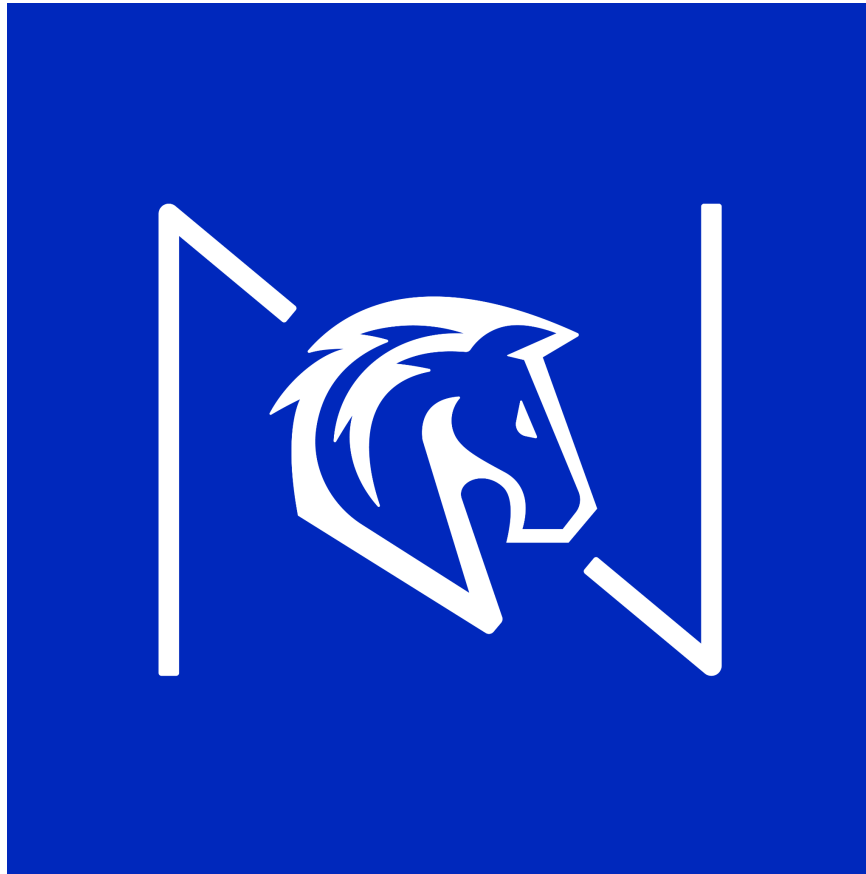


Updated August 16, 2023

The Nueva Upper School



2023/2024 Course Catalog

Table of Contents

<u>Nueva Graduation Requirements</u>	2
<u>Scheduling Tips from College Counseling</u>	4
<u>UC Approved Courses</u>	6
<u>Computer Science</u>	7
<u>Economics</u>	12
<u>Engineering, Fabrication, & Design</u>	16
<u>English</u>	20
<u>History</u>	23
<u>Interdisciplinary</u>	28
<u>Languages</u>	34
<u>Math</u>	41
<u>Performing Arts</u>	48
<u>Science</u>	52
<u>Science of Mind (SOM)</u>	61
<u>Visual Arts</u>	64

Courses and the Blackbaud Tutorial can also be found on the Glide App: [2023-23 Nueva US Course Catalog](#).

Nueva Graduation Requirements

Discipline	Years	Required Courses
English	4 Years	3 year-long courses (ENG101, ENG201, ENG301) 2 semester-long courses (ENG401 & ENG450)
History	3 Years	(HIST101, HIST201, HIST301)
Math	3 Years	Stage not Age
Physical Education	4 Years*	US Nueva Physical Education
Performing/Visual Arts	1 Year	Performing: two semesters of any two courses OR Visual: 2 semesters, Intro & Advanced, in same medium
Quest	4 Years*	
Science	3 Years	2 Years (CHEM101 & BIO101) 1 Year of two semester-long electives or one year-long elective
SOM/DWI	4 Years	(SOM101/DT104, SOM201, SOM301, Senior Block/SEL401)
World Languages	3 Years^	Stage not Age ^Consecutive Years of Same Language

* or every year of enrollment at Nueva

Core Course Load By Grade Level

Grade	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8
9th	ENG101	SOM101/ DT104	HIST101	MATH101	Language 1	CHEM101	Arts Part 1**	Arts Part 2**
							Elective 1	Elective 2
10th	ENG201	SOM201	HIST201	MATH201	Language 2	BIO101	Elective 1	Elective 2
							Elective 3	Elective 4
11th	ENG301	SOM301	HIST301	MATH301	Language 3	Sci. Pt. 1**	Elective 1	Elective 2
						Sci. Pt. 2**	Elective 3	Elective 4
12th	ENG401	Senior Block/ SEL401	Elective 1	Elective 2	Elective 3	Elective 4	Elective 5	Elective 6
	ENG450		Elective 7	Elective 8	Elective 9	Elective 10	Elective 11	Elective 12

** indicates core courses leading to graduation requirements, but which can be taken in any grade level. Students choose classes from an array of possibilities.

The yearly number of available elective slots are broken down below for each grade level:

- 9th & 10th Grade: 2-4 electives (based on when Art classes are taken)
- 11th Grade: 6 electives
- 12th Grade: 12 electives

NOTE: These numbers are dependent on when a student decides to take their Arts classes and their third year of Science classes. In addition, the elective length (semester or full year) also impacts the number of electives available to students.

Scheduling Tips from College Counseling

As we prepare students to apply to college, we are acutely aware that students will apply at the end of a distinct Nueva education. So as you contemplate your own path to college, we hope that you will do so with the same awareness. While Nueva's philosophy, pedagogy, and curriculum were not designed with college preparation explicitly in mind, students who buy into Nueva's goals are exceptionally well-prepared to apply. The flexibility Nueva affords students frees them from "typical" high school competition (more AP courses is better...) and helps students develop habits of lifelong learning that will serve them well both in life generally and when they apply to college. We routinely hear from college admission offices that they find Nueva's applicants *interesting*. It is our strong belief that worrying about what colleges expect from high school students would be a waste of the opportunities of Nueva and therefore also unhelpful in college admissions.

NINTH GRADE

- The most important task of ninth grade is to figure out what high school is all about. How do you study best?
- If you haven't already mastered time-management skills, this is a good time to practice those.
- Learn where to find help if you need it, and never be afraid to seek it out. Teachers are here to help you master their disciplines, make interdisciplinary connections, and help you develop your talents and abilities — if you hit a bump in the road, they want to help you over it!
- Read, read and read. There is no better way to learn vocabulary and writing skills.

TENTH GRADE

- College is still a long way off, and it's much too early for you to be thinking about building a college list. That said, tackling an interesting curriculum and working hard in your classes will help you achieve your college goals later.
- Pursue your passions and interests in and out of the classroom, and don't shy from taking risks.
- As for course selections, if you are thinking about becoming an engineer, you probably want to double up on your science by taking Physics 101 this year, if you haven't already.

ELEVENTH GRADE

- Continue to do well in your classes. First, the grades you earn in junior year will often be the most recent grades colleges will see, especially if you apply under an early action or early decision plan.
- Additionally, your letters of recommendation may come from junior-year teachers, so it's important that your teachers know how hard you work and how much you can contribute to a classroom.
- Again, if you are thinking about becoming an engineer, and didn't take Physics, this is the year to do it.
- Remember you must complete three years of the same world language to fulfill Nueva's graduation requirements.

SENIOR YEAR

- At this point you'll be working closely with your college counselor and likely have developed relationships with faculty mentors. Use them as resources when selecting senior year courses.
- Standard college counseling wisdom is "all five all four" - taking all five core academic subjects all four years.
- However, this is the year when you may consider dropping a subject if it frees you to explore more deeply a primary area of interest (but do consult your college counselor before making this decision final!).
- This is the last chance to take a class at Nueva you have wanted to and haven't had the chance.
- Take advantage of your time with your teachers - you will likely never again be surrounded by such an accomplished, engaged, and compassionate group of educators!

UC Approved Courses

This is a list of all the UC approved courses Nueva has on offer, categorized by their UC designation and more courses are in the process of getting UC approved. Virtually every Nueva student will exceed the a-g requirements for UC eligibility (as well as maximize the eight semesters of honors weighting) by simply fulfilling the Nueva graduation requirements, this list is only provided as a reference. For more information, use these links: [UC requirements](#) and [GPA calculation](#).

A - History/Social Science

American Government*
American Indian History*
California History: By Foot, Hoof and Rail
Capitalism & Apocalypse*
Chinese History through Material Culture*
Crisis and Conservatism
Environmental Humanities
History 10 - Modern World
History 11 - US History
History 9 - World to 1500
Postcolonial Latin America*
Religion and Modernity*
Urban Studies*

B - English

Adv. Literature Seminar
Afterlives of Classics
AIDS History and Culture*
American Literature*
Celebrating the Margins*
Creative Writing
Gender and Sexuality in America*
Literary Foundations

C - Mathematics

Abstract Algebra*
Advanced Probability*
Algebra Techniques
Calculus*
Complex Analysis*
Cryptology
Differential Equations*
Geometries Beyond Euclid
Graph Theory and Applications
Infectious Disease Dynamics and Modeling*
Intro to Knot Theory
Linear Algebra*
Math 1
Math 2
Math 3
Mathematical Modeling*
Multivariable Calculus*
Quantum Information
Statistics*

D - Science

Adv. Chemistry Consulting
Adv. Mech Engineering*
Advanced Mechanics*
Applied Engineering: Oceans*
Biology Research Teams 1*
Biology Research Teams 2*
Biology*
Bioorganic Chemistry*
Chemical Engineering*
Chemistry
Climate Science & Action
Computer Graphics
Drug Design*
Intro to Mech Engineering*
Modern Physics*
Optics & Astrophysics*
Physics
Physics Research
Semiconductor Processes*

E - Language other than English

Adv. Japanese Topics*
Chinese 1
Chinese 2
Chinese 3
Chinese 4*
Chinese Culture and Society*
Japanese 1
Japanese 2
Japanese 3
Japanese 4*
Spanish 1
Spanish 2
Spanish 3
Spanish 4*
Spanish Communication*

F - Visual & Performing Arts

Advanced Drawing
Fall Production
Groove Workshop
Intro Art & Fabrication
Intro to Ceramics & Clay
Intro to Drawing
Intro to Mixed Media
Intro to Music Production
Intro to Painting
Jazz Ensemble
Musical Theater
Steel Drum Band

G - Elective

Advanced Machine Learning
Applied Game Theory*
Asian America
Business Analytics
Cinema Studies
Computational Biology
Computer Internals
Computer Vision*
Creation Comfort
Economic Inequality
Economic Thesis Seminar
Environmental Economics
Film & Stage Prop Making
Financial Econometrics
Full Stack Web Development*
History of Technology
International Relations*
Intro to CAD
Intro to Comp Programming
Introduction to Entrepreneurship
Intro to Game Programming*
Intro to Machine Learning*
Intro to Macroeconomics
Intro to Mechatronics
Intro to Microeconomics
Intro to Psychology
Introduction to Speech and Debate
IntroFab: Metal
Japanamerica: Japanese Pop Culture*
Journalism
Latin the the Classical World
Mechanisms of Cancer*
Models of Group Decisions
Philosophy of Consciousness and Personhood*
Programming with OOP*
Queer Japan
Research in Psychology*
Sensory Neuroscience*
Translation Studies
What Is Philosophy?
Yearbook Media Production

* equates to receiving UC Honors designation

Computer Science

Advanced Machine Learning

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with intermediate programming experience (2 or more CS electives or equivalent experience).

Corequisites: None

Repeatable: No

Excited about machine learning and want to keep learning more? In this class, we will go more in depth on some of the topics covered in the first Machine Learning class, learning more about how to tune or implement these algorithms. We will also look more closely at specific neural network architectures and cover some new topics such as reinforcement learning and evolutionary methods. The class will focus on the use and high-level understanding of these methods, but students with more math background may choose to delve into the underlying mathematical definitions as well. Students should have enough class time to complete assignments to the required level, but can choose to expand their work at home.

Applied Comp Programming

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Do you want to take a Computer Science class and come away with something you can use right now? Applications of CS is an entry-level course where we'll look at different ways you can apply CS and programming to your classes. We'll look at collecting and organizing data for science and math, using programming to solve questions about data, and other ways to apply CS to our everyday tasks. Harness the power of programming to improve your productivity, research, and enhance future projects!

Computer Graphics

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with beginner programming experience (1 or more computer science electives or equivalent experience).

Corequisites: None

Repeatable: No

With powerful computers, we are now able to mimic the human visual experience and expand on it in the digital world. Computer graphics can be used to simulate and visualize physical phenomena - such as sunlight refracting in water, the motion of bees around a hive, or molecules moving across a cell membrane - and expand beyond our visual experience in creative ways - in CG movies, 3D character art, or VR experiences.

This course provides a comprehensive introduction to Computer Graphics. Students will gain an understanding of how to model 2D and 3D visual information such as lines, polygons, light, color, texture, and more within their own

computer programs and in 3D animation software. The course will cover the essential algorithms for geometry manipulation, rendering, and animation. Students will have opportunities to deepen their knowledge in one area of Computer Graphics that interests them, such as 3D modeling and lighting, physically-based simulation, digital globes and space, character rigging and animation, or GPU programming.

Computer Internals

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with beginner programming experience (1 or more CS electives or equivalent experience).

Corequisites: None

Repeatable: No

So you know how to write code. But how does code actually work? How do the words you write -- in Python, Java, HTML, etc -- get turned into ones and zeroes, and how does a computer process those ones and zeroes to run programs of arbitrary complexity? In this class, we'll answer these questions by starting with logic gates and use those to build structures of increasing complexity, from adders to registers, all the way up to our own fully functional CPU, running a custom assembly language! Coursework will largely be circuit design in simulation, with limited coding.

Computer Vision

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with beginner programming experience (1 or more computer science electives or equivalent experience). Intermediate programming experience (2 or more electives) is recommended for students who want to build more complex applications of computer vision.

Corequisites: None

Repeatable: No

What do the following technologies have in common: phones that unlock using fingerprints, robots that navigate space and perform complex tasks, image and video search, expert medical diagnosis systems, and self-driving cars? They all rely on computer vision technologies to bridge the gap between pixels and meaning! In this class, we'll explore fundamental concepts in computer vision and how they're used in real-world applications. Topics include filters, edge detection, feature detection, automatic image resizing, feature tracking, and object recognition, with opportunity for students to explore other topics of their interest. We will also discuss and consider the ethical and societal impacts of these technologies. Coursework will be a combination of written exercises and computer programming. Students should have enough class time to complete these assignments to the required level, but may choose to expand their work at home.

Data Science

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with beginner programming experience (1 or more computer science electives or equivalent experience).

Corequisites: None

Repeatable: No

How do you analyze data to reveal insights? How do you efficiently communicate and tell the stories of those insights? Those are the core questions we'll seek to explore in this class, where students will gain experience with all

the steps of analyzing and presenting data: collecting data, either by scraping it from websites or with surveys; cleaning up that data so that it can be analyzed with statistical tools; and finally, creating elegant visualizations that communicate insights into the data or reveal additional questions. Along the way, we'll look at some ways in which data can be manipulated or biased into showing a particular result. Students will then use these techniques to investigate an issue of their choice and present their findings. Coursework will include programming, written exercises, and creative use of visual tools such as Tableau and Photoshop.

Intro to Algorithms

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with beginner programming experience (1 or more computer science electives or equivalent experience).

Corequisites: None

Repeatable: No

From self-driving cars to Amazon recommendations, our modern society is increasingly driven by algorithms. But what are algorithms? How do we know they work, and how do we know whether they are efficient? In this class, we'll start with a survey of mathematical techniques and tools, including proofs and asymptotic analysis, to build a solid foundation. Then, we'll explore various types of algorithms and techniques to solve different classes of problems, including sorting, trees and other data structures, web search, finite state machines, dynamic programming, and relaxation. We'll also survey some advanced topics, including distributed algorithms, randomized algorithms, and complexity theory. Coursework will be a combination of written exercises and computer programming.

Intro to Computer Programming

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Learn and practice the fundamentals of computer programming! This course is meant for students who are curious about how computer programs work and want to translate their ideas for digital art, games, and apps into code. We will work primarily in the Python programming language. We'll practice how express logic as code, model information, and learn the basics you'll need to use coding in other classes or for your personal projects. Coursework will consist of computer programming projects which gradually increase in size and complexity over the course of the semester. Open to all students - no prerequisites required!

Intro to Game Programming

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with beginner programming experience (1 or more computer science electives or equivalent experience).

Corequisites: None

Repeatable: No

The best way to learn programming is through making! In this case we'll focus on programming video games. We'll look at some of the first games ever made, and build our way up from something simple to more complex implementations. We'll focus on the programming side of game development with some short explorations of sprite

creation and what makes video games challenging. If you're curious about different ways that developers engage with programming, video games create a unique challenge as we learn to work with a more involved environment through the game engine. We'll be using something similar to Unity, so this can be a great place to start that journey!

Intro to Machine Learning

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with intermediate programming experience (2 or more CS electives or equivalent experience).

Corequisites: None

Repeatable: No

We are currently generating huge amounts of data about any number of aspects of life on earth, at a rate well beyond the capacity of humans to absorb. How can we use machines to learn from these datasets and make predictions or decisions about the future? We'll look at various tools, including linear and logistic regression, naive Bayes, clustering algorithms, decision trees and random forests, and neural networks. The class will focus on the use and high-level understanding of these methods, but students with more math background may choose to delve into the underlying mathematical definitions as well. Students should have enough class time to complete assignments to the required level, but can choose to expand their work at home.

Mobile App Development

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with beginner programming experience (1 or more CS electives or equivalent experience).

Corequisites: None

Repeatable: No

Almost all of us use mobile apps every day. But how are these apps made, and what challenges and opportunities are unique to the mobile environment? In this class, students will explore various aspects of mobile app development, potentially including but not limited to: location, NFC, Bluetooth, rotation, device aspect ratio, accelerometer, GPS, notifications, touch interactions, camera, and integration with other apps. We'll also look at some of the ethical concerns that are particular to mobile, including privacy, growth hacking, attention hijacking, and tech addiction. Students will build apps of their own in a language of their choice, with Javascript and React Native being the default supported option.

Programming with Object-Oriented Programming (OOP)

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: Open to students with beginner programming experience (1 or more computer science electives or equivalent experience).

Corequisites: None

In this course, students learn to design data structures that describe how different parts of their programs act, react, and interact. Through making art, games, and scientific simulations, we talk about how to model concepts from the physical world within a computer program in a way that makes the boundaries between these objects clear. Object-oriented programming can help make code more readable, reusable, and maintainable, as we'll see through ongoing projects during the semester. Different languages have different ways of implementing this paradigm, and

we'll explore some of the trade-offs between these choices. Students should have enough class time to complete assignments to the required level in class, but can choose to expand their work at home.

Software Engineering

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: Open to students with intermediate programming experience (2 or more CS electives or equivalent experience).

Corequisites: None

Repeatable: Yes

What is the difference between code that is written for an assignment — turned in, tested once, likely never thought about again — and code that is written for production, to be deployed, used, updated, and maintained over time, possibly by someone other than the original author? That is the central question we seek to explore in this class, which we'll examine from a few different perspectives, including but not limited to: version control, user interviews, prototyping and iteration, user experience design, task estimation and project management strategies, documentation, specification, automated testing, code review, and non-engineering roles. Students will complete multiple projects and will have an opportunity to leave a lasting legacy by building at least one project for the Nueva community.

Business Analytics

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

This elective explores the quantitative tools of management science in different business models. The course is structured around four modules. The first three modules investigate three distinct analytic methodologies, while the final one pits the students, in small groups, in a business plan competition. The first module explores “Models of Optimization”, using the framework of mathematical programming. We learn to use linear inequalities to represent decision problems and exploit convexity to approximate optimal solutions. The second module examines “Models of Dynamics”, using the framework of causal loop diagrams to track stocks and flows. We proceed to use computational tools for assessing the growth behavior and path dependence in different business practices. The third module introduces “Models of Uncertainty”, using the framework of queueing systems and their networks. We learn about Markov Chains and proceed to design Monte Carlo simulations to propagate risk through a network of business decisions.

Economic Inequality

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Economic Inequality is the driving force behind many of the most significant political upheavals of the 21st century. Our one-semester course will leverage macroeconomic models and statistical tools in order to understand and forecast the effects of economic inequality around the globe. Students will begin the semester by teaching each other about the mechanics and importance of all major indexes to measure economic inequality. We will then move on to reading and critiquing Piketty's *Capital in the 21st Century* in order to understand the history and effects of capital ownership and formation. The class will then dive into texts, pilot programs, and proposals concerning universal basic income programs which will culminate in a series of academic debates. Our analysis will proceed to examining the economic underpinnings of racial inequality in America through closely looking at both mass incarceration and federal housing policy. Students will conclude the semester by interviewing different stakeholders in their own communities about affordable housing development in order to test the hypothesis that homeowner incentives are aligned opposite to the social good. While our class will involve statistical methods and close reading of challenging academic texts, there are no required prerequisites. Students who have previously taken macroeconomics will find this a relevant application of those tools to broader and more complex issues.

Economic Thesis Seminar

Term: Spring Only

Open to Grades: 11th - 12th

Prerequisites: Any Economics class & History 10 (HIST201)

Corequisites: None

Repeatable: No

Economic Thesis Seminar is a team of researchers that spends each Spring semester making innovations in the most exciting areas of economic research. In prior classes, we have 1) Worked hand in hand with a brand new United Nations commission to investigate the potential for blockchain to solve environmental market failures. 2) Designed a radically new insurance model with the potential to eliminate the influence of Super PACs. 3) Modeled the economic effects of LibGen on the academic publishing industry. 4) Forecasted the economic and health effects of the creation of a legalized sex work market in California, and so many more groundbreaking projects. Most of our projects utilize some form of mathematical modeling and data analysis but there is also absolutely the need for researchers who will take on roles more focused on writing and reading research. Expected workload for this class significantly exceeds the average asked of students in other classes. This course is exclusively open to 11th and 12th graders who have taken at least one prior high school economics class.

Environmental Economics

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Environmental economics is possibly the most consequential field of the entire discipline, while simultaneously being the subject which traditional economics fails most comprehensively to understand. This course will be a focused semester-long attempt to answer some of the most complex and meaningful questions facing economists today. How should we quantitatively value the lives of future generations? How do we know the true worth of an environmental good that is never traded on a market? Is there a way to design an international climate change agreement that does not implode with greed? Which forms of environmental regulation most effectively align the interests of corporations with those of society? We will grapple with this field of economics through analyzing academic papers, mathematically assessing environmental policies through algebra and calculus based microeconomic models, and creating expansive independent research projects. Our class continues to be the only high school in the nation chosen to participate in the Electricity Strategy Game, originally developed by the economist who currently governs California's electricity grid. After years of improvements and iterations by your peers, you will spend a month immersing yourself fully in the simulation. Students will role-play as investors within our state electricity spot market so that we can feel first-hand the real incentives facing stakeholders.

Note: Intro to Microeconomics (ECON 101) is a helpful but not required prerequisite.

Financial Econometrics

Term: Fall Only

Open to Grades: 10th - 12th

Prerequisites: Math 3 (MATH301)

Corequisites: None

Repeatable: No

This new elective explores financial time series and stochastic processes that model them. Along the way, we encounter Markov chains, martingales and arbitrage, the Capital Asset Pricing model, the Black-Scholes framework and the derivative pricing revolution it spawned, as well as a series of stylized facts about the ubiquitous observed

deviations from the Efficient Market Hypothesis. Our focus will be on data analytics, using data sets from a wide range of financial markets across the risk spectrum. Throughout the semester, students will curate a portfolio of investments based on their data analyses and the systematic forecasts they generate. MATH301 is a required prerequisite and Calculus, Advanced Stats or Applied Stats are preferred preparation.

Intro to Macroeconomics

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Macroeconomics is the study of the most pressing issues facing global economies today. This course will introduce students to the tools and models necessary to understand current and historical events. Students analyze the cause and effects of economic crises through considerations of growth, inflation, employment, income, productivity, and trade. They will gain insight into fiscal policy and monetary policy by grappling with the following questions: What policies and economic conditions lead to the Great Depression and the Great Recession? Could the New Deal have rescued the United States economy if World War II had never occurred? Why was the United States Federal Reserve desperate to increase inflation after the 2008 Great Recession? Who are the winners and losers of modern free trade agreements? Is it possible to achieve economic equality while maximizing economic growth?

Intro to Microeconomics

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Our course will introduce students to the core questions, models, and tenets of Microeconomics. Together, we will analyze the economic rationale and consequences of choices made by consumers, businesses and government within the context of our broader economic system. Through academic texts, news articles, case studies and a multitude of in-class games and simulations - we will expand our understanding of why economic decisions are made and how to predict and evaluate their far-reaching consequences. Given that the field has been practically reinvented by behavior economists over the past several decades, we will turn a very critical eye to the neoclassical economic view of the world while simultaneously learning of its inner workings. Our goals for the class are as follows:

- Understand consumer behavior, non-cooperative game theory, and the limits of economic rationality
- Predict and understand firm behavior in terms of price, quantity, market entry, and efficiency
- Analyze a variety of market structures including competitive markets, monopolies, and oligopolies
- Explore the causes and effects of market failures
- Understand the effects of government policies on market outcomes including consumer and producer surplus
- Build a strong analytic foundation that will enable successful future forays into the world of economics

Models of Group Decisions

Term: Spring Only

Open to Grades: 10th - 12th

Prerequisites: Intro to Microeconomics (ECON101) and Math 2 (MATH201)

Corequisites: None

Repeatable: No

In this elective we will read widely to familiarize ourselves with elements of Political Economy and the role of institutional arrangements for aggregating preferences in a historical and global context. We will explore modeling paradigms, from game theory and auctions to voting schemes, in an attempt to disentangle the non-market forces that shape the economy. Limits to rationality and a host of behavioral norms and biases will challenge us to develop rich enough models to accommodate them. This course probes the interface between social science and mathematics, both in substance and in modes of inquiry, involving readings and debate, as well as computer modeling of interacting economic agents.

Engineering, Fabrication, & Design

Adv. Mechanical Engineering: Ocean, Air, & Space

Term: Spring Only

Open to Grades: 10th - 12th

Prerequisites: Physics (PHYS101)

Corequisites: None

Repeatable: No

A project-based survey course covering advanced engineering topics used in various industry fields. Students will apply these subjects to real-world engineering problems and systems in the aerospace, propulsion, and oceanic engineering fields. Students will be doing both computational work as well as hands-on building of projects.

While calculus is helpful to know, it is not a requirement for this course. Previous experience in the I-Lab shop is preferred - this may be through Design with Impact, Intro to Fabrication, and/or robotics.

Applied Engineering: Oceans

Term: Yearlong

Open to Grades: 11th - 12th

Prerequisites: Successful completion of 9th grade DT104 and two additional I-Lab electives.

Corequisites: None

Repeatable: No

This year-long course offers students an opportunity to participate in a real world technical engineering project. Students will need to draw on their previous class experiences, knowledge, and research skills to conceptualize, design, fabricate, and deploy a real world project while working closely with external industry partners. The course will be entirely project and team-based, requiring students to work in a highly collaborative and fast-paced environment. Students looking for a challenging, interdisciplinary course covering multiple technical topics are encouraged to sign up for this course.

CAD for Manufacturing

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Intro to CAD (EFD162)

Corequisites: None

Repeatable: No

From basic CAD to advanced parametric modeling, this class will dive deeper into Autodesk Fusion 360 and how it can be used for manufacturing. We will discuss best practices for designing for specific manufacturing techniques including sheet metal, and CNC machining. CNC machining will focus on fixturing, G-code, modeling, and tooling. This course is designed to take students from basic introductory CAD practices all the way to advanced techniques.

Creature Comforts

Term: Spring Only

Open to Grades: 10th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

Zoo to You is a private zoo in Paso Robles, CA that many of the students are already familiar with due to their involvement with the Conservation Ambassadors US Intersession. Students will work with the zoologists to learn the needs of the animal keepers before observing the animals in their current environments to study how they interact with their homes and surroundings in order to build homes for specific animals.

By working with two separate groups (the zookeepers as well as the animals) students will learn how to compromise solutions between multiple end users. By simply using observational analysis to study their animal user students will learn new need finding skills beyond surveys and questions.

Design With Impact

Term: Yearlong

Open to Grades: 9th

Prerequisites: None

Corequisites: None

Repeatable: No

Design Thinking, Systems Thinking, Data Science, Computer Science and Design Engineering are all key aspects of the 9th grade experience at Nueva. Design With Impact integrates these five critical curricular threads into a single course that follows students throughout the year. A key aspect of the class is to break down the perceived stovepipe between these five topics and build the creative courage of students to craft solutions to compelling challenges using one or all of them. Software, hardware and post-it notes can all be leveraged to address not only the challenge of launching a paper airplane across the room but also in addressing societal challenges around social justice and equity.

Film & Stage Prop Making

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Students will explore the materials, processes, and techniques used to fabricate props and costumes in cosplay, film, TV and stage production. The focus of this course will be on exploration and experimentation with materials and techniques to produce a desired visual result. Students will complete several major fabrication projects, some for set items as determined by the instructor and others based on student choice.

History of Technology: Steel, Telescopes, & Trains

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

This course is a hands-on history of science and technology. We will not just learn about but also try to recreate everything from flinted axes to the steam engine. Focusing on some of the most transformative technologies and experiments in history, from smelting to zippers, this class will be both ILab and history, with small writing and research projects intermixed with fabrication projects.

Intro to Fabrication: Wood

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

This class is designed for students who are new to the space and/ or want to build a strong foundation for I-Lab skills. From deciding what saw to use for a cut to how to pick out appropriate hardware. We will discuss methods as well as best practices and will have a series of structured projects along the way. Open to all students - no prerequisites.

Intro to CAD

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

From basic CAD to advanced parametric modeling— this class will dive deeply into Fusion 360 and how it can be used for advanced modeling, rendering, and assemblies. We will discuss advanced tools like lofting, 3D sketching, advanced assemblies, etc. Open to all students - no prerequisites.

Intro to Mechanical Engineering

Term: Fall Only

Open to Grades: 10th - 12th

Prerequisites: Physics (PHYS101)

Corequisites: None

Repeatable: No

This class is designed as an introduction to various topics in mechanical engineering. From structures and mechanisms to materials and machines, students will explore topics through open-ended engineering projects that will allow them to approach engineering in ways that appeal to them. Students will also explore various real world engineering applications through these projects. Open to students who have completed a year of high school physics

Intro to Mechatronics

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

This course introduces students to the design and implementation of mechatronic systems through the integration of electronics, mechanical parts, and coding. In the first half of the course, the focus is on building a solid foundation. Students first develop an understanding of electrical circuits and learn how to use the common tools of electrical engineering, such as breadboards, multimeters, etc. We then gain hands-on practice with the “sense-think-act” paradigm common to mechatronic systems via two mini-projects using the Arduino microcontroller. Through these projects, students are exposed to a variety of sensors, actuators (light, sound, and motion), and how to integrate inputs and outputs using the Arduino platform. In the second half of the semester, students apply their knowledge in a final project of their choice. Past projects have included interactive toys, wearables, cosplay accessories, and robotics. Through the final project, students not only deepen their technical skills but also gain experience with project planning and breaking down a large project into smaller “proof of concept” prototypes.

Intro to Fabrication: Metal

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Intro to Fabrication: Metal will give students the opportunity to learn metalworking with a focus on steel. From sheet metal to tubing and bar stock we will learn new tools (breaks/ mills/ presses/ etc) and new methods (bending/ forming/ etc). This class will be entirely around metal fabrication and many of the commonly used methods and tools associated with it. We will be mainly looking at metal fabrication in the context of engineering/ precision building rather than from artistic expression but there will be the opportunity to to be creative with your projects. This means looking at different joinery techniques as well as making parts that fit together/ work with existing components. Open to all students - no prerequisites.

Adv. Literature Seminar

Term: Fall Only

Open to Grades: 11th - 12th

Prerequisites: English 11 (ENG301)

Corequisites: English 11 (ENG301)

Repeatable: Yes

Advanced Literature Seminar is a half-year course for seniors that consists of an in-depth study of a particular topic in English and American literature. Rather than a traditional survey approach, this course drills down intensely into specific literary genres, national genres, movements, and interdisciplinary approaches to literary study. Throughout the course, students will be exposed both to depth and breadth as they investigate these special topics while also seeking to make connections between texts. Special emphasis will be placed upon working with literary criticism--thus leading to original research in the discipline--and upon the production of creative scholarship, including journalistic reviews of novels and films, oral presentations, data visualizations, pastiche, and video responses. This course will prepare students for university-level study in literary and cultural studies even as it draws on material and concepts covered in previous English courses.

Note: English Seminars may be taken by 11th-grade students as an English elective.

Afterlives of Classics

Term: Spring Only

Open to Grades: 11th - 12th

Prerequisites: English 11 (ENG301)

Corequisites: English 11 (ENG301)

Repeatable: Yes

"Afterlives of the Classics" begins with a careful, in-depth reading of a classic literary text to discuss its enduring popularity, its social and historical context, and theoretical reception through the ages. The semester then explores how the text has influenced literature and culture over the centuries, and in geographic, political, and historical zones that are different from its original context. For example, in a seminar centered on Shakespeare's *Othello*, we might ask: How does Shakespeare continue to speak to the pressing issues of our time, including race, gender violence, and exclusionary politics ("othering," so to speak)? Or, how does Shakespeare's representation of racial otherness speak to our current understanding of race, especially in light of the Black Lives Matter movement? A seminar on Tolstoy's *Anna Karenina*, meanwhile, might explore the novel's focus on women's subjectivity and desire in light of 20th- and 21st-century struggles around gender relations, and we might ask ourselves how a 19th-century Russian text continues to shape our understanding of love and marriage. The semester will conclude with students writing and producing an original live adaptation of their classic text that is set in a new time and place. The course is designed to build on literary analytical skills developed in English 9, 10, and 11. Assessments will include close readings of individual scenes, essay-length responses to scholarly articles on the play, character studies, and Hollywood-pitch style proposals for possible adaptations.

Note: English Seminars may be taken by 11th-grade students as an English elective

Cinema Studies

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Not to be confused with a class where students would focus on making movies, this course is about studying movies. With an eye towards cinema appreciation, criticism, and analysis, this class focuses on the art of understanding and “reading” film. We will spend time watching and analyzing portions of nearly 100 films (and some in their entirety). On occasion, there will be an opportunity to experiment with media creation as well, and students will create projects that utilize various cinematic techniques that we discuss together in class. Texts include short weekly readings and chapters from various filmmakers, theorists, critics, and academics, as well as the films that we will engage in.

Creative Writing

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

This course will serve as a foundational approach to the creative writing workshop, a space where students experiment with and explore their own voice while investigating a multitude of genres (fiction, nonfiction, poetry, playwriting, and hybrid texts). Not only will students have the opportunity to write, read, analyze, and respond to their classmates’ writing in a workshop setting, they will study various authors’ stylistic choices, literary devices, and literary elements. Students will also learn how to provide constructive feedback to their peers by engaging in class discussions and submitting written comments.

English 9

Term: Yearlong

Open to Grades: 9th

Prerequisites: None

Corequisites: None

Repeatable: No

In English 9, students learn to analyze literary texts and construct arguments as they develop their skills as readers, writers, collaborators, and critical thinkers. In order to accomplish these goals, we will read a variety of texts and genres, including novels, short stories, poetry, plays, and essays, that explore key values, philosophies, and aesthetics of Western culture. The fall semester is devoted to literature of antiquity and its modern echoes, and the spring semester examines literature on the topic of power and creation. Reading texts across an historical spectrum will prompt students to consider how texts adopt, adapt and deviate from recurring types of characters, plot devices, and settings. We will ask how these stories imagine what it means to be human, how concepts of good and evil inform our humanity, and how the stories we tell represent various identities and cultures. Additionally, we will examine how each text engages myths and archetypes, and what these elements might say about the author’s contemporary influences. Over the course of the year, we will write analytically and creatively, using an intensive process of imagination, creation, and revision. Texts may include *The Odyssey*, *Frankenstein*, *Macbeth*, and a variety of shorter poems and stories.

English 10

Term: Yearlong

Open to Grades: 10th

Prerequisites: English 9 (ENG101)

Corequisites: None

Repeatable: No

Our goal in tenth-grade English is to expand and deepen skills in reading, writing, critical thinking, and collaborative dialogue. Through encounters with a variety of literary texts, students will develop more sophisticated ways to analyze literary works and their devices; use writing mechanics, structure, and style to articulate ideas in various modes of writing; and communicate ideas to others. Another goal of English 10 is to examine and understand relations of culture, identity, and power by focusing on literature produced outside the West.

English 11

Term: Yearlong

Open to Grades: 11th

Prerequisites: English 10 (ENG201)

Corequisites: None

Repeatable: No

The particular focus in this course is the rich and varied history of American literature, from precolonial writings to the 21st century. Throughout the year, we will have the opportunity to examine and reflect on the complex interplay between literature (and other cultural forms) and the historical and political forces that shape it. The course is designed to also integrate with History 11, American History, so students will be able to make deep interdisciplinary connections in course discussions and essays. The overarching question for the course is “What stories do we tell ourselves as Americans, and why?”

Readings of diverse texts (in genre, period, author’s background, etc.) — from Native American poetry and early Gothic fiction to modernist novels and postmodern plays — will encourage students to respond to this question through three key lenses (enduring understandings):

1. American identities are shaped by a multitude of voices, cultures, and actions that are often in conflict with each other.
2. American literature is a product of historical dynamics that continue to resonate today in new ways.
3. American literary forms reflect the changing notions and needs of a democratic society.

History

American Government

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

It's a critical time to examine the functioning (and dysfunction) of American government. We'll start with a fresh analysis of the current distemper – then leap backwards to the 1780s to see what Madison & Co. intended, and how the best of their intentions might be restored. We'll get a close look at legislative, executive, and (especially) judicial processes. Readings from historians, 18th and 21st century political analysts, and court decisions; guest lecturers via Skype; close attention to the presidential election. Trotskyists, democratic socialists, frumpy conservatives, and everything in between -- all welcome!

American Indian History

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: none

Corequisites: None

Repeatable: No

Join us to examine North American History from multiple vantage points utilizing an interdisciplinary and collaborative learning process. We examine the multifaceted intersections between Indian and early European settlers, political and spiritual reactions to American expansion, framing of identities and formation of policies such as Indian Removal, Reservation system, and termination efforts. We will examine current scholarly debates as well as the poignant contributions of contemporary Indian authors such as Roxanne Dunbar-Ortiz and Vine Deloria, Indian filmmakers Michelle Derosier and Chris Eyre, and musicians such as Robert Mirabel. Indian Gaming, NoDAPL protests, and implications of proposed marijuana cultivation on reservation lands, decolonization, and the dynamics involved with land acknowledgements are also among diverse topics for us to choose from. Participants examining areas of interest to teach their classmates is an integral component of this course. As collaborators students must take initiative and be prepared to examine unpopular or uncomfortable depictions of past events with intellectual maturity.

Asian America: Perpetual Foreigners & Paper Sons

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Asian Americans have been in the fabric of America since its beginnings, and yet have been considered perpetual foreigners. And yet, despite the variety of laws targeted at Asian immigration, immigrants have found a way to enter, to settle and build, to become American. This course will examine the complexity and diversity of the Asian American

immigration experience, the role that Asian Americans have played in fighting for equal protection and recognition as Americans, and the modern challenges of being considered perpetual foreigners and a model minority. While this course is designed for 9th and 10th graders, upperclassmen will be expected to complete a more advanced research project.

Capitalism & Apocalypse

Term: Fall Only

Open to Grades: 11th - 12th

Prerequisites: History 10 (HIST201)

Corequisites: None

Repeatable: No

Around the time of the 2008 economic crisis, there was a popular saying among many humanists that made its way into popular cultural discourse: “It is easier to imagine the end of the world than it is to imagine the end of capitalism.” And this was said at a time when people were seriously questioning whether the values and motivations intrinsic to the political economy of capitalism had produced the crisis. Simultaneously, there was a preponderance of films in which the end of the world was envisioned in various forms of social, political, or environmental catastrophe. This class provides an opportunity for students to explore moments of transition in American capitalism, examining efforts to define capitalist reality or imagine alternatives to the status quo. The class will employ a variety of methodologies and readings from history, literature, and media students to think about representations of capitalism in specific historical moments stretching from the antebellum era to the present. Students will also be introduced to a variety of scholarly research and critical literature that has developed in response to these moments, each of which make the case for the importance of cultural representation in thinking through our social and economic values.

Chinese Material Culture

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

What can art tell us about the people who made it and the time they were living through? How does the historical context limit or inspire diversity of art and material culture? In this course we will look at art produced for different segments of Chinese society: the court, the scholars, the commoner, and the foreigner. What does landscape painting tell us about a scholar’s world view? What is the purpose of Imperial portraiture? How does porcelain made for general consumption differ from porcelain made for foreign export? How does Buddhist art manage to appeal to all audiences? We will span the breadth of the monumental to the personal, from Shang bronzes to Communist posters, as we move through Chinese dynastic history.

Crisis and Conservatism: Darkness at the Edge of Town

Term: Spring Only

Open to Grades: 11th - 12th

Prerequisites: History 10 (HIST201)

Corequisites: None

Repeatable: No

The 1970s were more than a time of leisure suits and disco as the liberal consensus of the 1950s came under fire from both the left and right. By the closing of the 1980s, a new consensus of neoliberalism had begun to emerge,

eventually taking hold of the political center during Bill Clinton's presidency in the early 1990s. This class is a cultural study of capitalism and politics using class, race, and gender as lenses to understand the tensions and conflicts of the era, from deindustrialization and controversies over busing and gentrification to the Reagan-era "war on drugs" and rise of the prison-industrial complex.

History 9 - World to 1500 (formerly History101)

Term: Yearlong

Open to Grades: 9th

Prerequisites: None

Corequisites: None

Repeatable: No

This course covers major themes and developments from pre-modern world history. The course starts with a look at the earliest civilizations and ends with an exploration of several cultural conflicts that defined the start of the modern period. Although the course covers a great deal of pre-modern global history, it is not intended as an exhaustive survey of every event or development from this era. Many but not all of the important historical moments from the ancient and medieval periods will be covered.

History 10 - Modern World (formerly History201)

Term: Yearlong

Open to Grades: 10th

Prerequisites: History 9 (HIST101)

Corequisites: None

Repeatable: No

This course traces the emergence of the modern international system from 1500 to the end of the Cold War, focusing on the four global centers of power and wealth at the beginning of the early modern period: Europe, the Middle East, India, and China. Students will start with an investigation of the emergence of the European balance of power system and compare it to the consolidation of political power in Ming/Qing China, the Ottoman Middle East, and Mughal India, and explore the effects of the military, naval, and commercial revolutions on modern government, international politics, and global trade and wealth generation. The first semester ends with an investigation of how 19th century revolutions and technological changes globalized great power rivalry, increased avenues for state power and wealth through industrialization and imperialism, and created new forms of nationalist and socialist mass politics, setting the world up for the great power conflicts, revolutions, and anti-colonial wars of the 20th century.

The second semester will focus on the massive transformations of the international system in the 20th century, tracing how the centuries-old multipolar world of great powers gave way to the bipolar world of the postwar U.S. and Soviet Union. The semester will start by exploring the causes and impact of the two world wars on the global system and on the emergence of new regimes and nation-states in the light of collapsing empires and decolonization, followed by a study of the international political, economic, ideological, and technological dimensions of the Cold War, and concluding with an investigation of the challenges of regional politics, state consolidation, and economic development among newly independent nation-states in the Cold War period.

History 11 - US History (formerly History301)

Term: Yearlong

Open to Grades: 11th

Prerequisites: History 10 (HIST201)

Corequisites: None

Repeatable: No

United States History is designed to provide students with a survey of the major forces which have shaped our country and incorporate deeper contemplation into specific eras and historical schools of thought along the way. Students are expected to explain how past events helped shape our modern society, while at the same time gain an appreciation for the complex connections between those events. In doing so, students will engage with three key questions: 1) Are capitalism and democracy complementary or contradictory? 2) Is the American state a vehicle for repression or liberation? 3) Globally, have US actions internationally lived up to or contradicted the ideals of freedom and democracy? Rather than answering these questions conclusively, we use them as an analytical framework in exploring varied case studies. In exploring these questions, students are encouraged to deepen their expertise in areas of their individual interests through varied readings, independent and collaborative research, and subsequently presenting their various discoveries to one another in class on a regular basis. As such the students are all in the same course, but each is delving into their new areas of expertise while learning from one another's deep dives.

International Relations

Term: Fall Only

Open to Grades: 11th - 12th

Prerequisites: History 10 (HIST201)

Corequisites: None

Repeatable: No

Why has war been such a dominant force in human history? Is the world simply a chaotic collection of self-interested states, or does an international society exist that might one day eradicate global conflict? Why do some states fail and degenerate into ethnic and sectarian strife? Can economic integration create peace? These are some of the central questions of international relations, a branch of political science. In this course we will study the major theories of this discipline, including key works from the realist, liberal, and constructivist schools of thought, and examine case studies from 1945 to the present day, spanning Russia, Europe, Asia, Africa, and the Americas.

Postcolonial Latin America

Term: Spring Only

Open to Grades: 11th - 12th

Prerequisites: History 10 (HIST201)

Corequisites: None

Repeatable: No

Although Latin America is united by a common history of European colonialism, there is no singular narrative of Latin American history. Rather, this course will use specific case studies to develop a historical, nuanced and multifaceted view of Latin America. Students will explore issues of sovereignty, the stronghold of dictatorships, underground insurgencies and counter-revolutions, U.S. intervention, neoliberalism, and shifting cultural and racial identities. In doing so, we will answer questions such as what makes movements revolutionary and why do people join or resist their call to action? How do we as historians assess their lasting impact? This course will utilize an interdisciplinary approach drawing on an array of materials including film, correspondence, photographs, music and scholarly texts.

Religion and Modernity: Reformation, 1450-1750

Term: Spring Only

Open to Grades: 10th - 12th

Prerequisites: History 9 (HIST101)

Corequisites: None

Repeatable: No

In the year 1500, people across Europe were united under one Church that transcended their many languages and directed their prayers to one God. Within two centuries, that unity had collapsed under the weight of fierce debate and cataclysmic war waged over the true nature of that God. In this class we will explore how the Protestant challenge to the authority of the Catholic Church provoked violent conflict but also radical new ideas about society and profound political transformations that continue to shape our world today. In the absence of the certainty guaranteed by one legitimate church, thinkers during the Reformation studied the natural world and analyzed distant societies to arrive at modern scientific methods. We will read theological and political treatises to understand how principles of religious freedom could follow from religious war, and we will listen for the voices of everyday people to see how the Reformation transformed all levels of society. These investigations will help us analyze and judge the competing interpretations that scholars have offered to explain how the Reformation carried Europe and its empires from the middle ages into the modern era.

Urban Studies: The Death and Life of Great American Cities

Term: Fall Only

Open to Grades: 10th - 12th

Prerequisites: History 9 (HIST101)

Corequisites: None

In 1800, only 3% of the global population lived in cities. Today, more than half the population – 3.3 billion people – are city dwellers. By 2050, 75% will be urbanites. This rapid rise in urbanization demands new strategies to address our growing needs: resource distribution, affordable housing, public transit, sustainable infrastructure and environmental justice. Using the Bay Area as our classroom, students will critically examine how policy decisions, historical trends, urban design, corporate interests and the natural environment have shaped our urban landscape. As we explore how the modern city functions, students will engage with local institutions, contemplate new strategies and design action plans to improve the built environment in which we all live.

What Is Philosophy?: Survey of Thought Across Time & Space

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Why does anything exist? Why can't we turn around in time as we can in space? Is time even real? What is a society, and how should it be organized? Is justice something other than the interests of the powerful? Is democracy better than other political systems? In this course we will consider how philosophers in a variety of contexts from the ancient world to the present have thought about such questions. You will have the chance to think, talk, and write about these matters and other problems of interest to you. This course is intended to be a broad survey of philosophy and will cover topics in metaphysics, epistemology, ethics, aesthetics, and social and political philosophy.

Interdisciplinary

Gender and Sexuality

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

In this interdisciplinary humanities course, we'll explore representations of gender and sexuality that run counter to dominant American narratives. We'll study queer life in New York City from the 1930s to the 1980s, the extraordinary (and startling) contributions of women and Asian Americans in the "Wild West" of the 19th century, and the complicated intersection of race and sexuality in the pre-Civil War American South. The "hidden" nature of these narratives informs the title of this class, establishing a juxtaposition of public and private lives, "closeted" cultures versus outed cultures, and mainstream versus fringe social geography. In addition to historical accounts, we'll look at novels, poems, memoirs, films, and television shows produced over the last century, and we'll delve into queer and feminist critical theory. The course will end with students undertaking original research into contemporary case studies of gender and sexuality in American life.

Environmental Humanities

Term: Fall Only

Open to Grades: 10th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

Environmental Humanities employs humanistic questions about meaning, culture, values, ethics, and responsibilities to address pressing environmental problems as well as helping to bridge traditional divides between the sciences and the humanities. Environmental Humanities is an interdisciplinary class where we look at storytelling and climate change through the study of environmental philosophy, environmental history, ecocriticism, cultural anthropology, and ecosemiotics. Some questions we will look at include: whose voice has been centered in the telling of climate change? Whom have we left out of the conversation? How can we tell a convincing story in the face of climate science denial? And, what are some new mediums to tell an impactful story in the future? The class contains six modules: Language and Narration, Imperialism and Colonialism, Indigenous Knowledge, Nature, Climate Migration, Anthropocene and the Future.

Free Block

Term: Fall & Spring

Open to Grades: 11th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

Independent Study

Term: Fall & Spring

Open to Grades: 11th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

Independent study is an opportunity for students to pursue a deep dive into an academic course of study of their choosing. This research block cannot replace an existing course that is taught at Nueva. Rather, it is either an extension of a student's interest that may be inspired by a course (eg, art history, but the student wishes to study Japanese wood block in particular) or a passion which a student wants to explore in academic detail (eg. Russian literature). This course is by application only; please fill in this [form](#) by May 5th, 2023. ICS projects will then be approved by the ICS Coordinator.

Independent Study: Internship

Term: Fall & Spring

Open to Grades: 11th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

The Independent Study Internship is an opportunity for Nueva juniors and seniors to receive transcript credit for engaging in meaningful, experiential learning with an organization outside of the curricular offerings. Students may elect to take an Independent Study Internship during the fall or spring semester, or both.

The Independent Study Internship credit must be in place of an elective or during a free period. Students may not receive this credit on top of a full course load. In addition to meeting expectations set by a manager, students should plan on meeting with Katie Saylor and other Internship students regularly throughout the semester to check in.

Note: though these internships are often a continuation of a summer experience secured through the Nueva Internship Program, Nueva does not guarantee placement or dedicate resources to connecting students with employers during the school year. Internships secured outside of the Internship Program may also be considered for credit if they meet the requirements below.

Internship Requirements:

- Minimum 4 hours per week of work
- Paid or unpaid
- The position provides learning that is not possible through existing Nueva curricular offerings

Students interested in pursuing an Independent Study Internship should contact Katie Saylor to discuss the opportunity before the add/drop period expires. If the employer is not an existing partner of the Internship Program, Katie will need confirmation that they understand the credit expectations.

Intro to Psychology

Term: Fall Only

Open to Grades: 10th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Does digital technology change our thinking? Why do art and music affect people differently? Can we predict who a person will be attracted to? How does a person form an identity? Can trauma be inherited? What are the roots of prejudice? Answers to questions like these can be found in the field of psychology. Contemporary psychology posits that the way humans act and think is shaped by the interaction among biological, cognitive, and social-cultural factors. In this elective, students will critically examine research related to certain behaviors; learn several fundamental theories in psychology, such as schema theory and social identity theory; write analytical essays proposing arguments; participate in seminar-style discussions, and create individual and group projects such as podcasts, games, and films on topics of their choice. By the end of the course, students will have a good grounding in the field for future study in psychology, understand the strengths and limitations of studying human behavior, and develop an appreciation for the weird and wonderful ways that humans act and think. Most importantly, students will likely gain new insight into themselves as well.

Introduction to Speech and Debate

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

The course introduces four competitive speech and debate events: Extemporaneous Speaking, Impromptu Speaking, Parliamentary Debate, and Public Forum Debate. Students then choose one speech and one debate event in which they specialize. Public forum debaters will research and write cases on bimonthly and monthly topics issued by the National Speech and Debate Association; parliamentary debaters and extemporaneous speakers will read widely on current events. All students will compete in at least one interscholastic tournament each semester (though many more are offered). This course is the usual prerequisite for competitive tournament debating at Nueva.

Journalism

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

In this yearlong course, students will read and write a range of newspaper writing styles, including news, feature, opinion-editorial, sports, and entertainment. We will learn to write for different audiences and purposes, practice revision, and create compelling and meaningful stories that meet standards of accuracy, grammar, style, and journalism ethics. This is a writing and newspaper production course that explores a variety of storytelling techniques, emphasizes the importance of research and interviewing, and teaches layout and editorial design.

Latin in the Classical World

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

This Latin reading course is a fast-paced introduction to Classical Latin and ancient Roman culture. Since Latin is no longer a spoken language, the course focuses on translation skills and reading fluency. Students move quickly through Latin grammar and syntax as they encounter adapted and authentic Latin texts that explore Roman culture, Greco-Roman myths, and the larger Ancient World. By understanding Latin grammar, students also master the fundamentals of English grammar. Students further grow their English vocabulary through the study of Latin-derived cognates and word elements, unlocking word building and decoding skills. Students who enroll in this course in the Fall may repeat the class at an advanced level in the Spring.

Psychology and Memory

Term: Spring Only

Open to Grades: 11th - 12th

Prerequisites: Psychology 101 strongly recommended but not required if student has taken Philosophy of Consciousness (PHIL250), Sensory Neuroscience (BIO320), or has permission of instructor

Corequisites: None

Repeatable: No

This psychology elective centers on reconstructive memory theory, and explores the implications of memory's inherent unreliability in many contexts. For each aspect of memory we study, we'll look at the biological, cognitive, social, and cultural factors that contribute to the creation, consolidation, alteration, and loss of memory. But we will also allow the psychological study of memory to mingle with its portrayal in literature and art. For example, we'll examine the causes and consequences of conditions that affect memory, such as Alzheimer's and trauma/PTSD, but also explore how these memory disorders are portrayed in the cultural landscape, including works that imagine the potential we have to implant or delete memories. We'll veer into collective memory and the psychological purpose of commemoration, with students choosing a particular memorial or monument to study with respect to cultural memory. We'll look at the function of nostalgia, an idealized form of memory, which can connect us to our past but also hinder growth, and examine what happens to our mental health when our memories become the grist of rumination. We'll look at the effects of digital technology on memory, studying the implications of offloading our long-term memories to search engines. Overall, this is an examination of all things memory, from the biopsychosocial model of psychology to literature to cultural anthropology. Assessment and classwork will be diverse and project based, with presentations, filmmaking, creative writing, and research as possible outcomes.

Queer Japan: Gender & Sexuality in Japanese Culture

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Japan has a long and rich history of queer cultural representation, ranging from "gay samurai" (which is an anachronism) to shōjo manga (which often depict homogender or homosexual romances). And yet Japan remains stubbornly heteronormative, as shown by recent homophobic comments about gay marriage by many politicians.

How and why did this happen? This course answers these questions by examining the formation and transformation of gender roles and sexual identities in Japanese culture from the Edo period (1600-1868) to the present day. Covering topics like premodern nanshoku (male-male sexuality), same-sex love between bishōnen (beautiful boys) and shōjo (young girls), cross-dressing in the Kabuki and Takarazuka theaters, and AIDS and LGBTQ+ activism in Japan, this course shows how queer or non-normative people and practices have been central to the (re)production of Japanese national and cultural identity. Course materials include primary sources from literature, film, art, theater, and manga, as well as secondary sources from many fields.

AIDS History and Culture

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

This course investigates the outpouring of fiction, poetry, film, and visual art that arose in response to the AIDS crisis, which began in the 1980s and continues today. We will concentrate on the emotions—grief, passion, nostalgia, anger—that the epidemic provoked, and how writers, artists, and activists used these emotions as forms of survival and resistance. Throughout the semester, we'll explore this archive in order to better understand the complexity of how we remember. Key questions in the course include: How can art and literature be used as a means of survival? What do we do with the emotions that they create in us? Whose stories are remembered and why? We'll study, among other works, *The Great Believers* (novel), art by David Wojnarowicz, theoretical writings by Douglas Crimp and Susan Sontag, and *How to Survive a Plague* (documentary).

Research in Psychology

Term: Spring Only

Open to Grades: 10th - 12th

Prerequisites: Intro to Psychology (PSY101)

Corequisites: None

Repeatable: Yes

Can human behavior be quantified? What's the best way to study how and why humans do what they do? In this follow up to Psychology 101, students will continue to examine the biological, cognitive, and sociocultural roots of behavior and mental processes, though this time with two new behavior topics: thinking and decision making, with a focus on Daniel Kahneman's 2-system theory, and child development, with an exploration of Piaget and Vygotsky's theories, a look at brain development frameworks, and in-depth examination of environmental factors that threaten normal development, such as oppression and deprivation. Unlike in Psych 101, however, in this class the students become the researchers, designing and running two complete research studies of their own: one quantitative laboratory experiment and one qualitative study using observation and/or interview methods. They'll learn how to interpret their results and write a journal-style article reporting and explaining their findings. The semester ends with students applying their knowledge and understanding to some real world issue using any project format they wish. And of course, students will continue to gain insight into their own lives and the world around them. We usually take a field trip to Stanford's Bing preschool to gain insight on methods used to study development of young children.

Translation Studies: Fifty Words for Snow

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: CHIN201, JPN201, SPAN201, or the equivalent

Corequisites: None

Repeatable: No

This course is an introduction to the exciting and interdisciplinary field of translation studies, which examines not only how words and texts are translated but also how they function in the production and transformation of national, cultural, and linguistic identities. The title is something of a misnomer: there are not fifty words for snow in Eskaleut or Inuit languages; it depends on how you translate and define the term “snow.” In this way, the course encourages students to think critically and comparatively about how translation shapes, if not skews, our understanding of other peoples, languages, and cultures. Beginning with the question “What is translation?” this course covers some foundational theories and problems of translation before turning to case studies of literature in translation (prose and poetry). The course also examines translation as a metaphor in various films, stories, and other texts. At the end of the course, students produce a translation of their own.

Yearbook Media Production

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

This yearlong course produces Nueva's annual yearbook. Yearbook offers students an exciting opportunity to further their creative interests in writing, design, and photography while acquiring highly transferable skills in journalism, print production, and visual storytelling. Skills covered include digital design (specifically layout, theme development, and the use of Adobe InDesign), journalistic writing (features, captions, and interviews), and digital photography (composition, shutter rate, depth of field, and Adobe Photoshop). This class will emphasize both collaboration and student leadership, and students are expected to invest fully in the course by meeting all deadlines and actively participating in class and all work sessions. Students are expected to complete assignments on deadline, to fulfill their duties as staff or editors, and to contribute to the overall advancement of the yearbook theme and content.

Through participation in this course students will become members of both the Columbia Scholastic Press Association and the National Scholastic Press Association. These national organizations for student journalists hold yearly conventions and publications competitions. Students will be encouraged to submit their work for critique and judging to each organization's yearly contests, and a delegation of Nueva students will attend the NSPA spring journalism convention in Los Angeles. This class will also include a visit to a Bay Area publishing house where students can meet and learn from publishing professionals at work in the real world.

Languages

Chinese 1

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

The Chinese program provides the students opportunities to incorporate communication, collaboration, and technology skills in learning the Chinese language and its rich culture. In Beginning Chinese, students focus on culturally appropriate oral communication in Mandarin while utilizing pinyin, the Chinese phonetic system, to facilitate the sound transcription of the tonal language. Reading, writing, and typing in simplified characters (with references to their traditional counterparts) progress in parallel with oral skills development. Through each thematic unit — starting from self, family, and school and expanding to community and world — students will learn vocabulary, language patterns, dialogues, and culture topics, to create group presentations and to form conversations for real-life scenarios and functions. Foundational information of geography, history, pronunciation, classroom expressions and Chinese characters are introduced and reiterated among all the units.

Chinese 2

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Chinese 1 (CHN101) or equivalent

Corequisites: None

Repeatable: No

The Chinese program provides the students opportunities to incorporate communication, collaboration, and technology skills in learning China's language and its rich culture. Chinese 2 starts with an expansion of vocabulary and sentence structures built on top of Chinese 1 (or equivalent) content through dialogue creation, reading, listening, and writing. This course will roughly follow Lessons 9–16 on Integrated Chinese Level 1 (Parts 1 and 2) and cover topics including, but not limited to, shopping, transportation, weather, dining, directions, etc. In addition to colloquial Mandarin, students are exposed to more formal written language with stories and songs. While advancing in reading and creative writing, students in Chinese 2 dive deeper into cultural comparisons and 21st century world citizenship through group projects and comic/drama production.

Chinese 3

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Chinese 2 (CHN201) or equivalent

Corequisites: None

Repeatable: No

The Chinese program provides the students opportunities to incorporate communication, collaboration, and technology skills in learning the Chinese language and its rich culture. The Level 3 Chinese course is composed of themes and units about decision-making and planning. Topics include, but are not limited to, directions, seeing a doctor, dating, living space, sports, and travel. The course will roughly follow Lessons 13–20 in Integrated Chinese

Level 1 (Part 2) and loosely Zhēn Bàng! Level 1, Units 4–6. Correlated cultural topics are introduced with each unit for further exploration and comparison. In addition to the new vocabulary and sentence structures introduced in each unit, the students will be further immersed in an authentic environment through Chinese short stories, songs, news segments, TV series, and animated videos.

Chinese 4

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Chinese 3 (CHN301) or equivalent

Corequisites: None

Repeatable: No

The Chinese program provides the students opportunities to incorporate communication, collaboration, and technology skills in learning the Chinese language and its rich culture. The Level 4 Chinese course comprises themes and units about modernization and environmental issues. Correlated cultural topics are introduced with each unit for further exploration and comparison. In addition to regular language units, students will study biographies, news segments, crosstalk, and movies to manage a self-paced, individualized learning progress based on personal interests. Level 4 students will also conduct interviews and periodically publish bilingual newsletters in Chinese and English.

Chinese Communication

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Chinese 4

Corequisites: None

Repeatable: No

Chinese 505 is an advanced course, designed to help students to develop a dynamic range of advanced oral communication skills and strategies and acquire the literacy skills necessary to be effective communicators with native Mandarin speakers. Its primary focus is to further explore topics related to the Chinese culture, geography, education system, economic growth, history and modernization in order to develop a wider and deeper understanding and linguistic skills to engage with the Mandarin speaking diaspora.

Over the course of the year, students will review and analyze authentic texts and audiovisual resources such as news segments, advertisements, debates, speeches etc. as well as engage class discussions, personal learning logs, interviews, and oral presentations in order to develop and practice different linguistic skills with a focus on listening and speaking. Additionally, students will create cross-cultural connections between various contemporary language phenomena, including advertising, journalism, and common idioms.

Chinese Culture & Society

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: CHN401 or equivalent

Corequisites: None

Repeatable: No

Chinese 550 is an advanced course that delves deeper into the cultures and communities of Chinese-speaking populations worldwide. The course is designed for students who wish to broaden their knowledge and understanding of these communities. It focuses on topics such as history, art, mythology, education, technology, and global

concerns. Students will also have opportunities to propose solutions to various issues affecting these communities. The course is organized around several themes and units, including immigration, migration, popular culture, gender inclusion, social justice, legends, school systems, artificial intelligence, environmental issues, and more. Through critical thinking and analytical skills, students will learn to evaluate authentic information from diverse perspectives, while also improving their Chinese language skills through discussions, research, interviews, presentations, and projects.

Upon completion of the course, students should be able to achieve a proficiency level ranging from intermediate-mid to advanced-low in interpretive, interpersonal, and presentational communications, according to the ACTFL standards. This course aims to equip students with the knowledge and skills necessary to engage meaningfully with Chinese-speaking communities around the world.

Japanese 1

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Japanese 1 is a year-long introductory course that develops students' reading, writing, speaking, and listening skills through a systematic introduction and integration of grammar, vocabulary, Kanji, and culture. Using a communicative approach informed by the five C's of foreign language education as defined by the American Council on the Teaching of Foreign Languages (Communication, Cultures, Connections, Comparisons, and Communities), this course enables students to achieve a Novice-Low to Novice-Mid level proficiency in Japanese. In assignments and assessments, equal emphasis is given to the three basic modes of communication: the interpersonal, the interpretive, and the presentational.

Japanese 2

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Japanese 1 (JPN101) or equivalent

Corequisites: None

Repeatable: No

Building on Japanese 1 or the equivalent, Japanese 2 is a yearlong course that develops students' reading, writing, speaking, and listening skills in Japanese through a systematic introduction and integration of grammar, vocabulary, kanji, and culture. Using a communicative approach informed by the five C's of foreign language education as defined by ACTFL (Communication, Cultures, Connections, Comparisons, and Communities), this course enables students to achieve Novice Mid to Novice High proficiency in Japanese. Assignments and assessments focus on the three basic modes of communication: the interpersonal, the interpretive, and the presentational.

Japanese 3

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Japanese 2 (JPN201) or equivalent

Corequisites: None

Repeatable: No

Building on Japanese 2 or the equivalent, Japanese 3 is a yearlong course that develops students' reading, writing, speaking, and listening skills in Japanese through a systematic introduction and integration of grammar, vocabulary, kanji, and culture. Using a communicative approach informed by the five C's of foreign language education as defined by the American Council on the Teaching of Foreign Languages (Communication, Cultures, Connections, Comparisons, and Communities), this course enables students to achieve Novice High to Intermediate Low proficiency in Japanese. In assignments and assessments, equal emphasis is given to the three basic modes of communication: the interpersonal, the interpretive, and the presentational.

Japanese 4

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Japanese 3 (JPN301) or equivalent

Corequisites: None

Repeatable: No

Building on Japanese 3 or the equivalent, Japanese 4 is a yearlong course that develops students' reading, writing, speaking, and listening skills in Japanese through a systematic introduction and integration of grammar, vocabulary, kanji, and culture. Using a communicative approach informed by the five C's of foreign language education as defined by ACTFL (Communication, Cultures, Connections, Comparisons, and Communities), this course enables students to achieve Intermediate Low to Intermediate Mid proficiency in Japanese. In assignments and assessments, equal emphasis is given to the three basic modes of communication: the interpersonal, the interpretive, and the presentational.

Adv. Japanese Topics

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Japanese 4 (JPN401) or equivalent

Corequisites: None

Repeatable: Yes

Building on Japanese 4 or the equivalent, Advanced Topics in Japanese is a yearlong course that develops students' reading, writing, speaking, and listening skills in Japanese through a topics- based study of grammar, vocabulary, kanji, and culture. Using a communicative approach informed by the five C's of foreign language education as defined by the American Council on the Teaching of Foreign Languages (Communication, Cultures, Connections, Comparisons, and Communities), this course enables students to achieve Intermediate High to Advanced Low proficiency in Japanese. Assignments and assessments emphasize the three basic modes of communication: the interpersonal, the interpretive, and the presentational. For example, students are required to do skits and speeches, to read and analyze authentic materials in Japanese, and to discuss advanced topics in Japanese. Topics change yearly, depending on student enrollment and interests, but have included: geography, robots and technology, food, religion, pop culture, education, history, literature and poetry, performing arts, environmental issues, the atomic bomb, and urban studies. The course uses a variety of advanced Japanese textbooks and multimedia instructional materials, such as "Genki 2," "Adventures in Japanese," "Tobira," and "Quartet." Students continue their study of kanji using the Kanji Look and Learn workbook. Students can also deepen their language skills and cultural knowledge through an optional trip to Japan during the spring semester. This is a rotating topics course, so it may be taken multiple times for credit.

Spanish 1

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Spanish 101 is designed to build a foundation in the Spanish language, with a focus on developing students' skills in Interpersonal Communication, Presentational Speaking and Writing, and Interpretive Reading and Listening. Comprehensible and repetitive exposure to high-frequency structures is provided through visuals, physical activities, stories, readings, and conversations about students and their lives, while making space for comparisons and connections with the cultures of Spanish-speaking countries. Students will understand the benefits of learning a second language as well as some of the skills and practices needed for the successful acquisition of Spanish, broadening perspectives about communities both near and far. Students will learn to introduce themselves to regional and social contexts in mind. They will be able to describe their passions and interests and develop an understanding of how people in other cultures spend some of their leisure time. Students will be able to describe themselves and their friends. As they explore cultural traditions related to homes and families from the Spanish-speaking world, students will describe different types of families, roles, and activities in their communities. As the year progresses, students will construct and respond to questions, ask for what they need, and respond to the needs of others. Students also become storytellers, using their newly acquired language to retell and adapt real and imaginary stories.

Spanish 2

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Spanish 1 (SPAN101) or equivalent

Corequisites: None

Repeatable: No

The Spanish 201 course is designed for students to continue developing the skills and practices needed for the successful acquisition of the Spanish language, broadening perspectives about communities both near and far. Students continue their study of Spanish by further expanding their knowledge of key vocabulary topics and grammar concepts. They comprehend listening and reading passages more fully and express themselves more meaningfully and with greater spontaneity in both speaking and writing.

Spanish 3

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Spanish 2 (SPAN201) or equivalent

Corequisites: None

Repeatable: No

Students in class 301 Spanish will review and strengthen their understanding of essential Spanish grammar and build on the foundation of previous courses. They will expand their vocabulary and increase in fluency through frequent conversational practice and presentations, readings, creative projects, and research on cultural topics. Throughout the year, students should progress through the standards of the American Council on the Teaching of Foreign Languages (ACTFL). They should increase their ability to express needs and wishes, write increasingly cohesive passages, and present clearly and articulately using complex sentences. Their higher-level listening and

reading comprehension should allow them to identify main ideas, comment on what they hear, and identify and describe key points in authentic articles.

Through individual and collaborative learning activities, members of the Level 301 class will understand how life experiences shape identity, discuss cultural celebrations in Spanish-speaking countries, consider the relationship between life and the arts, delve into the complex issues of social justice in modern Hispanic society, and describe some environmental issues that pose challenges to society. The class will focus on developing students' skills in Interpersonal Communication, Presentational Speaking and Writing, and Interpretive Reading and Listening. Students will build knowledge of more complex grammatical structures and precise language to expand their possibilities in effective communication. They will review and master the preterit, imperfect, and present perfect tenses while implementing the present subjunctive mood in various contexts. They will review the future and conditional tenses and use them to describe predictions and hopes. Students will also learn to express desires and give instructions using the Imperative.

Spanish 4

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Spanish 3 (SPAN301) or equivalent

Corequisites: None

Repeatable: No

The Spanish 401 curriculum refines and enhances students' language skills, developing their ability to communicate effectively in oral and written Spanish within a thematic context. Students move toward less structure and more cumulative knowledge and self-initiated responses. Students will broaden their understanding of cultures from Spanish-speaking communities around the world, relating them to their own experiences. The course will focus on six essential themes: global challenges, beauty and aesthetics, families and communities, personal and public identities, contemporary life, and science and technology. Students will explore each theme through written and audio resources, acquire new vocabulary, and practice writing and speaking formally and informally. The course emphasizes the use of language for active communication and is conducted entirely in Spanish.

Spanish Communication

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Spanish 4 (SPAN401) or equivalent

Corequisites: None

Repeatable: No

Advanced Spanish Communication is an advanced elective course, conducted in Spanish, designed to help students develop a dynamic range of advanced oral communication skills and strategies and acquire the literacy skills necessary to be effective communicators with native language speakers, and interact closely with native-speaking communities both in and outside the school community. Students develop the communicative skills and oral expressiveness necessary to engage in a variety of real-life situations, and apply their skills to issues facing Spanish-speaking communities around the world. Through close readings and analysis of colloquial texts and conversations, as well as individual and group practice activities, students develop proficiency in Spanish language mechanics and learn skills necessary to conduct research and interpersonal interviews, deliver an original speech, write on demand, and interact with native speakers with an awareness of structure, organization, mechanics, and word choice in Spanish.

Over the course of the year students will examine and practice various daily interactions present in different Spanish-speaking communities. Over the course of the unit, students will review and analyze original texts and audiovisual resources such as news programs, advertisements, and debates. Through class discussions, personal learning logs, interviews, and oral presentations, students will develop and practice the different linguistic skills they have identified and classified throughout the review of class materials. Additionally, students will create cross-cultural connections between various contemporary language phenomena, including advertising, journalism, sports, and common slang.

Spanish Culture and History Through Film

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Spanish 4 (SPAN401) or equivalent

Corequisites: None

Repeatable: No

Conducted entirely in Spanish, students will learn about the history and the cultural legacies of Spanish-speaking countries through the medium of film. Movies viewed in class will provide a context in history, traditions, and political conflicts from colonial times to postmodernity. In preparation for watching the films, students will study the historical/cultural information that provides the backdrop of the settings of the films, which are set in Latin America, Spain, and North America. By focusing on the way movies address changing sociopolitical conditions, students will be able to analyze sociological conflicts and collective anxieties encoded in cinematic representation. Lessons will require analytical/critical thinking skills such as expressing opinion, analyzing, predicting, and comparing and contrasting in the target language. In addition, students will continue to master more sophisticated vocabulary and grammatical concepts and will be assigned reading material as well as written work. As such, students will improve oral, aural, written, and reading proficiencies.

Objectives

- to discuss and write about plot, characters, culture, history, and themes found in Hispanic cinema
- to encourage students to approach films as an object of analysis
- to gain an understanding of the films' integral relationship to the Hispanic social, economic, and political context
- to write a structured essay in Spanish supporting a thesis
- to debate on issues pertinent to topics studied
- to develop further the four basic language skills in Spanish (reading, writing, speaking, and listening)

Algebra Techniques

Term: Yearlong

Open to Grades: 9th

Prerequisites: None

Corequisites: MATH 1 (MATH101)

Repeatable: No

This course builds students' competency with the fundamentals of algebraic thinking and technique necessary for success across our mathematics and science programs. Students will practice and solidify techniques such as order of operations, simplifying and manipulating algebraic expressions, symbolic manipulation, solving equations and inequalities with linear, absolute value, and quadratic components, and working with exponents and radicals, among other skills. Along the way, students will develop their proficiency in recognizing structure, moving between representations in problem spaces, abstracting from repeated computations to the language of algebra, and moving between process and object views of various mathematical concepts. Throughout the course, there will be an emphasis on connecting this growing algebraic toolkit to geometric spaces as well as applied/contextual problems, with an aim to support students in their Math 1 course, in which they will be dual-enrolled.

Algebraic Topology

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Abstract Algebra (MATH330), Linear Algebra (MATH530), or Complex Analysis (MATH510)

Corequisites: None

Repeatable: No

Topology is essentially the study of connectedness; topologists are famously said to be unable to tell a donut from a coffee cup. We will explore the notions of deformation and topological equivalence, starting with some basic exercises and an introduction to knot theory and then using algebraic concepts to rigorously classify higher dimensional shapes. We will also discuss some methods for visualizing 4- or sometimes 5-dimensional manifolds.

The main prerequisite for this course is permission of the instructor, as this one semester course will be packed with abstract ideas and proofwork. Math 3 is also recommended as a prerequisite, as an introduction to the notion of a group and basic proof strategies will come in handy. The material lends itself reasonably well to differentiation, and challenges such as knot invariants, cohomology, and possibly k theory will be made available to the advanced student.

Calculus

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Math 3 (MATH301)

Corequisites: None

Repeatable: No

Calculus is a rigorous year-long course in single-variable calculus. This course interweaves two approaches: the classical, and the applied. First, it immerses students in rigorous, analytic thinking, through an emphasis on

deductive reasoning and careful proofs of deep results. Students are expected to derive formulas and results from basic principles, and to articulate verbally the connections between mathematical ideas. Second, students encounter a wealth of applications in physics, economics, and other sciences, ranging from fluid dynamics to compound interest. In working through these applications, students discover the transformative power of calculus as a problem-solving tool. The curriculum covers limits, epsilon-delta proofs, differentiation rules, applications of differentiation, differential equations, integration, various integration techniques, the fundamental theorem of calculus, transcendental functions, power series, convergence of sequences and series, and various applications.

Cryptology

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Cryptology is the study of the codes and ciphers used to create secret writing. In this math course, students begin their journey with an exploration of many early techniques for creating secret writing, such as the Caesar shift, other simple substitution ciphers, polyalphabetic substitution, and the Vigenère cipher. They move on to learn about mechanized techniques, starting with ciphers such as the Enigma machine and working up to modern techniques RSA public key cryptography, as students explore how data transmitted by computers can be secured with digital encryption. They'll also consider cutting-edge techniques involving quantum computing. Discussions about the vulnerabilities of each encryption system enable students to attack and decrypt messages using techniques such as frequency analysis and cribbing. Students apply the concepts learned to encrypt and decrypt their own secret messages.

This class is suitable for all grades and has no prerequisites; we will develop all the mathematical tools needed in order to fully understand these ciphers, and to learn to break them in particular. Students will accumulate an arsenal of techniques in probability, combinatorics, and number theory. Though the course's central focus is on the mathematics of cryptology, some historical context of cryptography and cryptographic devices is provided to further develop an understanding of this branch of mathematics.

Differential Equations

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: Calculus (MATH401)

Corequisites: None

Repeatable: No

This elective introduces the students to the search for functions that satisfy a variety of growth properties. Unlike the more familiar algebraic equations, where the unknowns are numbers, here the unknowns are the functions themselves. We explore constructive solution techniques, like the integrating factor, characteristic equations, the Laplace transform and Fourier series. We proceed to investigate systems of differential equations and their asymptotic properties, in applications ranging from Physics, Biology and Economics. In this course we combine analytic methods with computational ones, that allow us to simulate, approximate and visualize complex dynamics. The course culminates with a term project, based on the description and analysis of a modeling challenge.

Geometries Beyond Euclid

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: Math 3 (MATH301)

Corequisites: None

Repeatable: No

This course will expose students to the diverse forms that the classical study of Geometry has taken over the last two hundred years, through a series of hands-on, student-driven investigations. After a shared introductory unit, the students will choose three month-long modules to explore independently in small groups. Each module includes readings, both expository and technical, computational and applied challenges, problem solving and writing, as well as a series of inspiring research prompts. Along the way, the students will produce artifacts, which they will exhibit at monthly Geometry Symposia, culminating into portfolios that they will curate, under the teacher's mentorship, to demonstrate the arc of their learning. Modules will explore topics ranging from across algebraic, combinatorial, differential, hyperbolic, projective and tropical geometries. MATH301 is a required prerequisite and MATH401 is recommended preparation.

Infectious Disease Dynamics and Modeling

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Math 3 (MATH301)

Corequisites: MATH401

Repeatable: No

We will examine infectious diseases from several different perspectives. Students will consider different modes of transmission (casual contact, water-borne, sexual contact, vector-borne, etc), and the effect of biological, ecological, social, political, and economic forces on the spread of infectious diseases. We will cover vaccination strategies, diseases throughout human evolution and history, emerging infectious diseases including COVID-19, and major causes of morbidity and mortality including tuberculosis, malaria, and HIV/AIDS. Students will learn a variety of programming and calculus-based tools to create models. Modeling topics will include model design and construction, incorporating heterogeneity assumptions into models, equilibrium and stability analysis, estimating model parameters based on epidemiological data, sensitivity analysis, and stochastic and agent-based models. Possible extension topics include modeling antibiotic resistance, analysis of disease spread using genetic strain information, and spatial dynamics.

Linear Algebra

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Math 3 (MATH301)

Corequisites: None

Repeatable: No

Linear algebra is the branch of mathematics concerning the properties of matrices. Linear algebra has wide ranging applications in abstract algebra, functional analysis and many natural sciences and social sciences; it is particularly malleable to the student's interests, whether they be theoretical, applied, or computational. Our approach this year will give students the opportunity to acquire a number of communication and analysis skills that will benefit them in further math classes. The notions we consider can be subsequently bent to their further goals in a remarkable variety of fields, and we will periodically discuss specific examples of applications. These concepts will include vectors and

vector spaces, linear transformations and matrix representations, determinants, linear dependence and independence, subspaces and bases and dimensions, orthogonal bases and projections, Gram-Schmidt orthogonalization, Cramer's Rule, linear models and least-squares problems, eigenvectors and eigenvalues, and singular value decomposition.

Math 1

Term: Yearlong

Open to Grades: 9th - 10th

Prerequisites: None

Corequisites: None

Repeatable: No

This course builds students' competency in mathematical reasoning, focusing on generalizing patterns, building strong arguments, and finding multiple approaches to solving problems. Students learn to ask probing questions, reflect on their problem-solving process, and clearly communicate their findings. Students develop mathematical fluency by integrating geometry and algebra through rich introductions to geometric construction, formal proofs and notation, similarity and congruence, right triangle trigonometry, coordinate geometry, and unit circle trigonometry. Students also revisit and expand on their knowledge of forms of linear, quadratic, absolute value and piecewise functions, with an introduction to function transformations and the library of essential parent functions and analysis of key features. The underlying focus for the year is on building the language and foundations of mathematics.

Math 1A Booster

Term: Spring Only

Open to Grades: 9th

Prerequisites: Must have approval from administration AND Math 1 teacher.

Corequisites: MATH201A

Repeatable: No

The Math 1A/2A program is a compression of the Math 1 and Math 2 curriculum for students seeking additional challenge. These two courses build students' competence in mathematical reasoning, generalizing patterns, building strong arguments, and finding multiple approaches to solving problems. Students will expand their knowledge of and understanding of the four mathematical strands: functions, geometry, number theory, and probability & statistics. Students who successfully complete this program are eligible for Math 3.

Students who take the MATH101A Booster class must also enroll in the MATH201A Booster class.

Math 2

Term: Yearlong

Open to Grades: 9th - 11th

Prerequisites: Math 1 (MATH101)

Corequisites: None

Repeatable: No

Math 2 builds on the content and skills developed in Math 1, including further studies in Geometry (polygon angles and areas, 3D geometry, circle theorems, general triangle trigonometry, unit circle trigonometry review) and introductions to exponential and logarithmic functions, higher degree polynomials and factoring, complex numbers, and mathematical modeling. Throughout the course, students work individually and in groups to derive, make sense

of, and apply what they are learning to solve compelling problems, while continuing to develop their ability to reflect on and communicate their thinking effectively.

Math 2A Booster

Term: Spring Only

Open to Grades: 9th

Prerequisites: Must have approval from administration AND Math 1 teacher.

Corequisites: MATH101A

Repeatable: No

The Math 1A/2A program is a compression of the Math 1 and Math 2 curriculum for students seeking additional challenge. These two courses build students' competence in mathematical reasoning, generalizing patterns, building strong arguments, and finding multiple approaches to solving problems. Students will expand their knowledge of and understanding of the four mathematical strands: functions, geometry, number theory, and probability & statistics. Students who successfully complete this program are eligible for Math 3.

Students who take the MATH201A Booster class must also enroll in the MATH101A Booster class.

Math 3

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Math 2 (MATH201)

Corequisites: None

Repeatable: No

Students will spiral deeper into the content developed in Math 1 and Math 2 and prepare for advanced studies in calculus, statistics, number theory, abstract algebra, and other math electives, as well as physics, game theory, economics, and other science/social science electives through thought-provoking problems and projects. As topics from previous courses are deepened, Math 3 content will include function families and their graphs, trigonometric proofs and identities, complex numbers, parametric equations, polar coordinates, and various topics in geometry, including vectors, circles and conics, as well as introduce topics in calculus. Math 3 serves as a culminating course for Nueva's integrated Math curriculum, helping students see mathematics as a cohesive and beautiful system.

Mathematical Modeling

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: Calculus (MATH401)

Corequisites: None

Repeatable: No

Students will be presented with situations from biology, economics, engineering, logistics, management science, politics, and daily life. They will develop creative mathematical approaches to build, test, and refine models, focusing on applying the formal mathematics they already know. Modeling problems will draw on concepts from logistics and operations research, measurement and regression, game theory and decision theory, algorithmic design, and geometric design and inference. This class will be heavily project-based, and students will work in teams to produce models and formal write-ups of their approaches and results.

Multivariable Calculus

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Calculus (MATH401)

Corequisites: None

Repeatable: No

Our study of multivariable calculus will build upon techniques learned in Single-Variable Calculus, extending the realm of applications to problems in two, three, and more dimensions. The course provides a venue for students to combine and extend many of the mathematical techniques that they have learned in previous math courses, and to apply those techniques to problems of greater complexity. Students will generalize their knowledge of differentiation and integration to functions of several variables. In particular, students will learn to work with and visualize two- and three-dimensional functions, vectors, and vector fields. We will study techniques for working in n dimensions, including parametric equations, polar coordinates, vectors and vector operations, directional derivatives and gradients, multiple integration, line and surface integrals, Taylor's expansion in n dimensions, and Green's, Stokes' and Gauss' Theorems. Whenever possible, students will work with physical models or computer models to aid in visualization and will solve problems taken from real-world applications. We will also spend time honing formal mathematics skills by studying and performing proofs and presentations.

Quantum Information

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Math 3 (MATH301)

Corequisites: None

Repeatable: No

This elective will expose students to the mathematical tools, especially the geometry of complex vector spaces and tensor algebras, that underlie the design of quantum algorithms and their transformative promise. Along the way, we will investigate models of wave-particle duality, the uncertainty principle, entanglement and nonlocality, and various emerging applications of these iconoclastic, quintessentially quantum concepts in physical, biological and technological situations. The students will explore the quantum realm through a series of five, 3-week-long group challenges, that they will manage as a whole group, under the teacher's mentorship. The students' work will culminate with a series of jointly-created artifacts that will be curated into individual portfolios.

Statistics

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: Math 2 (MATH201)

Corequisites: None

Repeatable: No

How do we become critical consumers of data? How do we use data effectively to create an argument that is statistically significant? What must we be cautious of when designing an experiment? This course in statistics first explores how to interpret categorical and quantitative data, including both 1- and 2-variate, and then explores different tests that allow us to make inferences and justify conclusions. In the second semester, we explore study design deeply and technically for degree of association and inference. We also look at sampling techniques as it relates to inference about populations. In addition, we delve into the power of studies before embarking on

independent study as per inferential statistics housed within the context of epidemiological and environmental factors.

Performing Arts

Fall Production

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

Fall Production is open to all students and will offer the opportunity to rehearse, stage, and present a full-length play. Students are encouraged to contribute in ways beyond just acting, and there will be opportunities available during the rehearsal and production process for people of diverse talents and interests, including tech crew and design teams. We will begin by workshopping two different scripts and students will vote on which play we end up producing and performing. We will then move into academic and dramaturgical work, transitioning to the creative processes of interpretation, blocking, staging and performance as we ready the play to be presented to the wider community. Rehearsals will be held during class time, with weekly after-school sessions and potentially one or two Saturdays in advance of the show, culminating in an immersive Tech Week. All performances and technical rehearsals are mandatory. Any class time we have left in the semester after our production will be spent doing theatrical workshops, additional acting scenes, or other opportunities to work on other scripts. Come ready for a dynamic and creative atmosphere, an ensemble bonding experience, and the endorphin rush of bringing a text to life!

Groove Workshop

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None but some musical experience is encouraged

Corequisites: None

Repeatable: Yes

Groove Workshop is a music performance workshop designed to teach students how to form and maintain a band — in other words, how to rock! Areas covered will include analysis of song form and structure, rehearsal methods, chart writing, equipment setup, and performance tips and tricks. A big part of being in a successful band is having the ability to communicate and be open to the ideas of others. Making music is a great way to create bonds and build teamwork. This class gives students that opportunity.

Goals: The goals of the elective will be to master the songs we choose to learn, develop proficiency as musicians through playing challenging music, learn to play well as a band, and perform both at Nueva and in the community.

Homework: Most of our work in this elective occurs during class time. When we begin a more challenging piece of music, I will ask students to spend some time learning the music at home so we can use the class time learning the song as a whole, rather than teaching students individual parts.

Assessment: Primarily, students are assessed through their positive participation during class time and their willingness to practice and work on music. As this is considered an advanced group, students are expected to be proficient at all their individual parts for each song we learn.

Intro to Music Production

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

Students will learn how to create any type of music that they can dream of, using imagination and the program Ableton Live. Students will learn the fundamental concepts of music production, covering everything from programming electronic compositions using MIDI to recording live instruments and vocals to designing, engineering, and automating their own sounds. Students use musical examples from the industry to understand certain concepts in digital production and learn how to design and produce music using their own sounds and patches. Course assignments include creating musical compositions or designing sounds and patches for future productions using Ableton and are flexible in regard to genre and style (electronic vs. live). The course will model a workshop environment, as we will listen to and discuss student projects as a group. At the end of the course, students produce a final original song at full length.

Jazz Ensemble

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: Student must play an instrument

Corequisites: None

Repeatable: Yes

Jazz Ensemble will study and perform various jazz stylings, including blues, swing, Latin, Brazilian, and calypso. Each style will be explored historically, theoretically, and in performance. Emphasis will be on the basic concepts of each style as well as improvisation. Students will be exposed to “standards,” the classic compositions that are an integral part of any jazz musician’s vocabulary. In addition to performing at the upper school arts culmination on Thursday evening, December 13, we will look for other opportunities to perform at open houses and informal lunch concerts and morning meetings. Grading will be based on attendance and participation in class.

Goals: The Jazz Ensemble is designed to increase a student's musical proficiency, rhythmic vocabulary, ability to improvise, knowledge of theory, and understanding of that uniquely American art form — jazz. We will use a variety of rehearsal methods intended to strengthen and expand both conceptual and practical knowledge, and to help students improve their ability to hear intervals, melody, chords, and rhythms. For example, we will learn jazz standards, modern jazz compositions, and musical forms directly related to jazz, like the Brazilian samba and Latin jazz.

Homework: Most of our work in this elective occurs during class time. When we begin a more challenging piece of music, I will ask students to spend some time learning the music at home so we can use the class time learning the song as a whole, rather than teaching students individual parts.

Assessment: Primarily, students are assessed through their positive participation during class time and their willingness to practice and work on music and improvisation between classes. Additionally, students will be assessed on their willingness to learn the language of improvisation, which includes the study of chord/scale relationships, and how improvising musicians apply those concepts in an ensemble and performance setting.

Musical Theater

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

This elective is open to anyone interested in performing in the spring musical; it is also open to students with a strong interest in the production end of things (e.g., stage managing, tech, etc.). We will begin by workshopping two different scripts and students will vote on which musical we end up producing and performing. While the class serves as core rehearsal time, it also explores key components of acting, including voice work (breathing, articulation, projection, vocal blending, and musicality), stage movement (choreography, blocking, stage picture, and physicality of character) and characterization (focus and concentration, improvisation, open scene work, subtext, motivation, emotional range). Each student also has the opportunity to be a part of a tech team (costumes, props, assistant directing, sound, set design, etc) to help our show come to life. The majority of rehearsals will take place during class time, as well as two to three after school rehearsals per week, based on student schedules and availability (not all students will be called to all rehearsals), culminating in a dynamic tech week. An overarching goal of the class is to develop a deeper appreciation of the nuanced and myriad ways that musical theatre reflects and expresses the many facets of the human condition; in the process, it addresses the thematic, historical, social and cultural themes as they pertain to the spring production, which will be the culmination of this course. Note: students in the elective will receive 2 units of P.E. credit.

Steel Drum Band

Term: Fall & Spring

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

In the fall semester, the steel band will focus on learning compositions by Trinidadian steel drum virtuoso Robert Greenidge. Robert is one of the world's most influential steel drum composers, and while he has been known worldwide as a part of Jimmy Buffett's Coral Reefer band for the past 30 years, he is also a panorama winner in Trinidad's Carnival, arranging for the 120-member Desperadoes Steel Orchestra. In addition to learning the calypso stylings of Robert's music, we will most likely do several Santana tunes as well as music by Sting and Bill Withers. The rhythms of each style present different challenges for each section of the band.

Goals: The goal of the class is to develop an advanced steel drum ensemble for the high school that will play complex arrangements in a variety of musical styles. The ensemble will perform at school and in the community throughout the year. We will also perform at the upper school arts culmination in early December.

Homework: In addition to the performance aspect, we will research the history of the instrument, its cultural significance, its pioneers, and its greatest composers and performers. Students will do individual research projects on the development of the modern steel band and its musical styles, as well as listening to a variety of music related to the instrument.

Assessment: Students will be assessed primarily on their positive participation in rehearsals, willingness to practice parts individually between classes, attendance, and participation in the concert. In addition, students will be

evaluated on their willingness to listen to the different genres of music played and to strengthen their music theory skills.

Adv. Chemistry Consulting

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Chemistry (CHEM101) and Math 2 (MATH201)

Corequisites: None

Repeatable: No

Advanced consulting in chemistry is a laboratory-based class that exposes students to a wide range of chemistry and engineering disciplines through a collaborative, project-aligned curriculum featuring open-ended design, mystery, or analysis questions. The course mainly focuses on four chemistry disciplines: physical, inorganic, analytical, and computational chemistry. Students will join a fake company called "Vyrtecks" and work together in groups or as a class to master the course content and habits of mind while addressing real-world problems and prompts related to solar, battery, polymer, laser, and perfume chemistry, as well as chemical and electrical engineering topics, and plastic failure analysis.

The use of real-world prompts will help organize our efforts to learn new chemistry topics, understand the reasons for learning them, and how to learn them, while acting as consultants to address those prompts with laboratory work. The time spent working in the course can be divided into two categories: new chemistry topics and consulting activities. In percentage format, the year would look approximately like 85% for new chemistry topics (learning, laboratories, designing/building, homework, etc.) and 15% for consulting activities ('company' events, presenting work in class or to panels, field trips, meeting with "clients", etc.). The course provides an opportunity for students interested in post-secondary STEAM academic and career-related activities to experience the workings of a human-centered profession: consulting. Additionally, students will have the chance to visit, observe, and interact with a local consulting firm.

Advanced Mechanics

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Physics (PHYS101) & Calculus (MATH401)

Corequisites: None

Repeatable: No

This course represents an in-depth study of mechanics, including the mathematical tools of calculus and elements of mechanical engineering. Unlike the treatment in first-year physics, where objects are usually approximated as point masses or having infinite stiffness, here we may consider an object's center of mass, rotational inertia, modulus of elasticity, or other properties. Students solve problems of substantially greater complexity than those encountered in earlier classes. We also aim for students to develop a robust set of scientific practices: methods for asking questions, designing and carrying out experiments, interpreting the results, and communicating their results to others. Students explore physics experimentally whenever practical. When a phenomenon is not tractable to classroom demonstration, digital simulations are employed. Students spend most of their classroom time learning to solve problems, design and perform experiments, and analyze demonstrations of (sometimes unexpected) results. Topics to be covered during the year include:

- kinematics
- dynamics

- center of mass, impulse, and momentum
- conservation and transformations of energy
- gravity
- rotation and rolling
- oscillations and waves

Biology

Term: Yearlong

Open to Grades: 10th

Prerequisites: Chemistry (CHEM101)

Corequisites: None

Repeatable: No

Our goal in Biology 101 is to develop students' understanding of and appreciation for the living world in all its complexity. We approach the study of life through several key lenses, including form and function relationships, variations in size and scale, and change over deep timescales. By the end of the year, we hope students will naturally see these themes as some of the organizing principles in biology. Throughout the year, students perform authentic scientific research and participate in scientific discourse just as any scientist would. Thus, our students are able to develop an understanding of the process of science through direct experience. Students will learn to engage with peer-reviewed scientific articles, design sound experiments through iteration, collect and present data, and communicate scientific information to various audiences.

Essential questions we explore include:

- What is life, what capacities does it entail, and what does it require?
- How has time, from the scale of billions of years down to nanoseconds, shaped life and its processes?
- What are the molecular artifacts of life? How do the structures of these biological molecules dictate their functions?
- Why is life intimately tied to the need for an instructional code that is heritable and changeable?
- How has evolution shaped life on earth? How has it amplified positive traits and minimized negative traits?
- How are the characteristics of an organism shaped by its genetic code and interactions with the environment?
- How do populations of organisms and their environments interact, and how is human activity reshaping ecological relationships?

Biology Research Teams 1: Experiment & Research Teams

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Chemistry (CHEM101)

Corequisites: None

Repeatable: No

In the Biology Research Teams 1 class (formerly XRT1), we learn deeply about the scientific process by interrogating its underpinnings and directly participating in experimental biological research. We learn about the history of the scientific process, current philosophical issues surrounding science, how to approach experimental design and data analysis so as to mitigate bias and make sound claims, and how to engage with and learn from the scientific literature. Small teams of students also spend significant periods performing experiments to iteratively investigate the behaviors, physiology, and genetics of *C. Elegans*, a microscopic roundworm; during this process, they learn to use modern laboratory techniques and tools, collect and analyze data, and share their findings in writing, in figures, and in presentation formats. This year-long, hands-on introduction to biology research will prepare students for any future research endeavors, but it is a required course for anyone interested in the student-led advanced biology research

course, Biology Research Teams 2 (BIO375). In BIO375, students propose novel, long-term research projects to experimentally address significant scientific questions, and they pursue a subset of these projects in small, student-led groups over the course of 1-2 years.

Biology Research Teams 2: Experiment & Research Teams Leadership

Term: Yearlong

Open to Grades: 11th - 12th

Prerequisites: Biology Research Teams 1 (BIO275)

Corequisites: None

Repeatable: Yes

In the Biology Research Teams 2 class (formerly XRT Leadership), students propose novel, long-term research projects to experimentally address significant scientific questions, and they pursue a subset of these projects in small, student-led groups over the course of 1-2 years. These research projects in molecular, cellular, and behavioral biology are significant (we often present them at a scientific conference); they are created, pushed forward, and led by students; they are iterative; and they allow for student leaders to train their peers in a structured process guided by the teachers. The practice reading scientific literature, theoretical understanding of the scientific process, and hands-on experimental training that students received in Biology Research Teams 1 (BIO275) allow teams in BIO375 to collaboratively drive a multi-faceted research project forward during their 1-2 years in the class. Team leads and other team members together determine daily tasks and allocate time and resources accordingly to plan for and achieve long-term research goals. All students practice project management and reverse design skills, while team leads become experts in these areas while also developing their ability to coordinate, mentor, and inspire their team. Students learn to write about, display, and present their data through informal lab meetings and through creating scientific posters and written abstracts to share at a biology research conference. After 1-2 years in BIO375, students will be well-prepared to continue making significant contributions to the scientific community in a university laboratory setting.

Bioorganic Chemistry

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Chemistry (CHEM101)

Corequisites: Math 3 (MATH301)

Repeatable: No

The objective of this course is to discover organic chemistry, the chemistry of carbon, experimentally. Organic molecules such as petrochemicals, natural products, biomolecules, and pharmaceuticals are an integral part of our daily lives. Selected experiments will present common laboratory practices and techniques of organic chemistry, such as chromatography and distillation, and illustrate the chemistry of a wide range of functional groups. Other experiments will allow students to synthesize specific compounds — some of which are found in nature or are of commercial importance — or to explore reactions that are fundamental to organic synthesis: nucleophilic substitution, nucleophilic addition, electrophilic addition, esterification, and oxidation. Additional experiments will emphasize discovery-based approaches, which allow students to develop their own protocols for addressing a particular question experimentally, as they might do in a research laboratory.

The course in general aims for students to develop a robust set of scientific practices in conjunction with content knowledge: methods for asking questions, designing and carrying out experiments, interpreting results, communicating their results to others, and practicing analytical and reasoning skills based on observations. Topics to be covered during the year include:

- chemical bonding and molecular structure
- hydrocarbons
- kinetics and energy of a reaction
- stereochemistry
- functional groups in organic chemistry
- reaction mechanisms
- chemistry of proteins and enzymes
- independent project

Chemical Engineering

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Chemistry (CHEM101)

Corequisites: Math 3 (MATH301)

Repeatable: No

Chemical engineers are multi-disciplinarians who apply principles of chemistry, physics, biology and engineering to solve a range of practical real-life problems from the large-scale production of pharmaceuticals to the development of novel renewable energies or the design of new biomaterials to name just a few. In this course, some aspects of Chemical Engineering, such as applications to renewable energies, will be investigated with mini research projects including many elements of design thinking such as experimentation on a small scale, process analysis, followed by iteration and redesign.

The general goals of this class are to foster reasoning and analytical skills mostly in the context of physical chemistry and analytical chemistry through hands-on activities. Students will gather qualitative or quantitative data from experimental situations, understand and accurately represent data when needed and use the data to evaluate predictions, support structure determination and propose plans of action. Projects will be supported by mini-lectures to provide a base of content.

Chemistry

Term: Yearlong

Open to Grades: 9th

Prerequisites: None

Corequisites: None

Repeatable: No

Nueva's ninth-grade science provides a unified introduction to the principles that describe the natural world at its most fundamental level. The course aims to improve students' understanding of the world around us, and make their thinking more rigorous, by introducing principles of chemistry and applying those concepts in hands-on ways to real-world examples. We also aim for students to develop a robust set of scientific practices: methods for asking questions, designing and carrying out experiments, interpreting the results, and communicating their conclusions to others.

Topics studied this year include:

- gas properties
- atomic nature of matter

- bonding in materials
- chemical reactions
- stoichiometry
- acids and bases

Climate Science & Action

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Climate Science & Action is a semester-long course designed to be an EC (Environmental Citizenship) elective whose primary goal is to empower our students with the interdisciplinary knowledge and resources to take on climate change in their communities and beyond. After exploring the underlying theory, students will learn about the current impacts of climate change. They will also investigate climate/environmental justice and climate legislation at different levels of government before we shift our focus to how students can enact change now and locally.

Students will use multiple resources to learn, investigate and analyze climate change and to inform climate action including the En-Roads Climate Change Simulation Game where students will be able to see how their real-time decisions will impact global emissions. We also plan to invite some guest speakers including students and professionals working in the broader fields of climate science and activism. Possible projects could include a policy memo/brief to local, state, and national lawmakers, panel discussions/debates around controversial topics like geoengineering, and educational materials (e.g., reports, presentations, videos/podcasts) that students could use to teach younger students and to support Nueva's mission II.

Drug Design

Term: Yearlong

Open to Grades: 11th - 12th

Prerequisites: Chemical Engineering (CHEM250) or Bioorganic Chemistry (CHEM230)

Corequisites: None

Repeatable: No

This lab-based introductory medicinal chemistry class emphasizes the application of biological, chemical, and pharmacological concepts in the investigation of drug discovery. Medicinal chemistry has been defined as the "science that deals with the discovery and design of new therapeutic chemicals and their development into useful medicines" (Silverman, 1992). The aim of the class is to introduce students to the basic principles of medicinal chemistry and how they are applied to the design of new therapeutics. The emphasis of this course is that therapeutically relevant small molecules are chemical entities whose biological properties are dependent on chemical structure and physicochemical properties. Therefore, modifications of physicochemical properties are likely to influence the biological behavior of the small molecule. At the end of the course, the student will have a greater awareness of "drug-like" properties in a chemical structure (lipophilicity, H-bonding potential, toxicity potential) and approaches to modify some of the pharmacological properties of compounds. Throughout the class, students will gain confidence in studying a scientific discipline and acquire an appreciation for the field of medicinal chemistry. Some topics to be covered during the year include:

- spectroscopy
- intro to anatomy and physiology

- structure-activity relationship: antibacterials
- relationship between structure and ADME

Marine Environments

Term: Fall Only

Open to Grades: 10th - 12th

Prerequisites: Chemistry (CHEM101)

Corequisites: None

Repeatable: No

Marine Environments is a rigorous examination of the interaction between marine and human systems. The course develops students' understanding of marine science—ecology, biology, chemistry, etc.—and how the ocean interacts with the climate and human society. The overarching goal is for students to develop the scientific literacy and skills necessary to support ocean health and address problems of human impact. Students will be expected to attend at least one field trip outside of school hours.

Mechanisms of Cancer

Term: Fall Only

Open to Grades: 11th - 12th

Prerequisites: Biology (BIO101)

Corequisites: None

Repeatable: No

Together, the many thousands of genes in the human genome create a self-assembling system called the human being. All of the cells in this system use those genes in different ways, becoming constrained in terms of where they exist, how long they exist, what they consume, and what they produce. The human genome, however, has vulnerabilities. Changes to the genetic code—mutations—can cause cells within the human body to redefine their previous location, lifespan, and activities. A cell like this can grow and divide without typical boundaries, creating a cancerous tumor. In this class, we will work to understand the mechanisms, also called pathways, that control cell growth and division under normal circumstances, and that are hijacked when certain cancerous mutations occur. We will also explore the molecular basis for many cancer treatments. Although we will spend much of our time taking a scientific approach to cancer, we will also examine cancer and its related problems through other lenses and sources, such as personal narratives, the history of cancer, healthcare economics, and health disparities. Through creative and analytical projects, students will develop their scientific paper-reading and communication skills, deepen their understanding of molecular and cellular biology, and analyze complex societal problems through multiple frameworks.

Modern Physics

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Physics (PHYS101)

Corequisites: None

Repeatable: No

This course builds on the first-year introduction to physics and generally covers developments from the late 19th century through the present day. Transitioning from the relatively intuitive principles of classical physics, students explore the more conceptually profound and challenging ideas demanded by 20th and 21st century science. Students will study phenomena experimentally whenever practical. When a phenomenon is not tractable to

classroom demonstration, digital simulations are employed. Students explore new content primarily through teacher-created screencasts and readings, with some Socratic lecture and classroom discussion. Students spend most of their classroom time learning to solve problems, design and perform experiments, and analyze demonstrations of (sometimes unexpected) results.

Topics to be covered during the year include:

- electromagnetism
- relativity
- nuclear physics
- quantum physics
- standard model of particle physics

Optics & Astrophysics

Term: Yearlong

Open to Grades: 10th - 12th

Prerequisites: Physics (PHYS101)

Corequisites: None

Repeatable: No

In this year-long class, students will explore principles of optics in some detail. Students will study, construct, and characterize imaging systems (cameras) as well as the dispersive systems used for spectroscopy, paying particular attention to aberrations and other limitations on system-level performance. The application of such systems in ground and space-based observatories will lead to a study of astronomy and astrophysics. Observational data will be accessed through one or more methods, potentially including publicly available datasets, remotely operated telescopes for hire, or other techniques.

Physics

Term: Yearlong

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: Math 2 (MATH201)

Repeatable: No

This course aims to improve students' understanding of the world around us, and make their thinking more rigorous, by introducing principles of physical sciences and applying those concepts to real-world examples. We also aim for students to develop a robust set of scientific practices: methods for asking questions, designing and carrying out experiments, interpreting the results, and communicating their results to others. The course emphasizes important principles such as Newton's laws and includes more specific phenomena as necessary to illuminate those principles. Students explore physics experimentally whenever practical. When a phenomenon is not tractable to classroom demonstration, digital simulations are employed. Students explore new content primarily through teacher-created screencasts and readings, with some Socratic lecture and classroom discussion. Students spend most of their classroom time learning to solve problems, design and perform experiments, and analyze demonstrations of (sometimes unexpected) results.

Physics Research

Term: Fall Only

Open to Grades: 10th - 12th

Prerequisites: Physics (PHYS101) and Consent of Instructor

Corequisites: None

Repeatable: Yes

This fall-semester (only) course provides an opportunity for students to delve deeply into physics research by exploring topics curated for the U.S.A. Young Physicists Tournament. These interesting topics are chosen to be challenging but accessible at the advanced high school level, and usually require a combination of theoretical, numerical / modeling, and experimental investigation. Topics may include phenomena in optics, classical mechanics, fluids, gravitation, and electricity & magnetism. Examples of tasks that students have performed in past years include writing code to simulate the trajectory of an object subject to aerodynamic and gravitational forces, building an apparatus to generate and photograph rainbows formed from different liquids, or exploring the behavior of pristine and damaged tuning forks. Extensive quantitative data collection and analysis is emphasized. Students are strongly advised to read a fuller description of the class and its relationship to the USAYPT [here](#). PHYS101 is a required prerequisite, and additional advanced classes in physics and math are desirable. Consent of Instructor is also required. Interested students should express their interest by email and in-person to the teacher at least a week before course selections are due.

Semiconductor Processes

Term: Spring Only

Open to Grades: 10th - 12th

Prerequisites: Modern Physics (PHYS250) Fall Semester

Corequisites: None

Repeatable: Yes

How do they make the chips that make your computer work? Students will explore the processes, metrology, terminology, concepts, and equipment commonly used in the manufacture of integrated semiconductors. Students will explore more deeply in individual process or metrology steps and will have the chance to delve into integrated circuit design or special topics of their own choosing. Labs include photolithography and profilometry. Taking advantage of our proximity to silicon valley, we include guest speakers from the semiconductor industry and a field trip to a manufacturing facility. Concepts include how to control processes that cannot be seen and optimization of yield.

Sensory Neuroscience

Term: Spring Only

Open to Grades: 11th - 12th

Prerequisites: Biology (BIO101)

Corequisites: None

Repeatable: No

How do we perceive the world around us? Somehow, our brains interpret physical phenomena like light, sound waves, molecules, and temperature in order to produce our current sense of what's happening around us and in our bodies. In this class, we will explore sensory systems down to the molecular level, coming to understand how physical stimuli can be translated into a language that our brains can "read" and generate meaning from. Through this exploration, students will also learn fundamental concepts in neuroscience, such as how neurons communicate with one another. The unique experiences of people with sensory issues will help us consider the holistic nature of our perceptions, while the sensory "superpowers" of other organisms (think infrared sight and magnetic sense) will illuminate how evolution has shaped our sense of the world. Students will learn through various sources and modalities, including extracting information from scientific research articles and translating it for specific audiences.

They will also apply their scientific knowledge to answer a novel question or solve a problem of their own choosing in a culminating project, with options for experimental design, technology design, or science fiction story-writing. By the end of the course, students will be thinking deeply about the brain from molecular to systemic levels, and applying their skills to creative projects involving sensory augmentation and other cutting-edge topics in sensory neuroscience.

Soil Science & Health

Term: Spring Only

Open to Grades: 10th - 12th

Prerequisites: None

Corequisites: None

Repeatable: Yes

Insect composting! In this course, students will learn the basic methodology of insect composting, from breaking down organic material to scaling and building larger systems. We will discuss and experiment with different insects - Black Soldier Fly Larvae and Red Wiggler Worms - to learn how they, in conjunction with microorganisms, contribute to the decomposition of food waste. On the Hillsborough campus, students will build a physical structure and then design, implement, and iterate workflows that allow the community to use and maintain the biome. Finally students will look at educational models to engage and teach younger students about how composting systems work as well as their importance in creating a more sustainable school. NOTE: 6-7 classes during the semester will be held on the Hillsborough campus, transportation will be provided.

Science of Mind (SOM)

Ethics & the Good Life

Term: Spring Only

Open to Grades: 12th

Prerequisites: None

Corequisites: None

Repeatable: No

NOTE: This course can be taken in lieu of a Senior Block.

How should we live? How should we behave? What is the moral good and how does it relate to the personal good? This course is concerned with human values: our own and those of others, and those we use to organize and make decisions about the world. We will explore ethical frameworks and ideas of “the good life” throughout philosophy and history, ask where they come from and investigate how they relate to human happiness. We will read philosophy over history, from Aristotle to Kant to, as well as invite speakers and look in a more interdisciplinary sense at applied ethics, from bioethics to global ethics. And of course, we will investigate many iterations of the trolley problem, and may even analyze some episodes of “The Good Place”. The semester will end with students formulating their own presentation or project on a sub-topic, whether the ethics of machine learning or modern notions of “the good life” or perhaps even how we might think about leaving dishes out on the tables at Nueva in different ethical frameworks.

Science of Mind 9

Term: Yearlong

Open to Grades: 9th

Prerequisites: None

Corequisites: None

Repeatable: No

Science of Mind (SOM) is a core class designed to deepen empathy, build connections and empower students to make positive choices regarding their health, well-being and relationships. Drawing from a variety of disciplines and theories, (mindfulness, psychology, neuroscience, wellness, and social sciences) the course is grounded in scientific research and best practices. SOM aims to provide the tools, skills, and information that adolescents need to mature into well-balanced, resilient, compassionate people who will have a positive impact on the world.

The primary focus of grade 9 SOM is for students to explore their values and identities, and how these shape the ways they perceive and interact with other people and the world around them. Students will put into practice the ability to stand in their values while respecting the values of others with a sense of curiosity rather than judgment.

Homework & Assignments: Students will be asked to practice and apply the knowledge and skills that they learn in class to their lives.

Assessment: Students will be assessed based on their engagement and completion of course activities. Through narratives, each student will receive individualized feedback aimed at enhancing their social and emotional development.

Science of Mind 10

Term: Yearlong

Open to Grades: 10th

Prerequisites: Science of Mind 9 (SOM101)

Corequisites: None

Repeatable: No

Overview

SOUL (Students Operating Under Love and Liberation)

The SOUL course inspires students to understand their identities and politics of location through a mind, body, heart, and spirit lens. With a focus on empathy and criticality, students will examine the history, necessity, and joy of resistance to further their understanding of systemic oppression, power, inequity, inclusion, and liberation. The class thus blends key features of social justice education and social-emotional learning in order to best prepare students for life, work, and citizenship in an increasingly diverse and global society. By building a Radical Interconnectedness 'brave space' where students engage deeply through dialogue, perspective-taking, listening, and trust-building, the course aims to foster students' ability and willingness to engage with others around complex issues and with oneself in an effort to 'freedom dream' the kind of community and 21st century democracy we all seek.

Science of Mind 11

Term: Yearlong

Open to Grades: 11th

Prerequisites: Science of Mind 10 (SOM201)

Corequisites: None

Repeatable: No

Science of Mind (SOM) is a core class designed to deepen empathy, build connections and empower students to make positive choices regarding their health, well-being and relationships. Drawing from a variety of disciplines and theories, (mindfulness, psychology, neuroscience, identity development, wellness, and the social sciences) the course is grounded in scientific research and best practices. SOM aims to provide the tools, skills, and information that adolescents need to mature into well-balanced, resilient, compassionate people who will have a positive impact on the world.

The focus of SOM in grade 11 is for students to engage more critically with the relationship between their inner and outer worlds. Students will look at emotion, relationships, mental health, sexuality and drugs/alcohol through a critical lens to understand the ways that cultural narratives shape how they see and engage with the world around them.

Homework & Assignments: Homework might include reading short articles, written reflections, watching a short video, or listening to a podcast on topics to be discussed in class. Students will also be asked to practice the social and emotional skills that they learn in class.

Assessment: Students will be assessed based on their engagement and completion of course activities. Through narratives, each student will receive individualized feedback aimed at enhancing their social and emotional development.

Senior Block

Term: Yearlong

Open to Grades: 12th

Prerequisites: None

Corequisites: None

Repeatable: No

Visual Arts

Intro Art & Fabrication

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

This semester-long course combines the fields of visual art and fabrication. Students in this course work in a variety of media to create projects that demonstrate understanding and consideration of craftsmanship and the elements and principles of visual art. These elements and principles include, but are not limited to, space, form, balance, light, and contrast. Students gain firsthand knowledge and experience with construction by using a variety of hand tools, power tools, and materials, such as the hand drill, chop saw, band saw, belt and orbital sanders, wire, foam, wood, and sheet metal. Emphasis is placed on appropriate use of tools and safety. Students create work that can range from representational to abstract; it might be inspired by historical or contemporary artists and art movements. Through readings, slide presentations, and visiting artists, students consider the context in which they are creating art. Throughout their process, creative problem-solving and intentional decision-making will play a significant role in their ability to consider their ideas through visual means. Students participate in critiques as a means to develop critical thinking skills and to further understand the meaning in their work.

Intro to Clay Sculpture

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Intro to Sculpture is a studio class that explores ways of thinking three-dimensionally, with clay as the primary medium. It serves the needs of beginners and experienced students of art. In addition to sculpture techniques, the elements of the three-dimensional art and design will be studied as they apply to the projects at hand. Students work in both subtractive and additive manners, incorporating basic aesthetic concepts such as line, texture, composition, balance, mass, space, rhythm, tension, movement, light, and density. Students explore the relationship between form and content in materials through hand-building techniques in clay. Projects investigate representation (people and things), abstraction, and architecturally inspired design/installation. Students are encouraged to think about the conceptual possibilities of sculpture and expressing a personal point of view. Students participate in a culminating upper school gallery showing, presentations, and critiques. Homework includes some reading, writing, and sketchbook assignments.

Intro to Drawing

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Drawing considers our perception, observation, and knowing of the world around us. It is a method of recording and expression in a visual language all its own. This studio course focuses on technical skill as well as mark-making as a form of creative exploration. Students will examine their interests and ideas through visual representation, working

both technically and intuitively. Though class time will include lessons and discussions, students will typically be working on projects using a variety of drawing media, including (but not limited to) graphite, charcoal, and colored pencil. Studio time encourages a quiet focus and provides the necessary hours to build and refine the connection between the hand and eye. We will explore historically significant and contemporary artists, along with concepts in visual and critical studies. Students are strongly encouraged to participate in a culminating art show at the end of the semester.

Intro to Mixed Media

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Mixed Media is a studio course that explores a range of 2-D processes including (but not limited to) drawing, painting, collage, and digital media. Throughout the semester, students will utilize different surfaces and materials in both traditional and alternative methods. Working with representation and abstraction, students will be encouraged to experiment within the framework and assignments of the class. Course content will address our daily visual experiences, whether through the screens on our devices or actual objects. More specifically, we will examine texture and dimension as illusion on a flat surface through the act of art making. We will consider these modes of seeing through juxtaposing and combining digital and other 2-D media. This class seeks to develop the student's sense of visual literacy and personal art practice. Mixed Media 1 is designed to build technical skill and foster independent and creative thought that is both strategic and spontaneous. Students are strongly encouraged to participate in a culminating art show at the end of the semester.

Intro to Painting

Term: Fall Only

Open to Grades: 9th - 12th

Prerequisites: None

Corequisites: None

Intro to Painting is a studio class that teaches students about working with paint and exploring a range of applications. The course covers color, light, space, and the handling of paint (gouache and acrylic) in addition to exploring the beauty of forms and color. Students will be painting people, places, and things while simultaneously exploring ideas about abstraction, representation, and expression. Students are encouraged to reflect on their own lives, experiences, interests, and hobbies as inspiration for their work while building their painting skills. Aside from studio work, there will be critiques, sketchbook homework, some reading, and writing. The ultimate goal is for each student to develop an individual visual vocabulary and to transform an assignment into a quest that demonstrates curiosity, commitment, and craft.

Adv. Art & Fabrication

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Intro to Art and Fabrication (FA120)

Corequisites: None

Advanced Art and Fabrication will build on skills introduced in the first semester of Art and Fabrication. Students in this course work in a variety of media to create projects that demonstrate understanding and consideration of craftsmanship and the elements and principles of visual art. These elements and principles include, but are not

limited to, space, form, balance, texture, and contrast. Students gain firsthand knowledge and experience with construction by using a variety of hand tools, power tools, and materials, such as the hand drill, chop saw, band saw, belt and orbital sanders, wire, foam, wood, and sheet metal. Emphasis is placed on appropriate use of tools and safety. Students create work that can range from representational to abstract; it might be inspired by historical or contemporary artists and art movements. Through readings, slide presentations, and visiting artists, students consider the context in which they are creating art. Throughout their process, creative problem-solving and intentional decision-making will play a significant role in their ability to consider their ideas through visual means. Students participate in critiques as a means to develop critical thinking skills and to further understand the meaning in their work.

Some students who take this course have more experience with artistic expression than with mechanical fabrication. This course aims to empower these students by giving them the fundamental shop skills they need to create physical objects. By gaining competence and confidence in the use of hand and power tools, these artists will be transformed into maker-artists, capable of constructing robust, 3-D art from their already formidable imaginations. Others enrolled in Art and Fabrication 1, on the other hand, are more talented in the areas of engineering and power tool usage than in generating, developing, and realizing artistic visions. This course aims to empower these students by introducing them to artistic and creative processes and by giving them ample opportunity to practice visual creation. Just as understanding proper, safe usage of shop spaces provides the tools for physical creation, so will understanding the elements and principles of design provide the tools for visual expression. All students, regardless of former capabilities, will grow their knowledge of and skills in both art and fabrication by the application of each in the context of the other. Students are strongly encouraged to participate in a culminating art show at the end of the semester.

Adv. Clay Sculpture

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Intro to Sculpture (FA140)

Corequisites: None

Advanced Sculpture is a studio class that builds on the foundations of the Introduction to Sculpture class. Students continue to explore making sculpture with a range of clay bodies as the primary medium and ways of thinking three-dimensionally. This class serves the needs of beginners and experienced students for art. In addition to sculpture techniques, the elements of the three-dimensional art and design will be studied as they apply to the projects at hand. Students work in both subtractive and additive manners, incorporating basic aesthetic concepts such as line, texture, composition, balance, form, mass, space, rhythm, tension, movement, light, and density. Students explore the relationship between form and content in materials through hand building techniques in clay. Projects investigate representation (people and things), abstraction, and architecturally inspired design/installation. Students are encouraged to think about the conceptual possibilities of sculpture and expressing a personal point of view.

Advanced Drawing

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Intro to Drawing (FA110)

Corequisites: None

Advanced Drawing builds on drawing skills introduced in the first semester of Drawing. This studio course focuses on technical skill as well as mark-making as a form of creative exploration. Students will examine their interests and ideas through visual representation, working both technically and intuitively. Though class time will include lessons

and discussions, students will typically be working on projects using a variety of drawing media, including (but not limited to) graphite, charcoal, and colored pencil. Studio time encourages a quiet focus and provides the necessary hours to build and refine the connection between the hand and eye. We will explore historically significant and contemporary artists, along with concepts in visual and critical studies. We will learn techniques such as, but not limited to one, two, and three-point perspective, as well as experimenting with the alternative stylus.

Advanced Mixed Media

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Intro to Mixed Media (FA115) or Intro to Printmaking (FA135)

Corequisites: None

Mixed Media is a studio course that explores a range of 2-D processes including (but not limited to) drawing, painting, collage, and digital media. Throughout the semester, students will utilize different surfaces and materials in both traditional and alternative methods. Working with representation and abstraction, students will be encouraged to experiment within the framework and assignments of the class. Course content will address our daily visual experiences, whether through the screens on our devices or actual objects. More specifically, we will examine texture and dimension as illusion on a flat surface through the act of art making. We will consider these modes of seeing through juxtaposing and combining digital and other 2-D media. This class seeks to develop the student's sense of visual literacy and personal art practice. Mixed Media 1 is designed to build technical skill and foster independent and creative thought that is both strategic and spontaneous. Students are strongly encouraged to participate in a culminating art show at the end of the semester. Students who have previously taken FA135, Intro to Printmaking, can also take this class to fulfill their Art requirement.

Advanced Painting

Term: Spring Only

Open to Grades: 9th - 12th

Prerequisites: Intro to Painting (FA130)

Corequisites: None

Advanced Painting is a studio class that builds on the Introduction to Painting curriculum and is a continuation in working with paint and exploring a range of applications. The course covers color, light, space and the handling of paint (acrylic and oil*) in addition to exploring the beauty of forms and color. Projects in class range from painting people, places and things while simultaneously exploring ideas about abstraction, representation and expression. Students are encouraged to reflect on their own lives, experiences, interests and hobbies as inspiration for their work while building their painting skills. Aside from studio work, there will be critiques, sketchbook homework, some reading, and writing

Advanced Studio Art

Term: Yearlong

Open to Grades: 11th - 12th

Prerequisites: Any 2 art courses, except for first year foundational course that is pending to be approved

Corequisites: None

Advanced Studio Art is a class for students who want to continue making art and are interested in building a portfolio. Students in this upper division class will have taken an art class before and will drive their own exploration and art making. Students will have the opportunity to work in a community of other students who are committed to making and discussing art. Over the course of the semester, students will choose artistic research interests and make work

based on those interests. This studio class will be focused on critique of student work in addition to making work; discussions and readings will provide a frame for the critiques. An emphasis will also be placed on larger portfolio goals, and students will work toward achieving a cohesive portfolio with depth in addition to breadth. Students will work across mediums, according to their interest and portfolio needs. Advanced Studio Art students will be expected to participate in the arts culmination at the end of the semester.