Redwood Grove Academy

Homeschool Course Catalog

Palo Alto, CA • Grades 9-12 • 2022-26

Last updated: Oct 23, 2025

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Introduction

Course levels

All academic courses are designed for gifted learners, covering content and requiring output at an advanced or collegiate level; and are therefore classified as Honors. We also offer College Board Advanced Placement (AP) and Dual Enrollment courses via academic partners based on availability.

Courses taken at home use university-level resources. They are created in collaboration with the student, with the intention of studying a subject at greater depth, rigor, or specificity than other available options. We focus, where possible, on reading primary sources in their entirety in order to gain a deep understanding of the author's historical and intellectual context, primary argument, intellectual approach, and rhetorical style.

Course modes

Courses are either taken at home (home study) or through an academic partner, who may teach in-person or online. We carefully vet academic partners for rigor, quality of teaching, and depth and breadth of content coverage.

Tutorial model

Home study courses use a tutorial model centered around intensive one-on-one verbal and written dialogue. Students engage deeply with subject matter through discussions, dialectical journals, writing assignments, projects, and frequent, personalized feedback. This model emphasizes dialectic over lecture, and active learning over passive absorption.

Academic partners

Art of Problem Solving	Math courses focused on deep conceptual understanding and advanced problem-solving strategies
Clover Valley Chemistry	Advanced online chemistry courses
De Anza College	Community college in Cupertino, CA
Euler Circle Dr. Simon Rubinstein-Salzedo	University-level math courses tailored to advanced high-school students
Love of Math Dr. Heather Finotti	Proof-based courses for advanced math students, taught to university-level rigor
Pennsylvania Homeschoolers	Highly interactive online AP classes
Physics Prep	Interactive online AP Physics courses
Saddleback College	Community college in Mission Viejo, CA
Stanford Pre-Collegiate University-Level Online (ULO) Math & Physics Dr. Gary Oas	Math & physics courses originally developed for Stanford undergraduate students
Thinkwell	Award-winning, self-paced curricula

Course catalog legend

Level	Honors AP (Advanced Placement) Dual Enrollment
Mode	Home study (If via academic partner) ● Online ● In-person
Credit	0.5 to 1.0 (≥ 3.0 college units = 1.0 high school credit)

Social Studies

History of Africa

Level	Honors
Mode	Home study
Credit	1.0

This course provides a comprehensive survey of the history of the African continent from ancient to modern times. We examine the political, social, economic, and cultural developments that have shaped Africa, and in turn, the ways in which Africa has shaped the world.

Note from Head of School: The course was driven by the student's interest in learning more about Africa as a complement to her interest in the Arabic language. In addition to the primary text, the student sought out a variety of supplementary readings. The course emphasized examination of primary source documents and thesis-driven expository writing. The student wrote two midterm research papers ("The Aba Women's War in Nigeria" and "The Almohad Empire of Northern Africa") and a final paper examining the life and impact of Kongolese spiritual and political leader, Dona Beatriz. The student also completed a year-long capstone project: a visual companion to Harm's *Africa in Global History*. Using a combination of art and narration, the project is a comprehensive overview of African history.

Primary text(s) & course materials
Harms, Robert. *Africa in Global History: With Sources*. W. W. Norton & Company, 2018.

History of the Middle East

Level	Honors
Mode	Home study
Credit	1.0

This course surveys the rich and complex history of the Middle East. We examine political, social, economic, and cultural developments that shaped the Middle East from ancient times to the present day.

Note from Head of School: This course was driven by the interest of the student as a complement to her Arabic language studies. She chose a range of supplementary texts to develop a well-rounded understanding of the region's cultures and importance in the global context. The course emphasized further development of research skills and analytical writing, with a midterm paper examining the influence of women in the Ottoman Empire, and a final research paper exploring the longevity of the Persian Ismaili assassins. The course was complemented by a six-week study abroad scholarship through the National Security Language Initiative for Youth (NSLI-Y) program in Amman, Jordan.

Primary text(s) & course materials
Armstrong, Karen. *Islam: A Short History*. The Modern Library, 2002.
Lewis, Bernard. *The Middle East: A Brief History of the Last 2,000 Years*. Scribner, 1995.
Magidow, Melanie, translator. *The Tale of Princess Fatima, Warrior Woman: The Arabic Epic of Dhat al-Himma*. Penguin Books, 2021.

History 17B: History of the United States from 1800 to 1900

Prof. Christopher Jackson
De Anza College

Level	Dual Enrollment
Mode	Online • Asynchronous
Credit	1.0 high school • 4.0 college

This course examines U.S. civilization from 1800 to 1900 and includes a survey of U.S. history (political, economic, intellectual, cultural, and social developments).

Look at the back of an American coin: you will see the slogan *E pluribus Unum* — Latin for "Out of many, one." But what does this really mean? One *what*? There are many different answers to that question, several of which we will examine in this course. The United States is a country that has always been striving to define itself. This course will begin to explore that process of self-definition.

This survey will examine the evolution of the United States from an isolated group of "united" states to its emergence as a world power at the dawn of the 20th century. We will examine the democratization of politics in the early 19th century, as well as the expansion of the country and the problems created by that expansion. We will conduct original research into the memory of slavery for African Americans. We will examine the causes and consequences of the Civil War, the challenges of industrialization, and finally the emergence of the United States as a world power.

The student writes two primary source analysis papers; participates in weekly discussions, quizzes, and peer reviews; and writes an essay-based final exam.

Primary text(s) & course materials
Corbett, P. Scott, et al. *U.S. History*. OpenStax, 2014. openstax.org/details/books/us-history.

Honors Macroeconomics (Compatible with AP)

Thinkwell

Dr. Steven Tomlinson

Level	Honors
Mode	Online • Self-paced
Credit	0.5

Thinkwell's Macroeconomics Compatible with AP follows the AP topics outline. This AP-aligned macroeconomics course covers content normally taught in an introductory college course. Topics covered include:

- macroeconomic measurements;
- economic fluctuations due to unemployment and inflation;
- aggregate expenditures model;
- money (banking, spending, saving and investing);
- aggregate demand and aggregate supply model;
- monetary and fiscal policy;
- productivity and growth; and
- international issues.

Primary text(s) & course materials
Shapiro, David, et al. *Principles of Macroeconomics*. 3rd ed., OpenStax, 2022. openstax.org/details/books/principles-macroeconomics-3e
Tomlinson, Steven. "Macroeconomics Compatible with AP Online Course." *Thinkwell*, video lecture series.

American Government & Political Philosophy

Level	Honors
Mode	Home study
Credit	0.5

This course explores the philosophy, policy, and practice of American government through in-depth study of our nation's founding documents and philosophical predecessors. Through primary source readings, lectures, discussion, weekly short essays, and analytical papers, students critically engage with the ideas that have shaped the American political system, examining their relevance in contemporary governance. Students write two policy-oriented research papers in which they study an issue of interest and argue for or against a U.S. government policy.

Beyond the classroom, students participate in a community engagement practicum to gain firsthand experience in municipal government. A key goal is to foster a deeper understanding of democratic principles while equipping students with practical skills for active citizenship.

Note from Head of School: This course was designed around the student's interest in learning not only about modern American government, but also in understanding the primary ideas that influenced the framing of the Constitution.

Primary text(s) & course materials (planned, subject to change)
U.S. Constitution and Other Key American Writings. Canterbury Classics, 2015.
Skousen, Paul B., et al. *The Federalist Papers Made Easier*. Providentia Press, 2022.
Victor, Jennifer Nicoll. *Understanding the U.S. Government*. The Teaching Company, 2020. Streaming lecture series.
Locke, John. *Second Treatise of Government and A Letter Concerning Toleration*. Oxford University Press, 2016.

English

Great Books 1 & Rhetorical Foundations

Level	Honors
Mode	Home study
Credit	1.0

This course serves as an introduction to the Great Books model of learning, with an emphasis on ancient Greek thinkers and their impact on Western civilization. Through philosophy and literature, we examine questions of enduring importance to human existence. We seek to understand how the Greeks framed these questions and how their approach has influenced Western thought and literature.

This introductory rhetoric course focuses on the classical framework of invention, arrangement, and style to build persuasive arguments.

Invention: The student is introduced to the common topics of classical rhetoric: definition, comparison, relationship, circumstance, and testimony; employing these tools to generate comprehensive analysis of a text or topic.

Arrangement: The student practices the structure of classical argument: *exordium, narratio, partitio, confirmatio, refutatio,* and *peroratio*, learning how to adapt the framework for modern audiences.

Style: Using Corbett's text and Erasmus's model of copia (expressing a thought in multiple ways) the student undertakes a systematic practice of the schemes and tropes that can be used to bring style and pathos to writing.

Through the tutorial model, the student conducts close-readings, keeps dialectical journals, participates in Socratic discussion, and writes response papers, narrative and creative pieces, research papers, and literary analysis.

Primary text(s) & course materials
Aristotle. *Poetics*. Translated by Malcolm Heath, Penguin Books, 1996.
Bauer, Susan Wise. *Writing with Skill, Level 3: Instructor Text*. Peace Hill Press, 2014.
Keller, Helen. *The Story of My Life*. Dover Publications, 1996.
Lewis, C. S. *Mere Christianity*. HarperCollins, 2017.
McWhorter, John. "Every Day, We're Told to Use New Lingo. What Does That Really Accomplish?" *The New York Times*, 24 May 2022. https://www.nytimes.com/2022/05/24/opinion/woke-words.html
Orwell, George. *1984*. Signet Classics, 2017.
Orwell, George. "Politics and the English Language." *Essays*, Alfred A. Knopf, 2002.
Plato. *Five Dialogues: Euthyphro, Apology, Crito, Meno, Phaedo*. Translated by G. M. A. Grube, revised by John M. Cooper, 2nd ed., Hackett Publishing, 2002.
Plato. *Republic*. Translated by G. M. A. Grube, revised by C. D. C. Reeve, Hackett Publishing, 1992.
Shakespeare, William. *Macbeth*. Edited by Roma Gill, Oxford University Press, 2009.
Sophocles. *The Three Theban Plays: Antigone, Oedipus the King, Oedipus at Colonus*. Translated by Robert Fagles, Penguin Books, 1984.
Whorf, Benjamin Lee. "Science and Linguistics." *Technology Review*, vol. 42, 1940. web.mit.edu/allanmc/www/whorf.scienceandlinguistics.pdf
Short stories & poetry • Fitzgerald, F. Scott. "The Curious Case of Benjamin Button." *The Short Stories of F. Scott Fitzgerald*, edited by Matthew J. Bruccoli, Scribner, 1989.

- Fitzgerald, F. Scott. "The Lees of Happiness." *Tales of the Jazz Age*, Charles Scribner's Sons, 1922.
- Coleridge, Samuel Taylor. "The Rime of the Ancient Mariner." *Lyrical Ballads*, by William Wordsworth and Samuel Taylor Coleridge, 1798. The Broadview Press, 2008.
- Mansfield, Katherine. "The Garden Party." *The Garden Party and Other Stories*, Penguin Classics, 2007.
- Donne, John. "Holy Sonnet 10: Death, be not proud." *The Norton Anthology of English Literature*, edited by Stephen Greenblatt, 10th ed., vol. B, W. W. Norton, 2018.
- Bradbury, Ray. "The Veldt." *The Illustrated Man*, Simon & Schuster, 2012.
- Bradbury, Ray. *The Illustrated Man*. Simon & Schuster, 2012.
- Orwell, George. "Shooting an Elephant." *Shooting an Elephant and Other Essays*, Secker & Warburg, 1950.

Great Books 2 & Classical Rhetoric

Level	Honors
Mode	Home study
Credit	1.0

This course continues in-depth readings of seminal works of western civilization in order to better understand the development of political, religious, literary, and philosophical movements through time. We seek to understand how individuals and societies formulate values and live lives of meaning, compassion, and purpose.

The course is designed to serve as a foundation from which to conduct informed, comparative study of non-western thought and literature.

This intermediate rhetoric course expands on the skills of invention, arrangement, and style to build persuasive arguments. Focusing on Aristotelian forensic rhetoric, students examine whether actions are just, ethical, or legal, developing the ability to analyze, structure, and present compelling arguments.

The student keeps dialectical reading journals, participates in Socratic discussion, writes response papers, four judicial addresses, a comparison contrast essay (Machiavellian and Boethian approaches to fortune), and two analytical research papers for submission to the John Locke Global Essay Competition.

Primary text(s) & course materials
Corbett, Edward P. J., and Robert Connors. *Classical Rhetoric for the Modern Student*. 4th ed, Oxford University Press, 1999.
Aquinas, Thomas. *Summa Theologica*. Translated by the Fathers of the English Dominican Province, *New Advent*, 2003, www.newadvent.org/summa/. • "Prima Pars: Question 1: The Nature and Extent of Sacred Doctrine, Article 1" • "Prima Pars: Question 2: The Existence of God" • "Prima Secundae Partis: Question 1: Man's Last End"
Cicero, Marcus Tullius. "On Friendship." *The Internet Ancient History Sourcebook*, edited by Paul Halsall, Fordham University, sourcebooks.fordham.edu/ancient/cicero-friendship.asp. Accessed 10 Aug. 2024.
Cicero, Marcus Tullius. "On Old Age." *The Internet Ancient History Sourcebook*, edited by Paul Halsall, Fordham University, sourcebooks.fordham.edu/ancient/cicero-friendship.asp. Accessed 10 Aug. 2024.
Boethius, Anthius. *The Consolation of Philosophy*. Translated by Victor Watts, Penguin Classics, 1999.
Plutarch. "Life of Alexander." *Greek Lives*. Translated by Robin Waterfield, Oxford University Press, 2009.
St. Augustine of Hippo. *Confessions*. Translated by Henry Chadwick, Oxford University Press, 2009. • Books I-IX
Machiavelli, Niccolò. *The Prince*. Translated by George Bull, Penguin Classics, 2003.

Descartes, René. *Meditations on First Philosophy*. Translated by Donald Cress, 3rd ed., Hackett Classics, 1993.
Shakespeare, William. *Julius Caesar*. Edited by Roma Gill, Oxford University Press, 2010.
Nietzsche, Friedrich. *Beyond Good and Evil*. Translated by Michael Scarpitti, Penguin Classics, 2014. • Parts 1, 5, 9
Kafka, Franz. "The Metamorphosis." *Metamorphosis and Other Stories*. Translated by Michael Hoffman, Penguin Classics, 2008.
Bradstreet, Anne. *The Works of Anne Bradstreet*. Edited by Jeannine Hensley, Harvard University Press, 2010.
Marcus Aurelius. *Meditations*. Translated by Gregory Hays, The Modern Library, 2003.
Lewis, C. S. *The Abolition of Man*. HarperCollins, 2015.
Lewis, C. S. "The Humanitarian Theory of Punishment." *Res Judicatae (University of Melbourne)*, vol. 30, 1954.

AP English Language & Composition

Pennsylvania Homeschoolers

Maya Inspektor

Level	AP
Mode	Online • Daily
Credit	1.0

This highly interactive course is designed to prepare students for the AP English Language and Composition exam. Students learn to understand complicated texts and write with complexity, clarity and polish. Essentially, the goal of an AP English Language and Composition course is for students to develop maturity as readers,

writers, and thinkers. To reach this goal, this course involves extensive reading, writing, and online discussion.

Course writing covers a wide range of genres. During the year, students compose journal entries, discussion question responses, argumentative papers, and analytic essays. They also write several personal creative narratives. They engage in the challenging process of composing a researched argument essay that they can submit as an entry into an essay competition.

Primary text(s) & course materials
Shea, Renee H., et al. *The Language of Composition: Reading - Writing - Rhetoric*. 2nd ed., Bedford / St. Martin's, 2012.
Strunk, William and E. B. White. *The Elements of Style*. 4th ed., Pearson, 1999.
Rodriguez, Richard. *Hunger of Memory*. Bantam Books, 1983.
Thoreau, Henry David. *Walden and Civil Disobedience*. Penguin Classics, 1983.

Great Books 3 & Advanced Rhetoric

Level	Honors
Mode	Home study
Credit	1.0

In this final year of Great Books study, we continue in-depth study of classic works in literature, philosophy, social and political science. We seek to follow and understand the historical, religious, political, and intellectual precedents that have shaped modern thought. Why does our society believe x about y? Did we always think this way? What competing viewpoints were there? How do a society's viewpoints evolve over time?

This advanced rhetoric course expands on techniques employed in the classical canons of invention, arrangement, and style. The student focuses on Aristotelian deliberative discourse—a consideration of the expediency, utility, and honor of a course of action, with emphasis on how to adapt these tools for modern communication.

The student keeps dialectical reading journals, participates in daily discussions, writes response papers, at least five deliberative addresses, a comparison contrast essay, and a capstone research paper for submission to an international writing competition.

Primary text(s) & course materials (planned, subject to change)
Aquinas, Thomas. *Summa Theologica*. Translated by the Fathers of the English Dominican Province, *New Advent*, 2023, www.newadvent.org/summa/. • "Prima Pars, Question 21: The Justice and Mercy of God" • "Prima Secundæ Partis, Question 3: What is Happiness?" • "Prima Secundæ Partis, Question 58: The difference between moral and intellectual virtues" • "Prima Secundæ Partis, Question 98: The Old Law" • "Supplementum Tertiae Pars: Question 98 Of the Will and Intellect of the Damned"
Aristophanes. "Clouds." *Frogs and Other Plays*, translated by Stephen Halliwell, Oxford University Press, 2015.
Aristotle. *Nicomachean Ethics.* Translated by Adam Beresford, Penguin Classics, 2020. • Books I-III, V, VIII-IX
Byock, Jesse, translator. *The Saga of the Volsungs*. Penguin Classics, 1999.
Corbett, Edward P. J., and Robert J. Connors. *Classical Rhetoric for the Modern Student*. 4th ed., Oxford University Press, 1999.
Dante Alighieri. *Monarchy*. Translated and edited by Prue Shaw, Cambridge University Press, 1996.

Dostoevsky, Fyodor. *The Brothers Karamazov*. Translated by Michael R. Katz, W. W. Norton, 2023.
Freud, Sigmund. *Civilization and Its Discontents*. Edited by Samuel Moyn, W. W. Norton, 2021.
Goethe, Johann Wolfgang von. *Faust, A Tragedy*. Translated by Martin Greenberg, Yale University Press, 2014.
Johnson, Samuel. *The History of Rasselas, Prince of Abyssinia*. Penguin Classics, 2007.
Mill, John Stuart. "Utilitarianism." *On Liberty, Utilitarianism, and Other Essays*, Oxford University Press, 2015.
Montaigne, Michel. *The Complete Works*. Translated by Donald M. Frame, A. A. Knopf, 2003. ● "On Solitude" ● "On Pedantry" ● "On the Education of Children" ● "To Philosophize is to Learn to Die"
Shakespeare, William. *Othello*. Edited by Roma Gill, Oxford University Press, 2009.
Voltaire. *Candide*. Edited by Nicholas Cronk, 3rd ed., W. W. Norton & Company, 2016.

Mathematics

Geometry

Art of Problem Solving

Level	Honors
Mode	Online • Weekly
Credit	1.0

This course is specifically designed for high-performing students. It should be considered equivalent to or more difficult than a full year of honors geometry at the high school level, as it emphasizes rigorous proofs and covers material up to basic trigonometry.

Each week, the student completes a set of six to 12 difficult short-answer problems. The student also completes a writing problem each week, which requires the student to write a full solution in complete sentences, rather than simply provide a numerical answer. Each problem serves as a capstone for the week and provides practice in mathematical writing. Here, the student is expected to articulate their creative, critical, and logical reasoning, and to show any step-by-step computations that lead to their final answer or proof. Writing problems are reviewed by our instructional staff, and students receive a grade as well as personalized feedback on both the technical and stylistic aspects of their submission.

Note from Head of School: This course was completed prior to high school. It is not included in GPA calculations and is not counted toward graduation requirements.

Primary text(s) & course materials
Rusczyk, Richard. *Introduction to Geometry*. 2nd ed., Art of Problem Solving, 2019.

Precalculus

Art of Problem Solving

Level	Honors
Mode	Online • Weekly
Credit	1.0

This course is a full year in honors precalculus, covering trigonometry, complex numbers, and linear algebra. Precalculus is specifically designed for exceptionally high-performing learners.

Each week, the student completes a set of six to 12 difficult short-answer problems. The student also completes a writing problem each week, which requires the student to write a full solution in complete sentences, rather than simply provide a numerical answer. Each problem serves as a capstone for the week and provides practice in mathematical writing. Here, the student is expected to articulate their creative, critical, and logical reasoning, and to show any step-by-step computations that lead to their final answer or proof. Writing problems are reviewed by our instructional staff, and students receive a grade as well as personalized feedback on both the technical and stylistic aspects of their submission.

Primary text(s) & course materials
Rusczyk, Richard. *Precalculus*. 2nd ed.,, Art of Problem Solving, 2021.

Single-Variable Calculus

Love of Math

Dr. Heather Finotti

Level	Honors
Mode	Online • Twice weekly
Credit	1.0

This course covers limits, continuity, derivatives and their applications, definite and indefinite integrals, infinite sequences and series, plane curves, polar coordinates, and base differential equations. The course is aligned with college-level content, and moves at a college pace. While the course is not officially designated by the College Board as an AP course, the content covers all material needed for the AP Calculus BC exam.

Each week, the student completes two problem sets, two to seven writing problems, a quiz, and two challenge problems. Challenge problems are problems of exceptional rigor that require the student to demonstrate creative, critical, and logical reasoning in a step-by-step written format. Each semester, the student also completes two midterms and a final exam.

Primary text(s) & course materials
Thomas, George B. *Calculus: Early Transcendentals*. 15th ed., Pearson, 2023.
Patrick, David. *Calculus*. 2nd ed., Art of Problem Solving, 2020.

Multivariable Calculus

Love of Math

Dr. Heather Finotti

Level	Honors
Mode	Online • Twice weekly
Credit	1.0

This course covers:

- vectors and geometry of space;
- vector valued functions and motion in space;
- functions of several variables;
- partial derivatives;
- directional derivatives and gradient vectors;
- linearization and differentials;
- extreme values and saddle points;
- Taylor's formula for two variables;
- integration;
- line integrals;
- surfaces and surface integrals;
- Green's Theorem;
- Stoke's Theorem; and
- Divergence Theorem.

The course is taught at a university pace and level of rigor.

Primary text(s) & course materials
Thomas, George B. *Calculus: Early Transcendentals*. 15th ed., Pearson, 2023.

Differential Equations

Love of Math

Dr. Heather Finotti

Level	Honors
Mode	Online • Twice weekly
Credit	1.0

This honors-level course in Differential Equations offers a rigorous and in-depth study of both the theory and application of ordinary differential equations. Topics include:

- existence and uniqueness;
- first-order equations;
- mathematical modeling and numerical methods;
- linear second-order equations;
- theory of high-order linear differential equations and matrix methods for linear systems;
- introduction to systems and phase plane analysis;
- stability of autonomous systems;
- Laplace transforms; and
- series solutions.

This course is taught at a university pace and level of rigor.

Primary text(s) & course materials
Nagle, R. Kent, et al. *Fundamentals of Differential Equations and Boundary Value Problems*. 7th ed., Pearson, 2017.

Intermediate Number Theory

Art of Problem Solving

Level	Honors
Mode	Online • Weekly
Credit	0.5

This course is comparable to a collegiate course in number theory.

Topics covered include:

- bases;
- divisibility, divisors, and multiplicative functions;
- prime factorizations;
- algebra in modular arithmetic;
- linear diophantine equations;
- perfect squares;
- Fermat's Little Theorem;
- Euler's Theorem;
- orders and primitive roots;
- quadratic residues and squares; and
- sums of two squares.

Each week, the student completes a set of six to 12 difficult short-answer problems. The student also completes a writing problem each week, which requires the student to write a full solution in complete sentences, rather than simply provide a numerical answer. Each problem serves as a capstone for the week and provides practice in mathematical writing. Here, the student is expected to articulate their creative, critical, and logical reasoning, and to show any step-by-step computations that lead to their final answer or proof. Writing problems are reviewed by our instructional staff, and students receive a grade as well as personalized feedback on both the technical and stylistic aspects of their submission.

Primary text(s) & course materials
Custom online materials curated by Art of Problem Solving

Intermediate Counting & Probability

Level	Honors
Mode	Home study
Credit	1.0

This course, based on the Art of Problem Solving's *Intermediate Counting and Probability* text, covers more advanced concepts in counting and probability, including:

- Principle of Inclusion and Exclusion;
- 1:1 correspondences;
- the Pigeonhole Principle;
- constructive expectation;
- Fibonacci and Catalan numbers;
- recursion;
- conditional probability;
- generating functions;
- graph theory; and more.

This curriculum is specifically designed for high-performing students.

Note from Head of School: The student self-studied the entirety of the text, completing all exercises, review, and challenge problems.

Primary text(s) & course materials
Patrick, David. *Intermediate Counting and Probability*. Art of Problem Solving, 2007.

STAT C1000: Introduction to Statistics

De Anza College

Teck Ky

Level	Dual Enrollment
Mode	In-person • Twice weekly
Credit	1.0 high school • 4 college

This course is an introduction to statistical thinking and processes, including methods and concepts for discovery and decision-making using data from a broad range of disciplines. Topics include:

- descriptive statistics;
- probability and sampling distributions;
- statistical inference;
- correlation and linear regression;
- analysis of variance, chi-squared and t-tests; and
- application of technology for statistical analysis including the interpretation of the relevance of the statistical findings.

This course is also an introduction to data analysis, making use of graphical and numerical techniques to study patterns and departures from patterns. The student studies randomness with an emphasis on understanding variation, collects information in the face of uncertainty, checks distributional assumptions, tests hypotheses, uses probability as a tool for anticipating what the distribution of data may look like under a set of assumptions, and uses appropriate statistical models to draw conclusions from data.

Primary text(s) & course materials
Soler, Frank P., et al. *Statistics: Understanding Uncertainty.* 4th ed., Associated Research Consultants Publishers, 2016.

Fundamentals of Higher Mathematics (planned)

Euler Circle

Dr. Simon Rubinstein-Salzedo

Level	Honors
Mode	In-person • Twice weekly
Credit	1.0

A good part of the past century of mathematics has been devoted to finding deep connections between seemingly disparate subjects: algebra and topology, geometry and algebra, number theory and analysis, analysis and combinatorics, and many more combinations of 2 or more subjects. A few topics in mathematics make appearances almost everywhere, and are often considered the most important for a mathematician to learn: linear algebra and topology. Basic techniques from abstract algebra make appearances almost everywhere as well. Analytic techniques make surprise appearances as well, but are especially important for understanding how real-life processes behave, such as light and heat. This sequence will be an introduction to some of the most basic and important techniques from linear algebra, abstract algebra, point-set topology, and real analysis.

This will be a unique class teaching some of the most important topics from a variety of subjects, and will focus more on breadth over depth. The goal will be to learn prerequisite material needed for our advanced classes such as Analytic Number Theory, Complex Analysis, Differential Geometry, Ergodic Theory, p-adic Analysis, and Ring Theory and Algebraic Geometry.

Primary text(s) & course materials
Gilula, Maxim. *Fundamentals of Mathematics*. Self-published by Euler Circle, 2025.

Linear Algebra (planned)

Love of Math

Dr. Heather Finotti

Level	Honors
Mode	Online • Twice weekly
Credit	1.0

Throughout history, we have seen that mathematical structures and ideas that were created long ago with seemingly no "real-world" application at the time, suddenly emerge as exactly what humanity needed to solve a pressing real world problem. It has also often happened that some mathematical structure typically used in one domain (like physics), later finds sudden important use in a very different domain (like sociology).

In linear algebra (often referred to as matrix algebra), we have a subject founded in the simple and highly practical purpose of solving systems of linear equations that evolved from there into something that is key to many areas of mathematics and underlies a vast array of real-world applications.

It is important to note that this class is proof-based. While it does contain computation as well, students write proofs regularly in the homework sets. The pace and level of rigor in this class is that of a complete university-level linear algebra course.

Primary text(s) & course materials
Penney, Richard C. *Linear Algebra: Ideas and Applications*. 4th ed., Wiley, 2015.
Bretscher, Otto. *Linear Algebra with Applications*. 5th ed., Pearson, 2013.

Science

Advanced Honors Chemistry (with lab)

Clover Valley Chemistry
Connie Schwartz

Level	Honors
Mode	Online • Asynchronous
Credit	1.0

This is a rigorous course intended for students who plan to major in a STEM program at university. The course covers the standard introductory chemistry topics, along with a mathematical treatment where appropriate, and also covers organic chemistry and biochemistry in a more expansive fashion than is usually found in honors chemistry courses.

Note from Head of School: This course was driven by the student's interest in chemistry and was taken in 8th grade. It is not counted toward graduation requirements and is not included in GPA calculations. At the conclusion of the course, the student earned a 5 on the AP Chemistry exam.

Primary text(s) & course materials
Chang, Raymond, and Kenneth A. Goldsby. *General Chemistry: the Essential Concepts*. 7th ed., McGraw-Hill, 2014.
"Standard MicroChem Kit 2nd Edition." *Quality Science Labs*, 2023, www.qualitysciencelabs.com/chemistry-labs/microchem-kit-standard-2nd-edition/ .

Introduction to Organic Chemistry & Biochemistry for Advanced High School Students

Clover Valley Chemistry
Connie Schwartz

Level	Honors
Mode	Online • Asynchronous
Credit	1.0

This course covers the basics of introductory organic chemistry and biochemistry and is delivered as an advanced chemistry course for high school. This course is taught at the college level.

Scope and sequence:

- Alkanes, Alkenes, Alkynes, and Aromatic Compounds
- Alcohols, Phenols, Thiols, and Ethers
- Aldehydes, Ketones, and Chiral Molecules
- Carboxylic Acids and Esters; Amines and Amides
- Conformer Analysis, R/S Configuration, Mechanisms, Reaction Catalog, & Synthesis
- Carbohydrates, Lipids, Amino Acids and Proteins
- Enzymes and Vitamins
- Nucleic Acids and Protein Synthesis
- Metabolic Pathways for Carbohydrates, Lipids, and Amino Acids
- Metabolism and Energy Production

Primary text(s) & course materials
Timberlake, Karen C. *General, Organic, and Biological Chemistry: Structures of Life*. 4th ed., Pearson, 2011.

Physics C Mechanics (with Lab)

Physics-Prep

Dr. Jack Kernion

Level	AP
Mode	Online • Self-paced
Credit	1.0

Physics C Mechanics is a calculus-based course designed to expose the student to all the foundational topics needed to understand such concepts as motion, force, energy, momentum, rotation, harmonic motion, and gravitation. The program of study is equivalent to a first semester college physics course for engineering students.

The backbone of the course is a problem-solving approach that emphasizes methodology over memorization.

Primary text(s) & course materials
Moebs, William, et al. *University Physics, Volume 1*. OpenStax, 21 July 2023, openstax.org/books/university-physics-volume-1/pages/1-introduction.

Physics C Electricity & Magnetism (with Lab)

Pennsylvania Homeschoolers

Dr. Jack Kernion

Level	AP
Mode	Online • Asynchronous
Credit	1.0

Physics C Electricity and Magnetism is a calculus-based course designed to expose the student to all the foundational topics needed to understand such phenomena as electric force, electric field, electric potential, electric circuits, magnetic effects, electromagnetic induction, and electric energy. The program of study is equivalent to a second semester college physics course for engineering students.

This course prepares the student for the AP Physics C E/M test administered by the College Board. The backbone of the course is a problem-solving approach that emphasizes methodology over memorization.

Primary text(s) & course materials
Moebs, William, et al. *University Physics, Volume 2*. OpenStax, 21 July 2023, openstax.org/books/university-physics-volume-2/pages/1-introduction.

XP645: Light & Heat

Stanford University-Level Online Math and Physics

Dr. Gary Oas

Level	Honors
Mode	Online • Weekly
Credit	1.0 • 3 Continuing Studies

An introduction to optics and thermodynamics. Topics include:

- temperature and heat;
- properties of matter;
- introduction to the kinetic theory of matter;
- light and electromagnetic waves;
- reflection and refraction of light;
- lens systems;
- interference; and
- diffraction.

These college-level courses align with Stanford University's undergraduate math and physics courses.

Primary text(s) & course materials
Tipler, Paul A., and Gene Mosca. *Physics For Scientists and Engineers*. 6th ed., W. H. Freeman, 2008.

AP Biology (with Lab)

BlueTent Online

Bekah Hilton

Level	AP
Mode	Online • Asynchronous
Credit	1.0

This course is designed to help students develop a thorough understanding of biological concepts, view science as a *process* rather than an accumulation of facts, acquire personal experience in scientific inquiry, recognize unifying themes that integrate the major topics of biology, and apply biological knowledge and critical thinking to environmental and social concerns.

The College Board has structured AP Biology to be equivalent to two semesters of college Biology, with topics studied including the chemistry of life, cells and cell energetics, heredity, molecular genetics, evolution, diversity of organisms, structure and function of both plants and animals, and ecology.

Primary text(s) & course materials
Mader, Sylvia S., and Michael Windelspecht. *Biology*. 13th ed., McGraw Hill, 2019.

XP670: Modern Physics (planned)

Stanford University-Level Online Math and Physics
Dr. Gary Oas

Level	Honors
Mode	Online • Weekly
Credit	1.0 • 3 Continuing Studies

An introduction to the two pillars of modern physics. Topics include:

- special relativity and an introduction to general relativity;
- experimental basis of quantum theory;
- quantization of light;
- Hilbert space structure of qubits;
- multiparticle states;
- entangled states;
- incompatible observables;
- Bell inequalities;
- introduction to quantum information and quantum computing; and
- Schrödinger equation.

Prerequisites: Light and Heat and Multivariable Differential Calculus, and Linear Algebra as corequisites.

These college-level courses align with Stanford University's undergraduate math and physics courses.

Primary text(s) & course materials
Taylor, Edwin F., and John Archibald Wheeler. *Spacetime Physics*. 2nd ed., W. H. Freeman, 1992.
Susskind, Leonard, and Art Friedman. *Quantum Mechanics*. Basic Books, 2015.
Scarini, Valerio, et al. *Six Quantum Pieces*. World Scientific, 2010.

World Languages

ARAB 1: Elementary Arabic

Saddleback College
Professor Amina Yassine

Level	Dual Enrollment
Mode	Online • Asynchronous
Credit	1 high school • 5.5 college

Designed to develop the fundamentals of communicative competence in daily spoken Arabic. The emphasis is on listening, comprehension, and conversational skills. Early reading and writing skills are introduced, as well as fundamental aspects of culture. Equivalent to two years of high school Arabic.

Primary text(s) & course materials
Brustad, Kristen, et al. *Alif Baa: Introduction to Arabic Letters and Sounds*. 3rd ed., Georgetown University Press, 2010.
Brustad, Kristen, et al. *Al-Kitaab fii Ta'allum al-'Arabiyya: A Textbook for Beginning Arabic*. 3rd ed., Georgetown University Press, 2011.

ARAB 2: Elementary Arabic

Saddleback College
Professor Amina Yassine

Level	Dual Enrollment
Mode	Online • Asynchronous

Credit	1 high school • 5.5 college

Designed to further the fundamentals of communicative competence in daily spoken Arabic. Although the focus remains on listening, comprehension, and speaking, reading and writing skills are expanded. This course continues the familiarization with customs and cultural achievements begun in the previous semester.

Primary text(s) & course materials
Brustad, Kristen, et al. *Al-Kitaab fii Ta'allum al-'Arabiyya: A Textbook for Beginning Arabic*. 3rd ed., Georgetown University Press, 2011.

ARAB 3: Intermediate Arabic

Saddleback College
Professor Amina Yassine

Level	Dual enrollment
Mode	Online • Asynchronous
Credit	1 high school • 5 college

The intermediate level course focuses on fluency in reading, writing, speaking, and listening. Continues the study of Arabic culture.

Primary text(s) & course materials
Brustad, Kristen, et al. *Al-Kitaab fii Ta'allum al-'Arabiyya: A Textbook for Beginning Arabic*. 3rd ed., Georgetown University Press, 2011.

ARAB 10: Intermediate Conversational Arabic

Saddleback College
Professor Amina Yassine

Level	Dual enrollment
Mode	Online • Weekly
Credit	1 high school • 3 college

Designed to develop fluency in Arabic. The focus is on the Levantine dialect, although formal words and expressions are also covered. The student is expected to create short presentations in dialect once per week, as well as a longer presentation that serves as the final exam.

Primary text(s) & course materials
Handouts containing several hundred vocabulary words on topics including but not limited to daily routine, the outdoors, ordering at a restaurant, emotions and opinions, holidays, interior furnishings, and polite expressions.

ARAB 4: Intermediate Arabic

Saddleback College
Professor Amina Yassine

Level	Dual enrollment
Mode	Online • Asynchronous
Credit	1 high school • 5 college

Emphasizes fluency in speaking, reading, writing, and comprehension of Arabic. Includes selected readings and discussions from the basic four genres in Arabic and Arabic-American literature, culture, and customs.

Primary text(s) & course materials
Brustad, Kristen, et al. *Al-Kitaab fii Ta'allum al-'Arabiyya, Part Two: A Textbook for Beginning Arabic*. 3rd ed., Georgetown University Press, 2021.

Advanced Chinese Language & Culture, Tutorial

Level	Honors
Mode	Online • Twice weekly
Credit	0.5

This course is a one-to-one advanced tutorial designed to achieve native level cultural fluency and further expansion of vocabulary, written, and spoken fluency beyond the basics covered in standard Chinese language courses. The tutor is a certified language teacher who resides in Taiwan and conducts lessons through an online platform.

Primary text(s) & course materials
National Taiwan Normal University, Mandarin Training Center. *A Course in Contemporary Chinese, Volume 3*. National Taiwan Normal University Press, 2016.
Other resources curated by tutor

KORE 1: Elementary Korean

De Anza College

Professor Young Sook Kim

Level	Dual Enrollment
Mode	In-person • Twice weekly
Credit	1.0 high school • 5.0 college

This course teaches the Korean Hangul by applying the natural approach in the classroom. The materials are designed to encourage the students to interact in Korean as naturally and spontaneously as possible. It introduces vocabulary skills, decoding skills, and fundamental sentence structures in the present and past. Pronunciation, grammar, and everyday vocabulary are stressed as indispensable tools for comprehension and expression. Aspects of Korean culture and history are covered as well.

Primary text(s) & course materials
Cho, Young-mee Yu, et al. *Integrated Korean: Beginning 1*. 3rd ed., University of Hawaii Press, 2019.
Park, Mee-Jeong, et al. *Integrated Korean Workbook: Beginning 1*. 3rd ed., University of Hawaii Press, 2019.

Electives

Introduction to Programming through Python

Art of Problem Solving

Level	Honors
Mode	Online • Asynchronous
Credit	0.5

This course is specifically designed for high-performing learners and covers basic programming concepts such as variables, data types, iteration, flow of control, input/output, and functions.

Primary text(s) & course materials
Online course materials created by Art of Problem Solving

Socratic Logic, Homeschool

Level	Honors
Mode	Home study
Credit	0.5

This course introduces students to the foundational principles of sound reasoning through the study of both informal and formal logic. Students will explore the three acts of the mind—simple apprehension, judgment, and inference—as the basis for all logical thought. The course covers the structure and relationships of propositions, how to identify and define terms accurately, and how to translate everyday arguments into categorical form. Students will examine relationships of

opposition and equivalence between statements, construct and analyze syllogisms, and learn methods to determine their validity. Emphasis will also be placed on recognizing common informal fallacies, helping students think critically, argue clearly, and evaluate reasoning effectively in both academic and real-world contexts.

The student engages in close reading of the text, problem sets, oral exams, writes two logical disputations modeled on Aquinas's *Summa Theologica*, analyzes an extended Socratic dialogue, and, for the final project, writes a Socratic Dialogue to demonstrate and synthesize the many facets of Socratic logic that have been examined during the course.

Primary text(s) & course materials
Kreeft, Peter. *Socratic Logic: A Logic Text Using Socratic Method, Platonic Questions, and Aristotelian Principles*. Ed 3.1, St. Augustine's Press, 2010.

Advanced Intermediate Piano
Advanced Piano 1
Advanced Piano 2

Aera Joo

Level	Standard
Mode	In-person • Weekly
Credit	1.0 per year (Grades 9, 11, 12)

This series of courses is designed for experienced piano students seeking to refine their technical skills, interpretive abilities, and musical expression. Emphasis is placed on advanced repertoire from various historical periods, including Baroque, Classical, Romantic, and Contemporary works. Students will engage in solo

performance, sight-reading, and score analysis, while also exploring technique development through scales, arpeggios, and etudes.

Recent pieces
Bach: Intermezzo Debussy: Pour Le Piano—Sarabande Debussy: Pour Le Piano—Toccata

Physical Education

Physical Education & Health

Level	Standard
Mode	In-person
Credit	1.0 per year (Grades 9-11)

The RGA physical education program emphasizes lifelong wellness habits through rotating fitness units and student-led challenges. Fitness units have included swimming, cycling, hiking, running, and high intensity interval training, among others. The student also sets personal goals that have included training for and completing a half-marathon.

The program includes instruction in nutrition and health, with a survey of common chronic metabolic diseases and a study of nutritional and lifestyle habits that promote longevity and wellness. The courses require a minimum of 4 hours of moderate-intense physical activity per week throughout the year.

KNES 20A: Fencing Level 1 (planned)

Level	Standard
Mode	Dual Enrollment • Twice weekly
Credit	0.5 high school • 0.5 college

This course is an introduction to Kinesiology through the sport of fencing. Level 1 of fencing will teach the student fundamental techniques and skills utilizing the French foil. The rules and regulations governing fencing will be covered. Exercise physiology, nutrition and wellness concepts related to total fitness and individual

variations due to age, gender, and genetics will be explored. A brief historical examination of the various styles of this international sport will be included. This class meets two hours per week.

PHED 36A: Beginning Archery (planned)

Level	Standard
Mode	Dual Enrollment • Twice weekly
Credit	0.5 high school • 0.5 college

Introduction to Olympic archery using the recurve bow. Includes building a good basic foundation for shooting using the recurve bow through the utilization and practice of various skill development techniques.

Primary text(s) & course materials
Lee, Kisik, and Robert de Bondt. *Total Archery: Inside the Archer*. Astra, 2009.