



KHAN LAB SCHOOL

Upper School Course Catalog

2024-25

Upper School (Grades 9-12)

Upper School (Grade 9-12) Course Descriptions

Graduation Requirements

Khan Lab School provides students with a course experience that prepares them for college which also provides time and space to pursue an area of interest. Students take above the UC requirements and earn a minimum of 21 credits to graduate. These credits are earned by meeting the 15 college preparatory courses 'A-G' to be eligible for admission to the University of California, as well as successful completion of a year-long Senior Capstone course and 6 elective courses.

SUBJECT	University of California (UC) Requirements	KLS Graduation Requirements
History	Two years of history, including one year of world history, cultures or historical geography (may be a single yearlong course or two one-semester courses), and one year of U.S. history or one-half year of U.S. history and one-half year of civics or American government.	Two years 3 years recommended World History, US History, and one elective such as Government and Politics
English	Four years of college-preparatory English that include frequent writing, from brainstorming to final paper, as well as reading of classic and modern literature. No more than one year of ESL-type courses can be used to meet this requirement.	4 years Methods and Meaning, American Literature, Comparative Literature, and Senior Seminar
Mathematics	Three years of college-preparatory mathematics that include the topics covered in elementary and advanced algebra and two- and three-dimensional geometry; a fourth year of math is strongly recommended. A geometry course or an integrated math course with a sufficient amount of geometry content must be completed. Approved integrated math courses may be used to fulfill part or all of this requirement, as may math courses taken in the seventh and eighth grades if the high school accepts them as equivalent to its own courses.	3 years 4 recommended At least through Algebra II
Science	Two years of college-preparatory science, including or integrating topics that provide fundamental knowledge in two of these three subjects: biology, chemistry, or physics. One year of approved interdisciplinary or earth and space sciences coursework can meet one year of the requirement. Computer Science, Engineering,	2 years 3 years recommended Bio 10, Chem 25, and either Physics, Engineering, or a class at Foothill College.

	Applied Science courses can be used in area D as an additional science (i.e., third year and beyond).	
Language other than English	Two years, or equivalent to the 2nd level of high school instruction, of the same language other than English are required. Courses should emphasize speaking and understanding, and include instruction in grammar, vocabulary, reading, composition and culture. American Sign Language and classical languages, such as Latin and Greek, are acceptable, as are Native American languages. Courses taken in the seventh and eighth grades may be used to fulfill part or all of this requirement if the high school accepts them as equivalent to its own courses.	2 years 3 years recommended of the same language
Visual & Performing Arts	One yearlong course of visual and performing arts chosen from the following disciplines: dance, music, theater, visual arts or interdisciplinary arts — or two one-semester courses from the same discipline is also acceptable.	1 year minimum from the same discipline
College-Preparatory Elective	One year (two semesters) chosen from courses specific to the elective (G) subject area or courses beyond those used to satisfy the requirements of the A-F subjects.	Six elective courses
		Capstone Project

Upper School Suggested Curriculum

SUBJECT	GRADE 9	GRADE 10	GRADE 11	GRADE 12
Performing or Visual Arts (1 year required)	Visual or Performing Arts	Visual or Performing Arts	Visual or Performing Arts	Visual or Performing Arts
English (4 years required)	Methods and Meaning	Comparative Literature American Literature		Senior Seminar
History	World History	US History Government & Politics		Elective Government & Politics
Mathematics (3 years required; 4 years recommended) Must include Geometry and a minimum of Algebra II	Mathematics	Mathematics	Mathematics	Mathematics
Science (3 years required; 4 years strongly recommended)	Bio 10	Physics		
	Chem 25			
		Engineering		
		Foothill	Foothill	
World Language (3 years required; 4 recommended)	Spanish or externally approved option	Spanish or externally approved option	Spanish or externally approved option	Spanish or externally approved option
Applied Learning Project/Capstone	Stepping Stone?	Cornerstone (optional)	Cornerstone (optional)	Capstone
Community Engagement?				

Upper School Scheduling Suggestions

As Khan Lab School students experience their high school journey, we recognize that this process culminates their unique educational experience with us. We encourage students to approach college applications with an understanding of how our school's philosophy, pedagogy, and curriculum—though not explicitly crafted for college preparation—naturally equip them for life beyond KLS. Our educational model prioritizes personal growth over conventional academic competition. This approach not only fosters lifelong learning habits but also sets our students apart in the college admissions landscape.

Ninth Grade

The primary goal for ninth graders is to understand the high school landscape. Discover your optimal study methods and start mastering time-management skills. Always seek help when needed; our teachers are eager to assist you in mastering their subjects, making interdisciplinary connections, and developing your talents. Reading extensively is also crucial at this stage, as it significantly enhances your vocabulary and writing skills.

Tenth Grade

While college may seem distant, focusing on an engaging curriculum and excelling in your classes will set a solid foundation for future college applications. Pursue your interests both inside and outside the classroom and embrace taking risks. If you're considering a career in engineering, it might be wise to start specializing in science courses. If you are interested in the Arts, you might consider taking more advanced courses either at KLS or at Foothill.

Eleventh Grade

Continue to excel academically, as junior year experiences are pivotal—this is what colleges will see if you apply early. This is also a crucial time to build relationships with your teachers, who may write your letters of recommendation. If you're aiming to become a data scientist and haven't taken Statistics yet, this is the year to do it. Ensure you meet graduation requirements, such as completing three years of the same world language.

Senior Year

Work closely with your college counselor and work with your faculty mentors to guide your course selections for senior year. While it's advisable to continue a broad academic curriculum, this year also offers an opportunity to focus more intensely on areas of strong interest—consult your college counselor before making any final decisions about dropping a subject. This is your last chance to take any courses at Khan Lab School that you've been interested in but haven't yet explored. Make the most of your time with your teachers, benefiting from their knowledge and support as you prepare for the next steps in your educational journey.

Other Types of Classes

Independent Study

Students may pursue Independent Study (IS) when they have exhausted the course offerings and wish to continue with a specific focus in their studies. Students wishing to do independent study should talk with their current instructor in the spring semester before they register for classes, as approval of the Upper School Director is required. (Credits vary.)

Courses Completed Outside Khan Lab School

While enrolled at Khan Lab School, students may not complete courses that are offered at Khan Lab School through other schools or programs. For all courses completed through other institutions, the course and final grade will not be included on the Khan Lab School transcript. Prior to enrolling in courses for advancement, remediation, or enrichment, a student is required to obtain approval from the Upper School Director. Official transcripts for all completed coursework outside of Khan Lab School should be submitted to the Upper School Director immediately following completion of the course. This transcript will be added to the student's file and submitted to colleges with the Khan Lab School transcript if appropriate. Note that colleges may also require these transcripts to be submitted by the outside institution.

Khan Lab School University of California Approved Courses

This is a list of all the UC approved courses KLS has on offer, categorized by their UC designation. Virtually every KLS student will exceed the a-g requirements for UC eligibility by simply fulfilling the KLS graduation requirements, this list is only provided as a reference. For more information, use these links: [UC requirements](#).

Khan Lab School graduation requirements meet the minimum admission requirements for the University of California (UC) & California State University (CSU) higher education systems. Students must earn a minimum grade of C- to be considered eligible to apply.

A – History/Social Science

World History: Latinx American Studies
US History
Government and Politics

B – English

Methods and Meaning: The Art of
Storytelling
Comparative Literature: Multimedia Remixing
American Literature
Senior Seminar: Literature in Landscape

C – Mathematics

Algebra I: Algebraic Reasoning and Problem
Solving
Geometry: Delving Into Mathematical
Dimensions
Algebra II: Predictive Modeling through
Functions
Precalculus: Complex Numbers and
Transformations
Calculus: Change is the New Constant
Statistics: Data Science and Pattern-Finding

D – Science

General Biology: BIO 10
Fundamentals of Chemistry: CHEM 25
Engineering Design: Beyond the Blueprints
Physics: Mechanics and Optics

E – Language Other than English

Spanish 1
Spanish 2
Spanish 3
Spanish 4
Spanish 5
Advanced Cultural Studies in Spanish

F – Visual and Performing Arts

Foundational Art & Design
Advanced Art & Design

G – Elective

A Note on Specific Subject Areas

Mathematics

Placement: Math placements are based on a variety of input data, including performance on previous courses taken (at KLS or at another school) and the iReady placement exam, given in August before school starts. In addition, students will be observed in the first few weeks of class to verify that their placement is appropriate. During the year Middle School students also take NWEA MAP tests.

Math Competitions: Some math competitions (such as [AMC](#)) are student-organized and led, and are optional for any student who qualifies. The exams are proctored by math faculty. Some competitions, such as [MOEMS](#) are organized by our math faculty, optional for any student who qualifies, and proctored five times per year by our math faculty.

Advanced Placement Tests (APs): We do **not** teach to AP tests in any of our courses at Khan Lab School. We prioritize deep dives into complex topics with real-world applications. Students are always welcome to self-study for an AP, and we will proctor the most popular APs on campus. Students often self-organize into study groups for this purpose, but KLS teachers do not provide study support for APs.

Science and Computer Science at KLS

Khan Lab School partners with Foothill College to offer several science courses listed on the Khan Lab School transcript as “Dual Enrollment Courses.” This partnership provides access to college-level laboratory facilities, while keeping together with their peers in a small-classroom environment. Note that students are evaluated by college faculty using a grading scale that is not translated into our model but is included in their official school record.

World Languages

Placement: Spanish placements are based on a variety of input data, including performance on previous courses taken (at KLS or at another school) and a placement exam, given in August before school starts. If a student is new to Spanish or new to KLS, they must have a meeting with our World Language Coordinator in addition to the written placement test, where their speaking proficiency will be evaluated. In addition, students will be observed in the first few weeks of class to verify that their placement is appropriate.

International Trip: Students enrolled in Spanish 5 or Advanced Cultural Studies in Spanish, or who are members of the Sociedad Honoraria Hispánica are eligible to participate in an optional immersive international trip organized by the school.

Mixed Grade Level Classes: Spanish and math classes at KLS are not determined by your grade level, but by your proficiency level, as measured by the placement test given at the beginning of the year. This means that we are able to have mixed grade level classes which provides ample opportunities for peer learning and support.

Khanversation Circles: A key feature of language learning at KLS is “Khanversation Circles” - an original program developed by our own faculty and led by upper level students. While the classes meet three times per week, language students are expected to attend a fourth meeting, which is dedicated to conversation with peers at different levels of Spanish. No preparation is needed for these “circles” - it’s a chance for students to practice speaking and listening in a stress-free environment.

Advanced Placement Tests (APs): We do **not** teach the AP tests in any of our courses at Khan Lab School. We prioritize deep dives into complex topics with real-world applications. Students are always welcome to self-study for an AP, and we will proctor the most popular APs on campus. Students often self-organize into study groups for this purpose, but KLS teachers do not provide study support for APs.

Sociedad De Honoria Hispánica: In 2023, our school partnered with the American Association of Teachers of Spanish and Portuguese (AATSP) and started the “Casa de la Villa” Chapter of the Sociedad Honoraria Hispánica, which provides cultural and linguistic opportunities for upper level Spanish students. Students currently enrolled in Spanish 4, 5, or AC Spanish are eligible to become members. Students in Spanish 4 who are SHH members are eligible for our Spanish Immersion International Trip.

Languages Other Than Spanish: If a student is taking a language other than Spanish outside of KLS, they need to be able to generate their own transcript so that we can provide them with graduation credit. If there are enough students taking that language, a Khanversation Circle will be organized for them.

Upper School Course Descriptions (Grades 9-12)

English

(new!) Methods and Meaning: The Art of Storytelling

This is a 9th-grade project based English course that invites students to explore a rich tapestry of stories across various epochs and cultures, analyzing how narratives shape and reflect the complexities of human life. This dynamic course engages students in the art of deduction and the thrill of unraveling mysteries embedded in texts, deepening their understanding through immersive, interactive learning. Incorporating a broad spectrum of readings—from fiction to nonfiction, from ancient epics to modern tales—and various mediums, students develop a versatile toolkit for interpreting and creating stories. In this PBL environment, projects are specifically designed to be student-centered, fostering curiosity, encouraging outside-the-box thinking, and enhancing collaboration. Students engage in discussions and practices that foster clarity of communication, honing their ability to articulate ideas both on the page and verbally to their peers. Throughout the course, students become well-versed in the formal essay and are introduced to rhetoric and argument, equipping them with the skills to decode and craft diverse narratives and inspiring them to tell the stories of tomorrow.

(new!) Comparative Literature: Multimedia Remixing

This is an innovative project-based course for 10th and 11th graders that transforms how students interact with and reinterpret literary works. This course invites students to dive into a multifaceted exploration of narrative, where literature is not merely read or watched, but actively reimaged and remixed. Utilizing a variety of mediums—including short stories, novels, poems, speeches, essays, graphic novels, role-playing games, and films—students will dissect and reconstruct narratives to understand the underlying mechanics. The curriculum emphasizes the development of argument writing and speechcraft, equipping students with the rhetorical tools needed to articulate their ideas persuasively. The year culminates in a term-long project called "The Writers' Room," where students will read and select short stories that resonate with them, and collaboratively adapt these stories into short films. "Comparative Literature: Multimedia Remixing" is more than just a class; it's a workshop for the modern thought leader, preparing the next generation to reshape cultural narratives through innovation and insight.

Offered every other year; offered in 2024-25

American Literature

How is literature related to place and people? Who gets to tell stories in the United States, and why are certain stories considered classically "American" at the expense of others? Students will investigate these questions among others in order to explore how settler colonialism, race, class, nationality, gender, and immigration inform U.S. literature. We will ask how the staggering

proliferation of “American” identities makes for equally diverse production of literary forms by reading poetry, prose, drama, and letters. The course aims to give students the skills to analyze these varying modes in order to work toward building an argument and understanding how social, political, and national contexts inform American literature. Each term students will maintain a portfolio of work while also engaging in seminar discussion, project-based learning, and summative assignments to explore and test their ideas. Students will submit a formative project every term, one of which will be an extended essay that reflects their synthesis of course material.

Offered every other year; not offered in 2024-25

(New!) Senior Seminar: Literature in Landscape

Literature in Landscape offers a multidisciplinary exploration of the intricate relationship between literature and the natural environment. Through a blend of literary analysis, environmental studies, and cultural geography, this course delves into how landscapes shape and are shaped by human imagination, identity, and culture as represented in literature. Students will embark on a journey through various literary works spanning different genres and periods, examining how authors depict landscapes, ecosystems, and natural phenomena. From pastoral poetry to contemporary eco-fiction, from wilderness narratives to urban dystopias, the course surveys a wide range of texts that illuminate the complex interactions between humans and their environments. Through readings, discussions, and writing assignments, students will develop critical thinking skills and deepen their understanding of the complex relationship between literature and landscape. By examining diverse perspectives on nature and the environment, students will gain insights into pressing environmental issues and cultivate a deeper appreciation for the literary dimensions of our ecological existence.

History

US History

Frederick Douglass, a self-educated man who escaped slavery from the U.S. South, once stated that, “the life of the nation is secure only while the nation is honest, truthful, and virtuous.” In the course, students will explore, examine, analyze, and critique moments in the country’s past by engaging with primary and secondary sources. Students will gain knowledge and understanding of historical events, people, places, and movements that have shaped the society they live in today. Additionally, students will be introduced to various experiences of people in the United States that will question the idea of U.S. exceptionalism. With exposure to diverse perspectives, a major goal of the course is for students to absorb a more honest, truthful, and comprehensive view of the “American” experience to encourage more virtuous thinking and actions.

Offered every other year; not offered in 2024-25

Government and Politics

Founding Father, Thomas Jefferson, once wrote, “[t]he purpose of government is to enable the people of a nation to live in safety and happiness. Government exists for the interests of the governed, not for the governors.” Throughout the school year, students will learn about moments in history—and the present—when the government has “succeeded” and fallen short in keeping all of its citizens happy. Through examination of case studies developed by Harvard’s Case Method Institute—beginning with the “Federal Negative” in the 1780s through the “Citizens United” court case in 2010—the course explores how the U.S. government, its politics, and democracy have evolved over time. Modern-day political and economic debates in U.S. society will be examined and analyzed in class as a way of informing students and allowing them to critically think about current issues. Furthermore, there will be a concerted effort to demonstrate moments when marginalized groups (racial minorities, women, members of the LGBTQ community, etc.) felt the need to take action to ensure their full rights as U.S. citizens were respected.

Offered every other year; offered in 2024-25

(New!) World History: Latinx American Studies

As the world becomes increasingly diverse there needs to be a more concerted effort to understand the emergence, development, and persistence of different cultures, peoples, and their experiences. This course is designed to provide students with the historical context for understanding the long-standing presence of Latina/o people in the Western Hemisphere. The course will follow a general chronology of societal developments throughout Latin America and North America that includes examination of topics like: pre-columbian empires, colonization, (im)migration, settlement, and assimilation. By becoming familiar with and knowledgeable about the Latinx experience, the course intends for students to gain an appreciation for Latin America, its people, and their contributions to human development.

Mathematics

Math 7-8: Creative Math

Prerequisites: Math 6 or placement exam

Welcome to Math 7 and Math 8, where we will embark on a comprehensive journey through the world of mathematics. This combined course is designed to provide a solid foundation in math concepts and skills while ensuring a smooth transition from Math 7 to Math 8. The topics covered include solving multi-step equations and inequalities, rational numbers, ratios and proportions, percents, linear functions and graphing, geometry, real numbers and right triangles, perimeter, area, and volume, as well as statistics and probability. Whether you're tackling equations, delving into geometric shapes, or analyzing data, this course will equip you with the mathematical knowledge and problem-solving abilities necessary for success while also fostering an understanding and appreciation for the beauty of math.

Algebra 1: Algebraic Reasoning and Problem Solving

Prerequisites: Math 7/8 or placement exam

This foundational course serves as a gateway to the fascinating world of mathematical thinking and problem-solving. Through a systematic exploration of topics such as linear equations, inequalities, polynomials, functions, exponents, and radicals, you will develop essential skills for modeling real-world scenarios and making informed decisions. Whether you're preparing for advanced mathematics, science, or simply aiming to enhance your quantitative aptitude, Algebra I will lay the groundwork for your mathematical journey, fostering logical reasoning and analytical prowess that extend far beyond the confines of the classroom. Let's unlock the beauty of algebra and its applications together!

Geometry: Delving Into Mathematical Dimensions

Prerequisites: Algebra 1 or placement exam

This geometry course serves two purposes. First, students are introduced to the beauty of Euclidean geometry, learning the fundamentals of points, lines, 2D shapes, 3D objects, and how they all are related. Second, and just as important, students develop critical mathematical practices, including reasoning abstractly, modeling real-world situations, attending to precision, and developing detailed proofs. For many students, this is the first time they have rigorously constructed a proof. Understanding how the body of knowledge in math can be derived from a few fundamental axioms is one of the joys of this course.

Algebra 2: Predictive Modeling through Functions

Prerequisites: Geometry and placement exam

The purpose of this course is to extend students' understanding of functions and the real numbers, and to increase the tools students have for modeling the real world. They extend their notion of number to include complex numbers and see how the introduction of this set of numbers yields the solutions of polynomial equations and the Fundamental Theorem of Algebra. Students deepen their understanding of the concept of function, and apply equation-solving and function concepts to many different types of functions. The system of polynomial functions, analogous to the integers, is extended to the field of rational functions, which is analogous to the rational numbers. Students explore the relationship between exponential functions and their inverses, logarithmic functions. Trigonometric functions are extended to all real numbers, and their graphs and properties are studied. Finally, students' statistics knowledge is extended to understanding the normal distribution, and they are challenged to make inferences based on sampling, experiments, and observational studies. The Algebra II is divided into four modules: Polynomial, Rational, and Radical Relationships, Trigonometry, Exponential and Logarithmic Functions and Inferences and Conclusions from Data. Upon successful completion of Algebra II, students should be able to demonstrate: quantitative reasoning skills, Building of arguments and

critical reasoning skills, how to model with mathematics, which tools to use, how to use those tools and when to use them.

Precalculus: Complex Numbers and Transformations

Prerequisites: Algebra II and placement exam

Precalculus combines concepts of trigonometry, geometry, and algebra that are needed to prepare students for the study of calculus. The course strengthens students' conceptual understanding of problems and mathematical reasoning in solving problems. Proficiency with these topics is especially important for students who intend to study calculus, physics, other sciences, and engineering in college. The main topics in the Precalculus course are complex numbers, rational functions, trigonometric functions and their inverses, inverse functions, vectors and matrices, and parametric and polar curves. It is recommended that students complete Precalculus before taking an Advanced Placement calculus course. The Precalculus is divided into five modules: Complex numbers and Transformations, Vectors and Matrices, Rational and Exponential functions, Trigonometry and Probability and Statistics. Upon successful completion of Precalculus, students should be able to demonstrate: quantitative reasoning skills, Building of arguments and critical reasoning skills, how to model with mathematics, which tools to use, how to use those tools and when to use them.

Calculus: Changes and Constants

Prerequisites: Precalculus and placement exam

Calculus course is primarily concerned with developing the students' understanding of the concepts of calculus and providing experience with its methods and applications. This course emphasizes a multi representational approach to calculus with concepts, results and problems being expressed graphically, numerically, analytically and verbally. The connections among these representations also are important. In this course students will be able to work with functions represented in a variety of ways: graphical, numerical, analytical or verbal. They should understand the connections among these representations. They will understand the meaning of derivatives in terms of a rate of change and should be able to use derivatives to solve a variety of problems. They will understand the "Fundamental Theorem of Calculus". They will also learn how to model a written description of a physical situation with a function, a differential equation or an integral. In the end they will develop an appreciation of calculus as a coherent body of knowledge and as a human accomplishment.

Statistics: Data Science and Pattern-Finding

Prerequisites: Algebra II

Communication at every stage of the data science process is vital in making sense of a context, data, interpretation, and story. In this course, students build off the skills learned in Data Science through project-based modules. The modules allow students to be data explorers through active engagement, deepening their understanding of data analysis. At the end of the course, students

have a portfolio of data science work to showcase their knowledge and experience. This course provides students with opportunities to do advanced modeling, learn about training versus testing to help constrain models, log/exponential modeling, oscillating patterns, trig functions as models, categorical outcomes (e.g., logistic regression), data wrangling, web scraping, clustering techniques, geospatial data, and map making, heat maps, analyzing and synthesizing, and communicating our results. Ethics behind the data and involved with our models.

Multivariable Calculus

Prerequisite: Calculus

In this course students cover limits, derivatives, definite integrals, indefinite integrals, and applications of these topics. Topics will be explored graphically, numerically, algebraically, and verbally. Subtopics include products, quotients, the calculus of logarithmic and exponential functions, growth and decay, plane and solid figures, algebraic calculus of motion. Graphing calculators and online resources like Desmos will be used regularly to explore, to find x-intercepts and other intersection points, to find the derivative at a given x –value, to find indefinite integral, and to support conclusions.

Linear Algebra

Prerequisite: Algebra II

A branch of mathematics that covers systems of linear equations and the properties of matrices, Linear algebra is extremely useful in physics, economics, social sciences, natural sciences, engineering, and computer science. This course includes, but is not limited to, the study of systems of linear equations, matrices, determinants, vectors and vector spaces, linear transformations, eigenvalues and eigenvectors, and their applications. Computer software will be used to enhance the learning and teaching of topics and techniques covered.

Science

General Biology: BIO 10*

Prerequisite: concurrent enrollment in Algebra I or higher

This is a college-level general biology course that covers methods of science and basic principles of biology with special emphasis on genetics, ecology, overpopulation, nutrition and disease prevention. Students learn to explain the concept of evolution and the mechanism of natural selection, the scientific method and demonstrate an ability to use this method of study, and recognize the role of human activities in environmental problems and solutions.

*Dual Enrollment with Foothill College

Fundamentals of Chemistry: CHEM 25*

Prerequisite: enrollment in Algebra II or higher

The course includes basic chemical laboratory techniques and methods, a survey of important chemical principles with emphasis on problem solving, and a description of the elements and their compounds. Students learn: to recognize basic patterns of chemical reactivity, express reactions in terms of balanced equations and be able to determine quantities of reactants and products in terms of moles, mass and volumes of solutions; identify physical and chemical properties and change; use dimensional analysis to set up and solve numerical problems; and understand the meaning and uses of the mole and of Avogadro's number.

*Dual Enrollment at Foothill College

(New!) Engineering Design: Beyond the Blueprints

Prerequisites: Algebra I

In this class, students will explore a combination of mechanical and electrical engineering principles through the lens of design thinking. They will spend the first two terms building a foundational understanding of physics concepts from both mechanics and electricity - including kinematics, rotational motion, structures, simple machines, pneumatics, collisions, momentum, Ohm's law, circuitry, and input/output. Each term will end with a project, where students will undergo the design thinking protocol design and build a project focused on a combination of mechanical and electrical principles geared towards the interests and preferences of a specific audience.

(New!) Physics: Mechanics and Optics in Astrophysics

Prerequisites: Precalculus

Co-requisites: Calculus

In this course, students will be addressing the problem of asteroid impacts on the Earth, and will develop defense systems based on our understanding of mechanics and engineering principles. Students will predict the trajectory of near-Earth asteroids by applying Kepler's Laws and an understanding of projectile motion. They will also plan routes to intercept asteroids by solving systems of equations. Students will calculate the energy which would be released upon impact for a variety of asteroid sizes, velocities, and impact angles. They will discuss a myriad of defense mechanisms to protect ourselves against asteroid impacts which will apply concepts from mechanics, electricity and magnetism, waves and optics, and nuclear physics. Students will be asked to design their own solution and pitch it to the rest of the school in a formal scientific poster presentation. In this class, they will practice skills of data collection, visualization, and analysis, critical reading of primary-sources, evidence-based argumentation, experimental design, and engineering principles. Our exploration of this problem will also require students to develop data visualization techniques in Python, write papers using LaTeX, and work with large data sets.

World Languages

Spanish 1

Prerequisites: N/A

Spanish 1 is an immersive introduction to spoken and written Spanish and Hispanic culture. Through contextual, real-life communicative activities, students develop their sentence formation and vocabulary. The course also provides a rich understanding of Hispanic culture, enhancing students' appreciation and understanding of the Spanish-speaking world. Class is conducted 75-90% in Spanish.

At the end of the course, students will be able to talk about familiar scenarios in basic detail:

- Introduce self and others
- Create questions about self and about others in the present tense on varying topics
- Describe self, others, activities
- Express actions, activities, and events in the present tense
- Discuss own likes, dislikes as well as those of other people
- Create informal, interpersonal conversations that are culturally appropriate
- Use and understand appropriate vocabulary for an informal setting

By the end of this course, students will be able to communicate with at least Novice-Mid proficiency according to the proficiency levels published by ACTFL.

This course is open to both HS and MS students

Spanish 2

Prerequisites: Spanish 1 or placement exam

Spanish 2 builds on the foundation in Spanish 1 and enhances students' understanding of the material. In this course, students expand their vocabulary and master the use of different past tenses, including imperfect and present perfect or compound. They also improve their creative writing skills and oral proficiency through presentations, communicative activities, games, cultural activities, and reading-centered discussions. Class is conducted 80-90% in Spanish. By the end of the course, students will be able to talk about familiar scenarios in increasing detail:

- Express needs.
- Express feelings and reactions to less tangible situations
- Express and understand less concrete ideas

- Interact with day-to-day situations
- Describe events, experiences, dreams, hopes, and ambitions
- Talk about family, school, and social settings
- Demonstrate understanding of culturally appropriate behavior.
- Give brief explanations for opinions and plans.

By the end of this course, students will be able to communicate with at least Novice-High proficiency according to the proficiency levels published by ACTFL.

This course is open to both HS and MS students

Spanish 3

Prerequisites: Spanish 2 or placement exam

Spanish 3 assumes mastery of previously learned vocabulary and grammar structures. This course is designed to reinforce students' grammar proficiency, introduce advanced grammar concepts such as the imperative and the subjunctive mood. Students additionally establish a solid foundation for the interpersonal, interpretative, and presentational skills essential for success in higher-level language courses. Authentic materials such as newspaper articles, documentaries, movies, and music are integrated into the curriculum, and instruction is conducted primarily 90-100% in Spanish. Throughout the course, students will learn and practice:

- Expressing themselves effectively in both written and oral communication.
- Demonstrating comprehension of spoken and written content in the target language beyond mere textual understanding.
- Bridging their own knowledge of the world with the presented material.
- Cultivating critical thinking abilities, cultural awareness, and gaining insight into the language from a native speaker's perspective.
- Engaging in conversations with native speakers with a level of fluency and spontaneity that facilitates effortless interaction.
- Producing clear, detailed written compositions on a variety of topics and articulating viewpoints on contemporary issues, evaluating various perspectives' advantages and disadvantages.

By the end of this course, students will be able to communicate with at least Intermediate-Low proficiency according to the proficiency levels published by ACTFL.

Spanish 4

Prerequisites: Spanish 3 or placement exam

Spanish 4 builds upon the vocabulary and grammar mastery achieved in previous levels, aiming to further strengthen these skills and introduce advanced grammar concepts. The course focuses

on cultivating the interpersonal, interpretative, and presentational skills necessary for success in advanced language studies. Authentic materials such as newspaper articles, documentaries, movies, and music continue to be utilized extensively, with instruction predominantly conducted 90-100% in Spanish. By the conclusion of the course, students will demonstrate the ability to:

- Express themselves effectively through both written and oral communication.
- Display comprehension of spoken and written material in the target language beyond mere textual understanding.
- Establish connections between their existing knowledge and the presented material.
- Foster critical thinking abilities, cultural awareness, and gain insights into the language from a native speaker's perspective.
- Engage in conversations with a degree of fluency and spontaneity that facilitates seamless interaction with native speakers.
- conduct interviews with Spanish-speaking immigrants, providing a unique opportunity to explore real-life narratives.
- Generate clear, detailed written compositions on a diverse array of topics, articulating viewpoints on topical issues and presenting advantages and disadvantages of various perspectives.

By the end of this course, students will be able to communicate with at least Intermediate-High proficiency according to the proficiency levels published by ACTFL.

(New!) Spanish 5: Hispanic Identities through Cinema (formerly AT I Spanish)

Prerequisites: Spanish 4 or placement exam and/or teacher approval

This advanced course focuses on the intersection of art, film, and culture, particularly exploring how Spanish or Latin American cinema reflects pivotal concepts in Spanish-speaking societies. This course is for students who are prepared to further their understanding of the Spanish language and culture through the medium of film. Students are encouraged to hypothesize, articulate, defend opinions, and cultivate original thoughts within a less structured environment, primarily through open discussions and discourse. Students will improve their interpersonal, interpretive, and presentational communication skills through a series of readings, oral, aural, and written practices thematically tied to the selection of films. Class is conducted 90-100% in Spanish. The selected films studied in this course include but are not limited to:

- *El laberinto del fauno* (2006) – Guillermo del Toro (Mexico/Spain)
- *La teta asustada* (2009) – Claudia Llosa (Peru)
- *La mala educación* (2004) – Pedro Almodóvar (Spain)
- *El secreto de sus ojos* (2009) – Juan José Campanella (Argentina)
- *También la lluvia* (2010) – Icíar Bollaín (Spain, Mexico, USA)

- *Volver* (2006) – Pedro Almodóvar (Spain)
- *La misma luna* (2007) – Patricia Riggen (Mexico/USA)
- *El hijo de la novia* (2001) – Juan José Campanella (Argentina)
- *Radical* (2023) – Christopher Zalla (Mexico)

By the end of this course, students will be able to communicate with at least Advanced-Low proficiency according to the proficiency levels published by ACTFL.

Students in Spanish 5 are eligible for our Spanish Immersion International Trip.

(New!) Advanced Cultural Studies in Spanish (AC Spanish) (formerly AT II Spanish)

Prerequisites: Spanish 5 (formerly AT I Spanish or AT II Spanish) or placement exam or teacher approval

AC Spanish is a full immersion course designed for students ready to explore and analyze Spanish literature and creative writing from the 16th to the 21st centuries. Students are introduced to a variety of genres and types of texts, including poetry, novels, short stories, drama, and essays. They will engage with the texts (authentic and customized by level) through class discussion, deep literary analysis, and personal reflection on the impact these readings have on their lives. In addition, they will try their hand at being Spanish language fiction writers themselves. After studying the components that make up each genre and analyzing the particular styles and methods of different authors, they will write their own original pieces in that genre. This course aims to help students become more confident Spanish fiction writers and foster reflection and engagement with the writing process. The course will be carried out as a seminar and a workshop. They will read each other's work, critique it, and help each other become better writers. Class is conducted 100% in Spanish. Each year will focus on a different topic, such as:

- Women Writers
- Immigration and Border Studies
- Spanish Civil War and Memory Studies
- Civil War in Latin American Countries
- Iberian Literature (Cervantes, Quevedo, Calderón de la Barca, Lope de Vega, Zayas, Bécquer, Machado, Feijoo, García Lorca, Marías, Riera, etc.)
- Latin American Literature (Echeverría, Sarmiento, Quiroga, Storni, Borges, Neruda, Paz, Castellanos, Rulfo, García Márquez, Poniatowska, Allende, Ferré, etc.)
- Drama Translation Studies

By the end of this course, students will be able to communicate with at least Advanced-High proficiency according to the proficiency levels published by ACTFL.

Students in AC Spanish are eligible for our Spanish Immersion International Trip.

Visual and Performing Arts

Advanced Topics: Art Portfolio

Prerequisites: Foundational Art or portfolio review

This year-long advanced art course is designed for passionate, dedicated, and experienced artists. This course focuses on refining artistic skills and building a comprehensive portfolio for college applications and/or professional pursuits. Students will practice advanced techniques in various mediums, experiment with unique concepts, and receive personalized guidance to elevate their artistic vision. Through challenging projects and critiques, students will develop a refined body of work that showcases their artistic growth and individual style. This course will help students create a compelling portfolio comprised of previous and new works that stands out and opens doors to future opportunities in the art and design world.

Foundational Art & Design

Students will develop their art and design skills by exploring key art concepts: line, shape, color, value, contour, self-portrait, form and artist studies. Projects will be scaled to students' abilities with the goal of mastering the fundamentals of art and design. Students will practice Design Thinking techniques to learn visual hierarchy, composition, proportion, balance/alignment, texture, and repetition for fine art and digital design projects infused with cultural contexts. This is a core/foundational high school level art class. All work will be completed in the studio.

Note: This is a year-long course, but is designed as three semester-long modules.

Electives

(New!) Teaching Innovation Lab

In this year-long elective course, you will work alongside teachers during their professional development periods (Fridays 1-3pm). We'll be covering topics such as project-based learning, experiential learning, course design, equitable practices in education, and classroom management. We will pull readings from educational research journals, and you will write several posts for our teaching and learning blog throughout the year. In the end, you will design an elective course which you will offer during Term 3.

Note: There will be some meetings you will be asked not to attend due to confidentiality; in those instances, you will be asked to do work asynchronously.

This course can be taken as a 0.33 credit, 1-term class or as a 1 credit, full year class.

(New!) An Exploration of Architectural Eras

This course takes students on a journey through time, exploring the rich tapestry of architectural history from early human settlements to the present day. We'll delve into the various architectural styles, materials, and techniques that have been used throughout history, and how they reflect the cultures and societies that created them. From the grand pyramids of Egypt to the sleek skyscrapers of the modern era, we'll examine how architecture has evolved and continues to shape our world. This course may include quizzes and written assignments.

Note: This is a one term class, offered in the Winter term.

(New!) Python Programming for Scientists

This course teaches the fundamentals of computer science with the goal of being able to analyze and visualize large datasets using Python. You will complete a variety of small programming exercises in the beginning of the course to practice and cement your skills. In the latter half of the course, we'll hone and apply these newfound skills to larger passion projects in specific topic domains. The course will be taught using Python 3. We will cover the basics of programming: variables, control flow, repetition, data structures, abstraction, and basic object-oriented design. Special and frequent attention will be given to logical thinking and problem solving skills: how do you break down a problem into digestible, solvable pieces? And how do you reuse those solutions, and identify patterns to adapt them to other similar scenarios? You will demonstrate and push your skills through coding exercises, larger projects, and short writings and presentations.

Note: This is a one term class, meant for first-time programmers. The topics we explore may be adjusted to complement a concurrent class and can be taken by both middle and high school students.

This course may run depending on student interest.

(New!) History, Civics, and Action

This course invites students to explore the historical roots of today's most pressing issues. Covering a wide range of topics, from government and politics to science & technology, economics, culture and world affairs, this course is designed to guide students in exploring the origins and development of current debates and controversies. Utilizing a mix of primary and secondary sources this course aims to provide students with a rich understanding of the intricate tapestry of events, decisions, and movements that have shaped the contemporary world. By connecting these sources to popular news articles, it also aims at providing an engaging and relevant educational experience. This course equips students to participate thoughtfully in contemporary discussions, fostering their ability to contribute to the ongoing dialogue about our world's past, present, and future. This course not only enhances students' historical knowledge

but also empowers them to be informed and active participants in a democratic society, ready to shape its evolution.

This course may run depending on student interest.

Advanced Topics in Computer Science

Advanced Topics in Computer Science is an introductory college-level course that focuses on programming in Java, problem-solving, and algorithm development. The course emphasizes the design, writing, testing, and debugging of programs that solve real-world problems. This course will help prepare students for the AP CS A Exam.