing nights. Prerequisite: Chemistry, Physics (may be taken concurrently), or departmental permission.

Advanced Astronomy: (half credit/Spring) This course will focus heavily on astronomical observations, data collection and data processing. It will begin with the basic optics, the branch of physics that deals with light and its properties. This course will explore the mathematics and physics of lenses and mirrors — equipment used in optics to focus or gather light. The main goal of this portion of the course will be for students to design and build their own telescopes. The second portion of this course will focus on data analysis using data generated by other observatories around the world and in space. Student will have the opportunity to contribute, through their analysis of the data, to the larger field of astronomy. Other special topics are explored as well. This course will be more mathematical in nature than Astronomy and is intended as a follow up to that course, however students do not need to have completed Astronomy prior to taking this course. Prerequisite: Physics (may be taken concurrently).

INTEGRATED STUDIES & DESIGN

Learning to Code: (half credit/Fall/Spring) While exploring the digital world, students learn how data is digitally encoded and transmitted. They deepen their understanding of the internet and the underlying structure of digital devices. Students consider the power of current technology and the possibilities for the future. Together, we discuss the societal impact and challenges of our digital technologies. Throughout the course, students will learn basic programming skills and concepts that will translate to any programming language and will work individually and collaboratively to create dynamic apps to solve a variety of problems using the JavaScript language. Required of and only open to freshmen.

Learning to Make: (half credit/Fall/Spring) This course is a hands-on introduction to personal fabrication and innovation in the Wang Innovation Center. The course specifically looks at design thinking, computer-aided design, computer controlled cutting, electronics production, 3D scanning and printing, electronics design, machining, molding and casting, input devices, output devices, composites, mechanical design, invention and intellectual property. Students in this course can explore their own interests to develop creative projects that foster critical thinking, entrepreneurship, communication and collaboration while engaged in active learning with others. Students will demonstrate their competence by completing a series of projects utilizing the full capabilities of the Wang Innovation Center. Required of and only open to freshmen.

Learning to Communicate: (half credit) To navigate an increasingly complex, technologically-advanced, and global society, students must have strong skills in oral and written communication. Augmenting the learning that happens across the WRA curriculum with regard to effective communication, this course will give sophomores the opportunity to learn traditional and contemporary ways to craft a message and reach cogently intended audiences. Students will collaborate, think critically and creatively, and see projects through from idea to production and performance, all the while enhancing their speaking and writing skills. At the conclusion of the course, students will have demonstrated their enhanced communications skills. This course will have two major assessments on Class Seminar Saturdays. Required of and only open to sophomores.

Learning to Live Well: (half credit) This course introduces students to the dynamic processes of change and growth so that they make informed, healthy decisions about their self-care. Students learn the risks associated with certain behaviors and understand when to seek help for themselves and others. Completion of this course satisfies the State of Ohio health graduation requirement. In addition to meeting during Monday-Friday class time, this course will also meet on two Class Seminar Saturdays. Required of and only open to sophomores.

CL Compass: Compass aims to connect students with the world beyond the walls of Western Reserve Academy by cultivating their unique interests and talents and applying them to a "real-world" setting. A second, but not secondary, aim of Compass is to bring coherence to WRA students' broader academic pursuits. Over the course of the academic year, enrolled students will meet regularly with the compass coordinator and work to develop skills in the areas of project design, collaboration, scheduling and implementation, budgeting, proposal development, making a pitch, leadership and resilience, process reflection, professionalism, marketing, research, interviewing, presentation, et al. At the end of the academic year, students will present their work for assessment before a chosen assembly. In order to be eligible for this program, students must submit an application, which will be evaluated by the various members of the program's steering committee. This course fulfills the upper-level ISD requirement. Only rising juniors and seniors are eligible to apply.

GPS (Guided Project of Significance): This course allows motivated students to pursue a passion project beyond our typical curricular offerings. Students pursuing this option should propose to the committee the distinguishing opportunity they'd like to pursue (examples include: writing/submitting for publication in a journal or a publication of national distinction; submitting work to a significant arts competition; participating in an individualized academic competition that feeds into a national competition; participating in distinguished volunteerism). GPS proposals are committee approved. The course has two options for dedicated time during ECHO [Fall-Winter, with five Saturdays spread over two seasons for working or Winter-Spring, with five Saturdays spread over two

seasons for working]. This course fulfills upper-level ISD requirements.

Digital Fabrication Capstone: (half credit/Fall or Spring) This course is an opportunity to develop an in-depth fabrication project in the Wang Innovation Center. Students will create a project plan, hone project management skills and develop a final project using various skills, technologies and techniques of fabrication. Students will have the opportunity to present their final project either internally or externally at a Maker Faire. Prerequisite: one course in Technology Arts or Learning to Code/Learning to Make. This course fulfills upper-level ISD requirement.

Health: (half credit/Spring) Health covers all of the concepts taught during the Sophomore Health Seminar, only in a more traditional classroom setting. This is a discussion-based course, with class preparation coming from readings, worksheets, journal writing and simple research. Open to new juniors/seniors who have not yet completed the State of Ohio health graduation requirements.

MAP (Making, Asking/Articulating, Producing/Performing): In this semester-long course for seniors, students first articulate a meaningful question or identify a problem they would like to explore. Then, through a "design incubator," they develop a project that explores a pathway to understanding and amplifying interest in their work. Possible avenues of exploration could be writing an interdisciplinary paper, hosting an event(s), creating a product, engaging in scientific inquiry, or engaging with community partners. In addition to articulating a question or problem, students must research the problem, plan a step-by-step pathway for execution, produce a significant demonstration of learning, and give a public presentation of their journey. This course is similar to Compass, but it does not involve several components of that course, e.g. the application. (Offered beginning fall 2020). This course fulfills upper-level ISD requirements.

Introduction to Geography: (half credit/Fall) This semester course is an introduction to how geographers view the world and contribute to our understanding of it. We cover the following topics: maps and landforms, weather and climate, natural resources, population and culture. We consider these fundamental questions: What do we observe? Why is it there? What is the significance of its occurrence? They help to explain the world in its physical appearance (physical geography) and the phenomena of the human experience (human geography) at different scales from the global to the local. Geography requires knowledge in natural and social sciences and fits therefore in an interdisciplinary curriculum that fosters systems thinking and global citizenship.

Introduction to Geographic Information Systems: (half credit/Spring) This semester course is an introductory course. It applies spatial thinking (integrating spatial concepts, spatial representations, and spatial reasoning) using geographic information systems (computer systems for processing location-based data). Students will learn to frame and solve a sequence of applied problems with GIS across a wide range of topics, including biology, environmental science, political geography, and urban geography. Fundamental concepts and methods of GIS will be used to study data structures and operations, geographic frameworks, error and uncertainty, and principles of cartographic design. GIS transforms static maps into dynamic and interactive multimedia and reflects the integration of technological innovation and vast amounts of geographic data. Prerequisite: Introduction to Geography.

ALL COURSES 2019–20

ENGLISH

- Foundations of Text
- Explorations of Analysis
- Angles in Writing I (half credit/Fall)
- Angles in Writing II (half credit/Spring)
- Studies in English
- CL Studies in English
- Creative Writing: Fiction & Playwriting (half credit/Fall)
- Creative Writing: Nonfiction & Poetry (half credit/Spring)

FINE & PERFORMING ARTS

- Foundational Art
- Foundational Art (half credit/Fall/Spring)
- Environmental Art (half credit/Fall/Spring)
- Art 2D (half credit/Fall/Spring)
- Photography (half credit/Fall)*
- Ceramics Handbuilding I (half credit/Fall)
- Ceramics Handbuilding II (half credit/Spring)
- Ceramics Wheel Throwing I (half credit/Fall)
- Ceramics Wheel Throwing II (half credit/Spring)
- Dance
- Honors Dance
- Choir
- String Orchestra
- Symphonic Winds
- CL Music Theory
- Studio Music (half credit/Fall & Spring)
- Acting for the Stage
- Stagecraft: (half credit/Fall & Spring)
- Engineering & Fabrication (half credit/Fall & Spring)
- Graphic Design and Illustration (half credit/Fall)
- 3D Printing & Design (half credit/Spring TBD)*
- E-textiles and Fabrics (half credit/Fall)
- Artificial Intelligence & Machine Learning (half credit/Spring)*
- Idea to Product: How to Start a Business (half credit/Fall or Spring TBD)*

MODERN & CLASSICAL LANGUAGES

- French I
- French II
- French III
- Honors French III
- Topics in French Language and Culture I (half credit/Fall)
- Topics in French Language and Culture II (half credit/Spring)
- CL French Language and Culture
- Latin I
- Latin II
- Latin III
- Honors Latin III
- Topics in Latin Literature I (half credit/Fall)
- Topics in Latin Literature II (half credit/Spring)
- CL Latin Literature
- Mandarin Chinese I
- Mandarin Chinese II
- Mandarin Chinese III
- Topics in Chinese Language and Culture I (half credit/Fall)
- Topics in Chinese Language and Culture II (half credit/Spring)
- CL Mandarin Chinese
- Spanish I
- Spanish II
- Honors Spanish II
- Spanish III
- Honors Spanish III
- Topics in Spanish Language and Culture I (half credit/Fall)
- Topics in Spanish Language and Culture II (half credit/Spring)
- CL Spanish - Spain^
- CL Spanish - Latin America+

Electives in Classical & Modern Languages

- Ancient Greek
- Introduction to Ancient Greek (half credit/Fall)
- Introduction to German* (half credit/Fall or full credit)

^ | Even Graduation Years + | Odd Graduation Years * Not offered in the 2019-2020 school year

ALL COURSES 2019–20

HISTORY

- Introductory History Seminar: Exploring Global Foundations
- Intermediate History Seminar: Building the Modern World
- United States History
- CL United States History
- Introduction to Arabic and Arab Cultures (half credit/Fall)*
- Middle East Studies (half credit/Spring)*
- Art History: Raphael to Renoir (half credit/Fall)
- Art History: Paint, Build, Shoot! (half credit/Spring)
- CL Art History
- CL Economics
- International Relations (half credit/Fall)
- CL US Government & Politics (half credit/Fall)
- Space Race: Fighting Cold War on New Frontier (half credit/Fall)
- CL Comparative Politics (half credit/Spring)
- Vietnam: Humbling a Superpower (half credit/Spring)
- The American Presidency (half credit/Spring)
- CL Philosophy

MATHEMATICS

- Math 11 Algebra I
- Math 21 Geometric and Algebraic Reasoning
- Math 22 Honors Geometric & Algebraic Reasoning
- Math 31 Intermediate Algebraic Reasoning
- Math 32 Honors Intermediate Algebraic Reasoning
- Math 33 Accelerated Algebraic Concepts
- Math 41C Precalculus Intensified
- Math 41S: Precalculus and Statistics
- Math 42 Honors Precalculus
- Math 43 Accelerated Precalculus
- Calculus
- CL Calculus AB
- CL Calculus BC
- CL Statistics
- CL Calculus-based Probability & Statistics
- CL Multivariable Calculus (half credit/Spring)
- CL Linear Algebra (half credit/Fall)
- Web Development (half credit/Fall)
- Computer Programming: Python (half credit/Spring)
- CL Computer Science

SCIENCE

- Biology
- Biotechnology (half credit/Fall & Spring)
- Cancer Immunology I
- Cancer Immunology II
- Cancer Immunology III
- CL Microbiology
- CL Pathobiology of Human Disease
- Ecological Sustainability
- Chemistry
- Honors Chemistry
- CL Chemistry
- Physics
- Honors Physics
- CL Physics
- Robotics (half credit/Fall)
- Robotics
- Astronomy (half credit/Fall)
- Advanced Astronomy (half credit/Spring)

INTEGRATED STUDIES & DESIGN

- Learning to Code (half credit/Fall or Spring)
- Learning to Make (half credit/Fall or Spring)
- Learning to Communicate (half credit)
- Learning to Live Well (half credit)
- CL Compass
- GPS (Guided Project of Significance)
- MAP (Making, Asking/Articulating, Producing/Performing)*
- Introduction to Geography (half credit/Fall)*
- Introduction to Geographic Information Systems (half credit/Spring)*
- Digital Fabrication Capstone (half credit/Fall or Spring)
- Health (half credit/Spring) – Juniors/Seniors w/o Ohio health requirement

CLASS SEMINARS

ECHO MODULES

^ | Even Graduation Years + | Odd Graduation Years * Not offered in the 2019-2020 school year

COLLEGE LEVEL COURSES 2019–20

ENGLISH
CL Studies in English

FINE & PERFORMING ARTS
CL Music Theory

MODERN & CLASSICAL LANGUAGES
CL French Language and Culture
CL Latin Literature
CL Mandarin Chinese
CL Spanish - Spain^
CL Spanish - Latin America+

HISTORY
CL United States History
CL Art History
CL Economics
CL US Government & Politics (half credit/Fall)
CL Comparative Politics (half credit/Spring)
CL Philosophy

MATHEMATICS
CL Calculus AB
CL Calculus BC
CL Statistics
CL Calculus Based Probability and Statistics
CL Multivariable Calculus (half credit/Spring)
CL Linear Algebra (half credit/Fall)
CL Computer Science

SCIENCE
CL Microbiology
CL Pathobiology of Human Disease
CL Chemistry
CL Physics

INTEGRATED STUDIES & DESIGN
CL Compass

^ | Even Graduation Years + | Odd Graduation Years * Not offered in the 2019-2020 school year