

NORTH SHORE  
HEBREW ACADEMY

ישיבת חוף הצפון



# TWELFTH GRADE

ACADEMIC PROGRAM COURSE GUIDE

2026-2027

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# TWELFTH GRADE

ACADEMIC PROGRAM

COURSE GUIDE

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# CORE AND ELECTIVES

## 12 TH GRADE

Judaic Studies	General Studies Core	Electives
Judaic Studies Core		
Talmud	English	Social Sciences
Tanach	History	Computer Science
Halacha / Machshava	Mathematics	World Languages
Hebrew	Science	Engineering
Hebrew Language	Physical Education	Business
		Art
		Music

# ALL COURSES

## **ALL SENIORS ARE REQUIRED TO TAKE :**

### **4 Judaic Studies classes**

1 Talmud

1 Tanach

1 Halacha / Machshava

The fourth class could be either Hebrew Language or a second course offering in either Talmud, Tanach, or Halacha / Maschava.

### **4 General Studies Core classes**

1 History class

1 Mathematics class

1 English class

1 Science class

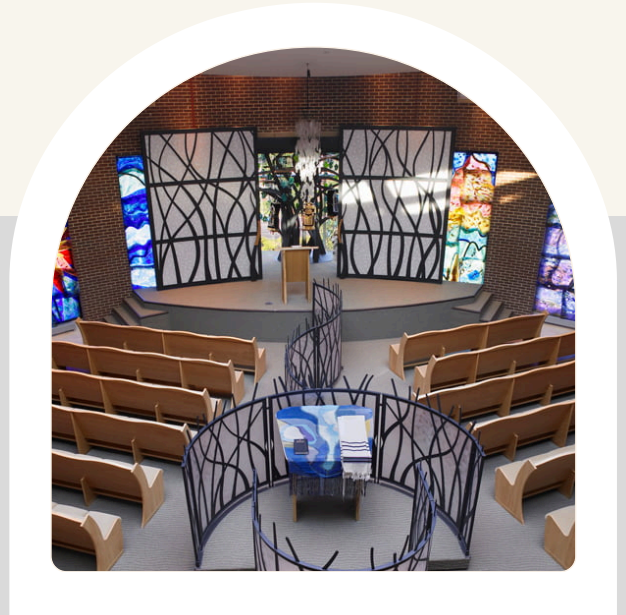
### **1 Physical Education class**

### **2 Elective classes**



# JUDAIC STUDIES

- TALMUD
- TANACH
- HALACHA / MACHSHAVA
- HEBREW LANGUAGE



**Seniors will select courses from the Judaic Selectives listed.**

**A selective is a required course chosen from a range of offerings within the department. While multiple courses are described in the catalog, the courses that run in a given year will depend on student interest and enrollment.**

**Students will complete an interest form to indicate their preferences, and courses will be scheduled based on sufficient enrollment.**

# TALMUD



***Enrollment requires administrative and departmental approval.  
Enrollment open for boys and girls.***

## **MASHECHET SUKKAH: DOUBLE GEMARA/BEIT MEDRASH**

***Rabbi Weiss***

In this course, you will learn sugyot from the second and third chapters of Masechet Sukkah in depth and with real focus (iyun). You will explore the mitzvah of sukkah, its laws, underlying principles, and the larger ideas it raises about the role of Hashem in your life. Along the way, you will also think more broadly about mitzvot and how they shape and deepen your relationship with Hashem. At the same time, you will learn additional parts of the masechet at a faster pace (bekiyut), giving you exposure to a wide range of topics and helping you build fluency and confidence across many dapim. With the added time of the Beit Midrash program, you will be part of a learning environment that is serious and challenging, while also being relaxed and enjoyable. The goal is for you to grow as a learner, deepen your connection to Torah, and be part of a group that builds real friendships along the way.

# TALMUD

## **BOYS ONLY**

### **MASHECHET SUKKAH (SINGLE PERIOD)**

***Rabbi Naor***

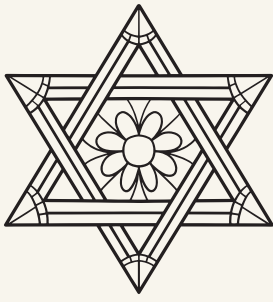
In this course, you will study topics from the second and third chapters of Masechet Sukkah in depth. You will explore the mitzvah of sukkah, its laws, underlying principles, and the larger questions it raises about the role of Hashem in your life. You will also consider the broader role of mitzvot and the ways they shape and deepen your relationship with Hashem. Through careful analysis of the ideas and principles behind these mitzvot, you will experience the depth of Torah learning and develop a stronger appreciation for the richness and seriousness of halachic thought.

## **GIRLS ONLY**

### **TALMUD AND WOMEN'S MITZVOT: FROM TEXT TO REAL LIFE**

***Ms. Septimus***

In this senior seminar, you will explore central questions about women, Torah, and Jewish life through the study of Talmudic and halachic sources. You will examine topics such as women's obligations in mitzvot and tefillah, and engage with important discussions around issues like kol isha and hair covering. You will also study the three mitzvot traditionally associated with women, hadlakat neirot, challah, and niddah. In the second semester, the course shifts toward your own growth and development, focusing on identity, healthy relationships, and the foundations of marriage and family life. Through close learning of sources alongside open and thoughtful discussion, you will have the opportunity to think deeply about how classical Jewish texts speak to the real questions, challenges, and opportunities in your own life.



# TANACH

## **VILLAINS IN TANACH**

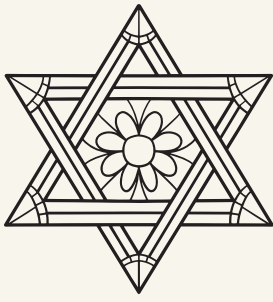
***TBD***

Were the so-called “villains” of Tanach truly wicked, or were their actions shaped by fate, inner turmoil, or divine purpose? This course unpacks the choices, motivations, and impact of infamous biblical figures, challenging our assumptions about justice, free will, and redemption. Through textual analysis and discussion, we’ll explore what defines a villain, whether they were beyond saving, and what their stories teach us about morality and leadership. Get ready for a thought-provoking dive into the darker corners of Tanach—where even the villains have something to teach us.

## **GREATEST SPEECHES IN THE HEBREW BIBLE**

***Rabbi Kahana***

The class examines the power of speech. Delving into the rich tapestry of language, history, and culture present in the Tanach, students will study some of the greatest speeches delivered by key figures such as Moshe, Dovid HaMelech, Shlomo, Yishayahu, and others, examining the rhetorical techniques, themes, and messages embedded within their words. Students will engage in close reading and textual analysis, examining the linguistic nuances, figurative language, and rhetorical devices employed by the biblical speakers. They will also explore the underlying themes of justice, mercy, faith, and redemption that permeate these speeches, considering their enduring significance in shaping Jewish thought and morality.

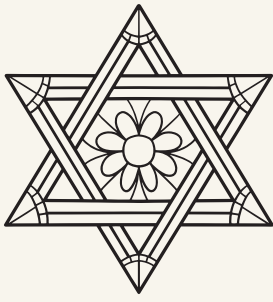


# TANACH

## **TORAH AND PSYCHOLOGY**

***Ms. Zelka***

In this engaging Tanach elective, you will explore the intersection of Torah and psychology, uncovering the complexity of human nature through key biblical narratives. Using both classical mefarshim and modern psychological ideas, you will analyze themes such as leadership, temptation, group dynamics, fear, ambition, and grief, gaining deeper insight into both the text and yourself. You will examine Moshe's challenges with leadership, the pressures behind Korach's rebellion, and the psychology of temptation and self control in the story of Baal Peor. You will explore how peer pressure shaped the Golden Calf, how fear and anxiety influenced the Sin of the Spies, and how grief and collective trauma affected Bnei Yisrael after the deaths of Aharon and Moshe. Through these stories, you will consider how biblical figures navigate emotions, choices, and challenges, and what their experiences can teach you about your own life. This course is ideal if you enjoy thoughtful discussion, are curious about human behavior, and want to encounter Torah in a fresh and meaningful way. You will be challenged to think critically, ask strong questions, and grow both intellectually and personally.



# TANACH

## **SEFER DEVARIM / YIRMIYAHU**

**TBD**

### **SEFER DEVARIM (FALL)**

Sefer Devarim (literally “words” or “speeches”) presents the speeches of Moshe in the fortieth year in the desert, as the nation stands on the threshold of entering the land of Israel. In this sefer, you will encounter a historical speech retelling the exodus and the wanderings in the desert, as well as a lengthy speech of mitzvot.

Although much of the sefer is a historical and legal recap—which gave it the name “Mishne Torah,” a retelling of the Torah—it is not a simple recap. You will see that the sefer contains many of the most important principles of Judaism, such as free will, teshuva, and redemption. The great national institutions are established, including the Judiciary and the Kingship. Laws of war and peace are presented, and a blueprint for a sovereign nation in the land of Israel is laid out. The sefer sets forth a positive charge to move forward into the land of Israel with a framework for national identity. It facilitates the transition from being “led” to becoming “leaders” of your own national destiny.

As you stand on your own “threshold” of independence, Sefer Devarim challenges you to consider what it means to move from being a passive recipient of guidance to an active architect of your own life. The sefer has the power to shape your thinking around themes of communal and national service and responsibility. Ultimately, Devarim invites you to find your own voice within our shared history, empowering you to step into the future with both a clear memory of your roots and a courageous blueprint for your own contribution to the Jewish story.

### **SEFER YIRMIYAHU (SPRING)**

Sefer Yirmiyahu captures the turbulent period surrounding the destruction of the First Beit HaMikdash, serving as a chronicle of a nation in spiritual and political decline. Spanning over forty years of prophecy, the sefer follows Yirmiyahu as he delivers difficult truths to a people and leadership resistant to change.

As you learn this sefer, you will encounter not only words of rebuke, but also a vital thread of hope and nechama woven throughout. Yirmiyahu guides you through the experience of a faith that endures even in the face of destruction. The sefer provides a blueprint for Jewish survival in the Diaspora and holds out the promise of eventual return.



# HALACHA/ MACHSHAVA

## **BEIT MIDRASH HALACHA: HILCHOT YOM TOV (DOUBLE PERIOD)**

***Rabbi Laub***

In this course, you will learn Hilchot Yom Tov in depth and with real rigor. You will explore the major halachot of Yom Tov while also developing a clear understanding of the halachic process, how we move from the Gemara and Rishonim through the Poskim to the practical rulings that guide what we do. The goal is not only for you to know what to do on Yom Tov, but to understand why, how the halachot develop, how different sources interact, and how the system works as a whole. With the benefit of a double period, you will have the time and space to learn seriously in a true Beit Midrash environment, one that is focused, thoughtful, and collaborative. Together, we will build a strong class culture and a positive, engaging learning atmosphere where you can grow both intellectually and personally.

## **JEWS AND MONEY**

***Rabbi Marlowe***

As the great philosopher Biggie once put it: “Mo’ money, mo’ problems.” Few communities embody that tension more than the Jewish people. On the one hand, Jews have achieved remarkable financial success—building industries, funding institutions, and sustaining vast networks of philanthropy. On the other hand, Jews have long been the subject of enduring stereotypes about greed, power, and control of financial systems. This course explores Judaism’s complex relationship with money and wealth through Tanach, Rabbinic literature, and in modern Jewish thought and practice. Does Judaism vilify or valorize wealth? Is the Torah more aligned with capitalism or socialism—or neither? What are the ethics of giving, earning, and lending? How has Halacha adapted to the realities of the modern marketplace?



# HALACHA/ MACHSHAVA

## **JEWISH BIOETHICS**

***Rabbi Bassali***

How does halakha confront the toughest medical and bioethical dilemmas of our time? This advanced course explores issues like surrogate motherhood, organ donation, genetic engineering, and medical triage through Talmudic texts, halakhic responsa, and real-world case studies. By studying halakha alongside modern science, we'll tackle complex ethical questions, sharpen critical thinking, and engage in thought-provoking debate. Students will gain the tools to approach bioethics with intellectual depth, moral clarity, and a halakhic lens on the ever-evolving world of medicine.

## **JEWISH PHILOSOPHY: GOD, FREE WILL, AND THE WORLD TO COME**

***Rabbi Chinskey***

In this course, you will explore some of the most foundational questions in Jewish philosophy. You will study topics such as knowledge of God, the purpose of creation, free will, the problem of evil and suffering, Olam HaBa, Mashiach, and Techiyat HaMetim. You will be encouraged to think critically and analytically about these big questions while also developing your own thoughtful perspectives. The course will culminate in a short research paper, where you will choose a topic that interests you and explore it in greater depth.

## **JEWISH LAW IN TIMES OF CRISIS**

***Rabbi Weissman***

What happens to Jewish law when the world falls apart? In this course, you will explore how major historical upheavals shaped the development of halacha. You will study moments such as the destruction of the Beit HaMikdash, the expulsion from Spain, the Holocaust, and the founding of the State of Israel, and see how each forced rabbinic leaders to confront new and difficult questions. You will come to understand how the Torah we practice today was shaped in response to real challenges and crises, and how halacha adapts while remaining rooted in tradition.



# HALACHA/ MACHSHAVA

## **THE RELIGIOUS THOUGHT OF RAV KOOK**

***Rabbi Chinskey***

In this course, you will engage deeply with the thought of Rav Avraham Yitzchak HaKohen Kook, one of the most visionary Jewish thinkers of the modern era. You will explore his ideas about the relationship between halacha and spirituality, the holiness within the natural world, and the possibility of finding meaning and sanctity in everyday life. You will encounter a bold and expansive vision of personal and national growth that speaks directly to the challenges of modern Jewish identity. More than just learning Rav Kook's ideas, you will wrestle with them, asking how they shape your understanding of faith, responsibility, and purpose. This course invites you to come with curiosity, openness, and a willingness to engage seriously with complex and inspiring ideas at the intersection of intellect, spirituality, and Jewish life.

## **HILCHOT CHAGIM**

***TBD***

In this course, you will move through the full cycle of the Jewish year as it unfolds in real time. You will begin with Sukkot, continue through Chanukah, Purim, Sefirat HaOmer, and Shavuot, and conclude with the Three Weeks, the Nine Days, and Tisha B'Av. Each topic will be taught on two levels. You will learn the clear, practical halacha that you can apply right away, including how to observe each mitzvah and how contemporary poskim address common questions. At the same time, you will explore the deeper ideas and meaning behind each chag, helping you experience these mitzvot in a more thoughtful and personal way. Because you will be learning each topic at the time of year when you are actually experiencing it, the course will feel immediate and relevant. The goal is for you to leave not only knowing what to do, but understanding why it matters and how it connects you to Hashem and to Klal Yisrael. Come ready to ask questions, share your experiences, and grow. This course is designed to be one of the most practical, meaningful, and engaging parts of your senior year.



# HEBREW LANGUAGE

***Seniors may select one of the two course options below. Classes will be conducted in Hebrew. Enrollment requires administrative and departmental approval.***

## **HEBREW COURSE OPTION 1 CONTEMPORARY ISRAELI CINEMA *Ms. Taylor***

Israeli cinema is both a reflection of and a commentary on Israeli society. Films about war, relationships and coming of age will be analyzed regarding what they can tell us about Israel, our world and ourselves. We will explore why the film was made, how it was received by the public, and what Israeli or Jewish customs, attitudes and viewpoints are apparent. In particular, we will look at the role of the Hebrew language in film, and will study how the phrasing, vocabulary, slang and accent are used to advance the film's message. The class will be conducted in Hebrew.

## **HEBREW COURSE OPTION 2: EXPLORING ISRAEL *Ms. Kaufman***

**“קום התהלך בארץ לארכה ולרחבה כי לך אתננה”**

*Arise, walk through the land in the length of it and in the breadth of it; for unto thee will I give it.*

The Israel National Trail (*Shvil Yisrael*) is a 1100 kilometer hiking and cycling trail that runs from the Israel-Lebanon border in the north to Eilat in the south. There are 56 sections along the way that include a variety of settlements, sites, and natural habitats. Together, these sections provide a unique perspective on the State of Israel. We will “hike” the trail from beginning to end, discussing the changing topography, climate, historic and current events, and personalities that we meet along the way. Class will be conducted in Hebrew.

# GENERAL STUDIES



- ENGLISH
- HISTORY
- MATHEMATICS
- SCIENCE
- PHYSICAL EDUCATION



# ENGLISH

***All seniors are required to take one English course every semester for a total of four years of English.***

***Teacher recommendation and administrative approval are required for AP courses.***

**Seniors will select one course from the English Selectives listed. A selective is a required course chosen from a range of offerings within the department. While multiple courses are described in the catalog, the courses that run in a given year will depend on student interest and enrollment. Students will complete an interest form to indicate their preferences, and courses will be scheduled based on sufficient enrollment.**

## **ADVANCED PLACEMENT ENGLISH LITERATURE AND COMPOSITION**

***Ms. Newborn***

Writers of fiction have many choices to make as they craft their works. This is the course that examines those choices. It also prepares you for both the AP exam (English Lit and Comp) and for college courses that require you to analyze text for meaning and style. You will read full-length novels and plays, lyric poetry, short stories and excerpts from long works in a quest to discover how language creates meaning. Most works considered are modern, but some were published in the eighteenth and nineteenth centuries, so you will also gain an understanding of how our language has changed over the centuries. To these ends we will discuss theme and technique and then do written analyses of selected works. Class instruction on how to read analytically and how to share your insights in written form is an important feature, so regular attendance is a must. Teacher recommendation and administrative approval are required for enrollment.

## **THE LOST ART OF READING**

***Ms. Newborn***

If you loved to read as a child, but find little time to do much reading now, this is the course for you. We will read stories and novels that have great appeal to readers. Some works will be read by all, but you will also get to choose what genres of fiction appeal to you personally and concentrate on them. We will seek recommendations from book lovers sites and from friends and relatives. You will share your experiences by creating imaginative presentations about what you have read. During the second semester, you will have the chance to read your favorite authors during class time and share your experience with a reading buddy who is reading the same work.



# ENGLISH

## **BEST SELLERS**

***Ms. Zabinsky***

In this first semester of this course, students will explore a curated selection of bestselling novels, examining the elements that contribute to their widespread popularity. Students will gain a deeper understanding into why these works resonate with a broad audience through an in-depth study of plot, character development, theme, and genre. Class discussions and writing assignments will encourage critical thinking about narrative structure, character motivations, and the cultural impact of these texts. Students will also engage in comparative analysis, considering how bestselling trends reflect societal values and shifts over time.

The second semester of this course will include an examination of literature written by survivors and witnesses of the Holocaust with a focus on memoirs, diaries, biographies and testimonies. There will be an emphasis on the importance of knowledge and remembrance as a vehicle to prevent the past from repeating itself.

## **LITERATURE AND FILM**

***Ms. Zabinsky / Dr. Maxwell***

This course examines the films of two masters –Alfred Hitchcock and Steven Spielberg– through the lens of literature, focusing on narrative techniques (e.g. flashbacks, camera angles and musical score), characterization, imagery, irony, thematic development, gender stereotypes, psychological trauma, etc). Studied within their historical context, these films will also introduce students to the issues of censorship that one of these artists had to negotiate in order to have his films produced. Through class discussions and written responses, students will hone those critical thinking and analytical skills that encourage them to become not just passive “Watchers of Movies” but rather active “Readers of Film Texts.”

These two filmmakers will serve as a bridge to Semester 2 “Literature of the Holocaust” as they both play pivotal roles in using the power of film—most notably IMAGERY and SOUND – to compel us to confront perhaps the most unimaginable crime in human history and to erode the lies of Holocaust deniers.

# ENGLISH

## **MONSTERS AND MADNESS**

***Dr. Maxwell***

This course will examine the various portrayals of fiendish characters that appear in selected literary and film texts. By exploring such depictions of evil, we will investigate the psychological implications for us as individuals endowed with free will, and the cultural implications for us as members of our larger community.

What do evil “monsters” in literature reveal about us?

About the society we inhabit? If these characters were to undergo present day psychoanalysis, what would their diagnoses be? Is this a gender-skewed phenomenon, or are there also female “monsters” inhabiting such texts?

The second semester of this senior course, “Literature of the Holocaust,” will focus upon survivor testimony, documentary film footage and memoirs that will lift us from the realm of individual “monsters” to that of perhaps the greatest manifestation of Evil in human history: The Shoah.

## **RESISTANCE WRITING: WORDS THAT CHANGE THE WORLD**

***Ms. Serravalli***

One of the strongest weapons in the world is language. This elective is for students who have opinions, questions, and stories that deserve to be heard. In this class, we’ll explore powerful speeches, protest poetry, personal essays, and modern media that challenged the world – and changed it.

## **MYTH AND FOLKLORE**

***Ms. Serravalli***

Before we had movies, we had stories told around the light of a fire. In this class, you’ll dive into gods, monsters, heroes, curses, prophecies, tricksters, and dark fairy tales from around the world. We’ll also explore how myths show up in modern movies, fantasy novels, horror films, and even social media trends.



# HISTORY

***Seniors must take one of the required history courses listed below. Seniors may also select an additional history elective.***


**Seniors will select one course from the History Selectives listed. A selective is a required course chosen from a range of offerings within the department. While multiple courses are described in the catalog, the courses that run in a given year will depend on student interest and enrollment. Students will complete an interest form to indicate their preferences, and courses will be scheduled based on sufficient enrollment.**

## **THE ETHICS OF EXISTENCE: GENOCIDES AND GEOPOLITICS**

***Ms. Goldschmidt***

This course explores the profound complexities of human nature, examining the persistent tension between our capacity for compassion and the recurring reality of extreme inhumanity. By analyzing the Holocaust and other modern genocides and human rights abuses in Cambodia, Bosnia, Rwanda, and Darfur, we will explore universal patterns of victimization and resistance as well as the individual choices that define our moral landscape. This student-centered course will include interactive learning confronting two essential questions: "How does a people allow a genocide to happen?" and "How can future genocides be prevented?"

In the second semester, the course shifts focus toward a deep dive into the geopolitical complexities of modern Israel and the Middle East. Students will analyze the historical, religious, and political narratives that shape the region while developing the critical thinking skills necessary for informed, civil discourse. Students will apply their research to engage with contemporary challenges faced by many Jewish students in today's political climate. We don't just study history as a record of the past; we treat it as a call to responsibility in the present.



# HISTORY

## **BOOM AND BUST: A HISTORY OF ECONOMIC CRASHES**

*Dr. Jucovy*

Business cycles are a seemingly inevitable feature of modern societies. This course explores the reasons for the emergence of business cycles, the ways in which political culture and economic theory shape the responses to crashes, and the ways in which crashes have shaped history.

## **CURRENT EVENTS AND CIVIC LITERACY**

*Mr. Gould*

The course will provide students with a knowledge of current events by developing their critical research and reading skills. Students will learn about the varied sources of information about current events, how to evaluate the sources for bias or accuracy, how to distinguish between news, analysis, and opinion sources, and whether or not social media has, as some have asserted transformed opinion formation and the political process.

## **AMERICA IN THE 1960'S**

*Mr. Gould*

No decade changed the United States as much as the 1960's. America was leaving the 1950's age of conformity, entering a new era of radicalism. Civil rights activists took bold steps to challenge the status quo, conducting sit ins and non-violent protests. Women's rights activists ushered in the age of feminism, fighting for greater equality and respect. Latino farm workers began to unionize. Finally, America's distraught youth being drafted into an escalating Vietnam War responded by creating their own counterculture to challenge the existing norms and beliefs. Revolution was not only in the air, but also the airwaves. The music of the 1960's reflected this extraordinary shift in values, embraced by the youth. Even the fashion and art at the time had a message to send. Poet laureate of the 1960's, Bob Dylan said it best that these "times were a changin.'" We will uncover what motivated this era and explore how the values of this era are still alive and well today. Embark with us on this amazing journey and see how its experiential learning will make this era come alive.

# HISTORY

## **MODERN ISRAEL: STATE, SOCIETY, AND THE ROOTS OF CONFLICT**

***Dr. Zadokya***

This course examines the history of the State of Israel from its founding in 1948 to the present, with particular attention to the political, social, and regional forces that have shaped its development. Students will explore the foundations of Israeli independence, relations with neighboring states, and the ongoing Israeli-Palestinian conflict. The course will also investigate internal debates within Israeli society, including questions of democracy, religion and state, minority rights, immigration, and national identity. Through engagement with primary sources, historical scholarship, and contemporary media, students will develop a nuanced understanding of Israel's achievements, tensions, and evolving role in the Middle East.

## **CONTEMPORARY ISRAEL: ON THE GLOBAL STAGE**

***Dr. Zadokya***

This elective explores Israel's contemporary history within the broader context of Middle Eastern politics. Beginning with the late Ottoman and British Mandate periods and continuing through the twenty-first century, students will analyze the ideological roots of Zionism, regional wars, peace processes, shifting alliances, and emerging geopolitical challenges. Special emphasis will be placed on Israel's political system, coalition governance, constitutional debates, security dilemmas, and relations with Palestinian leadership and neighboring states. The course will also consider how global developments—such as nationalism, capitalism, and the rise of the far right—have influenced Israel's domestic and foreign policy decisions. Students will engage in sustained research and discussion aimed at cultivating critical historical and political analysis.



# HISTORY

## **HISTORY OF IMMIGRATION IN THE UNITED STATES**

***Dr. Chernoff***

Immigration and migration have been a permanent feature of American history. At varying historical periods, immigrants have been blamed for the nation's problems. At other times, we celebrate our nation's immigrant heritage. This course will critically examine the cycles and waves of immigration, America's attitudes toward immigrants and immigration, and the ways that immigration has been linked to the rise of American Exceptionalism.

## **GLOBAL HISTORY AND CULTURAL UNDERSTANDINGS**

***Dr. Chernoff***

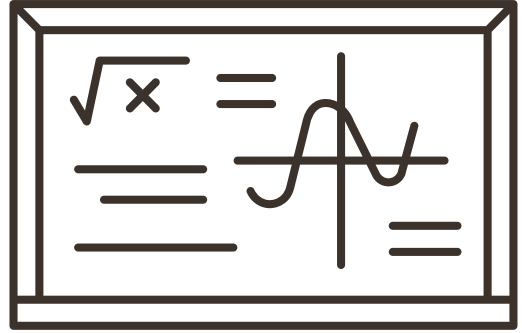
Global History and Cultural Understandings is a global interdisciplinary course that will span ancient through modern times and focus on historical context from Asia, Latin America, Europe, and the United States. As we re-explore main historical periods and direct our attention to topics from ninth–eleventh grade, we will understand why and how specific historical events, from different regions, figure into overlapping cultural changes. These cultural changes may include architecture, Greek sculpture, literature, poetry, and music.

## **ART HISTORY 101**

***Ms. Folk***

Art History 101 explores the fascinating evolution of art from the prehistoric era to the modern day. Students will study the major movements, artists and innovations that shaped the history of art while learning about the techniques artists developed over time. Alongside engaging lectures and discussions, students will participate in hands-on projects that allow them to create their own artworks inspired by the styles of the masters, offering an immersive and creative approach to understanding art history.





# MATHEMATICS

***Seniors are required to take one math course in the senior year. Placement will be decided by the department. Teacher recommendation and administrative approval are required for AP courses. You may request AP Statistics as an elective.***

AP Calculus BC

AP Calculus AB

Calculus 12

Pre- Calculus 12

Finite Mathematics

## **AP CALCULUS BC**

This course is open to seniors who have completed Pre-Calculus BC. Students study properties of functions, limits, continuity, definition of the derivative, techniques of differentiation, using calculus to graph functions, rectilinear motion, applied maximum and minimum problems, Rolle's Theorem and the Mean Value Theorem, the indefinite integral, slope fields, the definite integral, the Fundamental Theorems of Calculus, average value, applications of the definite integral including area and volume, integration by parts, first order separable differential equations, length of a plane curve, advanced integration techniques, improper integrals, first order separable differential equations, Maclaurin and Taylor series, convergence tests for series, polar coordinates, area in polar coordinates, and calculus on vector functions. Technology including a graphing calculator is used. Teacher recommendation required for enrollment.

## **AP CALCULUS AB**

This course is offered to seniors who have completed Pre-Calculus AB. Topics include properties of functions, limits, continuity, definition of the derivative, techniques of differentiation, using calculus to graph functions with, rectilinear motion, applied maximum and minimum problems, Rolle's Theorem and the Mean Value Theorem, the indefinite integral, slope fields, the definite integral, the Fundamental Theorems of Calculus, average value, applications of the definite integral including area and volume, and first order separable differential equations. Technology including a graphing calculator is used. Teacher recommendation required for enrollment.

## **CALCULUS 12**

This course is for seniors who have successfully completed pre-calculus AB in the junior year and elect to further their mathematics studies. The course encompasses the study of all elements of a first semester college calculus course including limits, the definition of the derivative, differentiation, and applications of differentiation.

## **PRE-CALCULUS 12**

This course is open to seniors who have completed Algebra II with Trigonometry and elect to further their mathematics studies. The course encompasses the study of various functions, including linear, quadratic, polynomial, rational, exponential, logarithmic, and trigonometric, as well as work with sequences and data analysis.

## **FINITE MATHEMATICS**

This course is open to seniors who have completed Algebra II with Trigonometry and elect to further their mathematics studies. Students will explore mathematical concepts from a different angle with an emphasis on creative and logical thought. This course will have a project-based assessment component. Students may work collaboratively and creatively. Topics include Functions, Graph Theory, Matrices and Linear Algebra, Conic Sections, Statistics, Probability and Business Applications.

# SCIENCE

***Students are strongly recommended to take one science course in senior year. Placement is determined by the department and the administration.***

***You may take an additional course as an elective.***

AP Physics C

AP Biology

AP Chemistry

Forensics

Anatomy and Physiology

**AP PHYSICS C**  
***Dr. Chandhok***

This is a calculus-based physics course that demands a strong mathematics background. The course emphasizes the broad field of mechanics typical of a college-level course and delves deeply into topic areas such as kinematics, dynamics, momentum, energy, rotations, gravitation, and oscillations. The laboratory is used to derive and illustrate major concepts of physics and to compare these idealized mathematical concepts, theories, and laws with the real-world phenomena. AP Physics students need to develop skills in performing laboratory activities with modern equipment and computer interfaces and analyzing data. Problem solving is an important part of the class and as such practice applications will be assigned. Only students concurrently enrolled in Calculus BC will be approved for this course.

# SCIENCE

## **AP BIOLOGY**

***Mr. Elkins***

AP Biology is offered as an introductory college-level biology course spanning the breadth of the life sciences offered to highly motivated students of strong academic quality. The curriculum which has undergone recent redesigning and College Board approval now stresses critical thinking and application of biological concepts in the context of 4 'big ideas.' The thematic approach makes study areas more meaningful as students make connections across the syllabus. Ultimately, students will develop a conceptual understanding of modern biology emphasizing applications of biological knowledge, scientific methodology, techniques, and critical thinking. These tools will help students understand themselves and the living world around them and better prepare them for the scientific, environmental, and social changes that will be a prominent part of their future. It is important to note that the conceptual framework of this course is based on the current ideals of evolution as the underlying foundation for all biological principles. AP Biology includes rewritten crucial laboratory exercises suggested by the College Board as well as several other labs deemed both important and helpful. After-school laboratory and classroom sessions are often scheduled to meet course requirements. In addition to work using the assigned textbook, students are required to study and master many forms of text supplementation, including on-line sources and current scientific literature.

## **AP CHEMISTRY**

***Ms. Evanoff***

AP Chemistry is designed to offer a rigorous and challenging course that covers the chemical principles typical of college and university general chemistry courses and is offered to highly motivated students of strong academic quality. AP Chemistry students will be expected to reinforce classroom-taught principles through consistent regular review, practice assignments and on-line activities. All are expected to take the AP Chemistry Exam and maintain a laboratory notebook. The topic areas covered in this course are atomic structure and properties, molecular and ionic bonding, intermolecular forces, reactions and stoichiometry, kinetics and equilibria, solution chemistry, acid-base theories and redox and electrochemistry. These topics have been reworked to emphasize the major themes and concepts of advanced chemistry in compliance with the redesign mandated by the College Board. There are several required laboratories, several of which are inquiry-based, and students must submit detailed, college-level reports for each. After-school laboratory and classroom sessions are often a required part of the course. Teacher recommendation and administrative approval are required for enrollment.

## **FORENSICS**

***Ms. Hennelly***

The forensics elective course provides a perfect opportunity to conflate reasoning skills, the application of the scientific method, genetics, and technology, with one of the most exciting career directions. The course quickly expands from basic skills in observation to the disciplined processing of data and crime situations, to ultimately the use of modern CSI techniques based on genetics, anatomy, chemistry, and physics. The formal lab program is adapted from institutions that are leaders in criminal investigation and discussions as well as forensic simulations stem from guest presentations from the field of CSI, classic crime cases, as well as reports from news and current events. The course culminates in the actual practical processing of a simulated crime scene.

## **ANATOMY AND PHYSIOLOGY**

***Dr. Chandhok***

The Anatomy and Physiology elective is a co-accredited course under the auspices of a local university. Students completing the course with good standing earn four transferable college credits from State University of New York. The course focuses on structures and functions of the human body in an organ system format and the maintenance of homeostasis. Topic areas include comparative histology, integumentary system, musculoskeletal system, digestive system, blood and cardiovascular system, respiratory system, nervous and endocrine systems, urinary system, reproductive systems and lymphatic and immune systems. Mechanisms of diseases that plague human beings will provide one fertile area for student research which will be a strong emphasis. Discussions will be held pertaining to the impact of new genetic and technological developments, and lifestyle influences on maintaining health and avoiding disease. There will be a laboratory component featuring visuals, models, and dissections where students will get hands-on experience. This course will challenge critical thinking and ultimately will require students to apply their knowledge to solving and diagnosing real cases.

# PHYSICAL EDUCATION

***All seniors are required to take physical education.***

***Mr. Malis / Ms. Arjang***

Students meet individually with the school's PE instructors to evaluate their level of activity and to review their individual wellness and fitness needs. Students, with their instructor's guidance, develop personal plans to meet their goals. Over the course of the year, the PE instructors monitor each student's individual progress according to the plan.

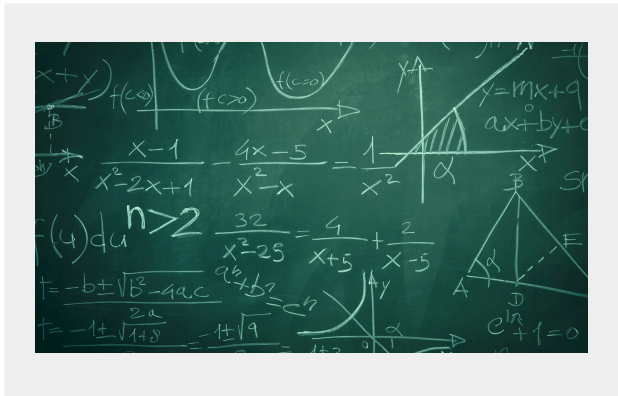


# ELECTIVES



- SOCIAL SCIENCES
- COMPUTER SCIENCE
- WORLD LANGUAGES
- ENGINEERING
- BUSINESS
- ART
- MUSIC

# SOCIAL SCIENCES



## **AP STATISTICS**

***Ms. Kosta***

This course is the equivalent of an introductory college-level course. Students will focus on four major themes: exploratory data analysis, designing studies, probability models and simulation, and statistical inference. In essence, students develop strategies for collecting, organizing, analyzing, and drawing conclusions from real-world data. Students design, administer, and tabulate results from surveys and experiments. Probability and simulations aid students in constructing models for chance phenomena. Sampling distributions provide the logical structure for confidence intervals and hypothesis tests. Students use a graphing calculator, formula sheets, statistical tables and activities to investigate statistical concepts. To develop effective statistical communication skills, students are required to prepare frequent written and oral analyses of real data. Students will regularly build interdisciplinary connections with other subjects and with their world outside of school. Teacher recommendation required for enrollment.

# SOCIAL SCIENCES

## **ADVANCED PLACEMENT UNITED STATES GOVERNMENT AND POLITICS**

***Enrollment requires administrative and departmental approval.***

***Does not qualify as satisfying the History Requirement.***

***Mr. Ethe***

Twelfth grade students will be given the option to take Advanced Placement U.S. Government. The advanced placement program is designed to allow students the opportunity to pursue college level courses in high school. This one-year course is the study of the role of the national government and its relationship to the concept of liberty in a pluralistic society. The course will cover the influence of American political culture, political parties, public opinion, the media, and interest groups on the Congress, the Presidency, and our Court System. A sophisticated understanding of majority-rule democracy, constitutionalism, and civil liberties will be stressed. The course also includes a study of economics and its interrelation with the U.S. government. Teacher recommendation and administrative approval are required for enrollment.

## **ADVANCED PLACEMENT MACROECONOMICS**

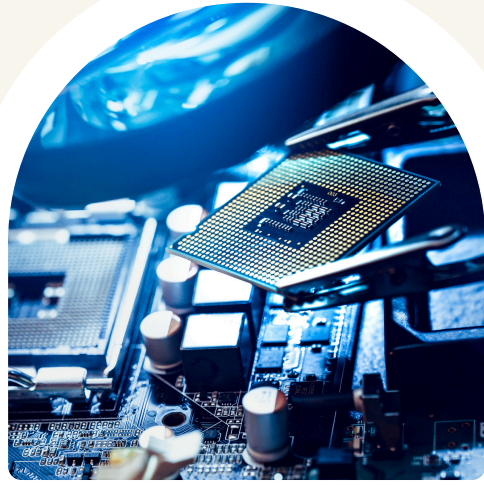
***Enrollment requires administrative and departmental approval.***

***Does not qualify as satisfying the History Requirement.***

***Ms. Goldschmidt***

AP Macroeconomics is a course designed to provide students with a thorough understanding of the principles of economics by examining aggregate economic behavior. Students taking the course can expect to learn how the measures of economic performance, such as GDP, inflation and unemployment are constructed and how to apply them to evaluate the macroeconomic conditions of an economy. Students will also learn the basic analytical tools of macroeconomics, primarily the aggregate demand and aggregate supply model and its application in the analysis and determination of national income, as well as in evaluating the effectiveness of fiscal and monetary policy in promoting economic growth and stability. Recognizing the global nature of economics, students will also have ample opportunities to examine the impact of international trade and international finance on national economies. Various economic schools of thought are introduced as solutions to economic problems are considered. Teacher recommendation and administrative approval are required for enrollment.

# COMPUTER SCIENCE



***All courses in the computer science department are electives. Teacher recommendation and administrative approval are required.***

## **AP COMPUTER SCIENCE A**

***Ms. Wilensky***

This course is equivalent to a semester-long, college-level course in computer science. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both structural and object-oriented problem solving and design using the Java language. The AP Computer Science A course includes a minimum of 20 hours of hands-on structured lab experience to engage students in individual or group problem solving. Prerequisite: Computer Science Essentials, College Python Programming, AP Computer Science Principles or equivalent computer science experience. Teacher recommendation required for enrollment.

# COMPUTER SCIENCE

## **PRINCIPLES OF ARTIFICIAL INTELLIGENCE 1**

***Ms. Vesa***

Want to know how Netflix knows what you'll watch next, how Spotify builds your playlist, or how a self-driving car decides to brake? This course is where you find out – and then build it yourself. Principles of AI 1 takes you through the entire landscape of machine learning, from collecting your own data by hand to training neural networks and generative AI models in real coding environments. No tests, no memorizing formulas – every unit ends with a project you actually present, in real language, like you would in any job that matters right now. Medicine, finance, music, film, sports analytics, criminal justice – AI is already there. This course puts you on the side that understands it.

Prerequisite: Computer Science Essentials and Department Recommendation

## **PRINCIPLES OF ARTIFICIAL INTELLIGENCE 2**

***Ms. Vesa***

In Principles of AI 2 foundations become a skill set the world is actively looking for. This course goes further into the architecture, the math, and the decisions behind the models that run across every industry right now. Same format: no tests, real datasets, real tools, and projects you build and present like a professional. You will develop a capstone fully independent project where you choose a field that matters to you and bring your own ideas. With the mentorship of your teacher, you are guided through a structured framework that takes you from raw concept to a finalized, working model. Medicine, criminal justice, climate, sports analytics, creative industries – you define the question, you build the answer, and you leave this course with a published notebook you can upload to GitHub and put on your resume – the kind of real, tangible work that gets you noticed for internships, college programs, and research opportunities.

Prerequisite: Principles of Artificial Intelligence 1

# COMPUTER SCIENCE

## **COLLEGE PYTHON PROGRAMMING**

***Ms. Vesa***

College Python Programming is equivalent to a first-semester, college-level course in programming. The course introduces students to coding essentials including problem solving and program design, algorithms (sequence, selection/decisions, iteration/loops), data collection (lists, sets, dictionaries and scalar values), abstractions (procedures, functions), graphical user interfaces and user experience design. This is a project-based learning course where Python applications will be created and explored within a backdrop of traditional problems and more current computer science fields such as data visualization, machine learning, web scraping and integration with engineering projects. Collaboration will also be a key component in the class. Students may opt to earn college credit through LIU upon successful completion of this course.

***All courses in the World Language Department are electives. Seniors are encouraged to pursue their study of foreign language if they have completed advanced levels in previous years. Teacher recommendation and administrative approval are required for AP and college level courses.***

## **FRENCH IV / V**

***Ms. Davis***

The students enrolled in this course master topical vocabulary, grammar, idioms, and practical expressions on an advanced level. They discuss a variety of contemporary themes gathered from authentic materials, including novels, films, short stories, articles and newspaper articles. Literary vocabulary is acquired. This course emphasizes aural comprehension and oral proficiency. These students will be eligible for Adelphi University college credits upon completion of the course.

## **SPANISH IV**

***Ms. Robbins / Ms Nikolaou***

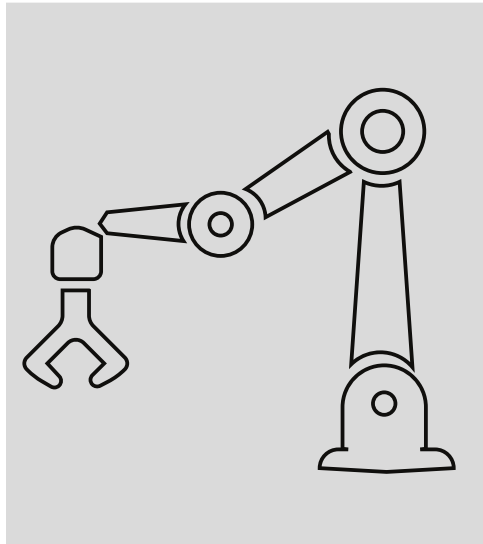
The students enrolled in this course master topical vocabulary, grammar, idioms, and practical expressions on an advanced level. They discuss a variety of contemporary themes gathered from authentic materials, including novels. Newspaper article analysis assigned weekly and written paragraphs and essays submitted. This course emphasizes aural comprehension and oral proficiency. These students will be eligible for Adelphi University college credits upon completion of the course.

## **SPANISH V**

***Ms. Robbins***

A communicative approach will be continued of Spanish language mastery including in- depth literary analysis and essay and paragraph writing. The students will acquire more advanced communicative skills in multiple tenses with an extensive vocabulary base as well as increased synonym and antonym acquisition. Cultural information will be accessed and discussed, Spanish newspapers read weekly, and novels, essays and poetry will be studied. Literary vocabulary is taught. These students will be eligible for Adelphi University college credits upon completion of the course.

# ENGINEERING



***All courses in the engineering department are electives. Teacher recommendation and administrative approval are required.***

## **ENGINEERING CAPSTONE**

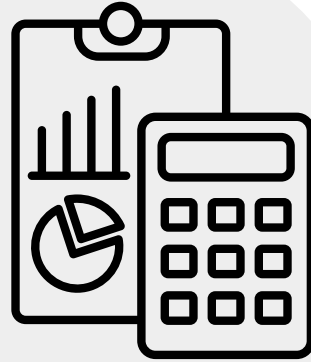
***Mr. Santiago***

The Engineering Capstone serves as the culmination of the North Shore engineering program, designed for seniors to apply and integrate the knowledge and skills gained over the past three years. This hands-on, project-based course challenges students to solve real-world engineering problems by combining concepts from electrical and mechanical engineering through the engineering design process.

Students will apply circuit analysis and microcontroller programming skills from Year 1, 3D modeling and prototyping techniques from Year 2, and mechanical engineering principles such as gear ratios, torque, and stress analysis from Year 3. Working in teams, students will design, build, and test a functional engineering project, simulating the collaborative and iterative processes used in professional engineering fields. If applicable, students will participate in the CIJE Innovation Day competition to showcase their skills and compete against other Judaic schools.

By the end of the course, students will have developed critical thinking, problem-solving, and teamwork skills while building a portfolio-worthy project that demonstrates their technical competence and creativity.

# BUSINESS



***All business courses are electives. We have partnered with several local colleges to offer courses for college credits. Students may enroll in these courses at a significantly reduced cost and earn college credits. Teacher recommendation and administrative approval are required.***

## **ADVANCED COLLEGE ACCOUNTING II**

***Ms. Solarsh***

This course provides a thorough and comprehensive look into Managerial Accounting. Students will explore business concepts and methods used to report managerial performance information to internal users and managers to assist in making sound business decisions in managing the firm. Topics include product costing methodologies, cost behavior, operational and capital budgeting, and performance evaluation. Students can earn 3 college credits. Prerequisite: College Accounting I.

# BUSINESS

## **COLLEGE MARKETING / DIGITAL MARKETING**

***Ms. Solarsh***

This is a full year course. College marketing will be covered during semester one. The marketing course focuses on the understanding of the foundational elements of marketing and the central role that marketing plays in the business process. The key areas of study are the 4P's: product, price, promotion and place. Instruction is provided through lectures, group projects and individual and group presentations. Numerous case studies are also included. Students can earn 3 college credits for this portion of the course. Digital Marketing in semester two will expand on the lessons learned during semester one focusing on marketing in the digital world. There will be two main areas of focus. First, the difference between traditional and digital marketing, especially examining the 4 P's of marketing in the Internet age, will be examined. Second, an in-depth look at how marketers can utilize web pages, social media, mobile marketing, blogs and more to create their digital brand and drive sales. Recent trends, current scenarios of the industry, competitive analysis, online simulations and SMART objectives will be explored. This course will also help students become comfortable with technology tools necessary for success in the business world. Opportunity to earn industry certification upon successful completion of the course and certification exam. Students will be required to bring a fully charged laptop to class on a daily basis. Teacher recommendation and administrative approval are required for enrollment.

## **COLLEGE VIRTUAL ENTERPRISE**

***Ms. Solarsh***

Virtual Enterprise is a live global business simulation in which students create and manage a virtual business. The program provides opportunities to develop valuable 21st-century skills in entrepreneurship, global business, problem solving, communication, personal finance and technology. VE replicates all the functions and demands of real businesses in both structure and practice. As "employees" of the virtual business, students experience the expectations of the workplace and are accountable for the firm's performance. Students can earn three college credits. Teacher recommendation (following interview process) and administrative approval are required for enrollment. Students can earn 3 college credits.



***All courses in the Art Department are electives. Teacher recommendation and administrative approval are required.***

## **PRE COLLEGE-PORTFOLIO DEVELOPMENT (NON AP)**

***Ms. Folk***

Portfolio Development is a new course offered at NSHAHS. We are trying to bridge the gap between HS and College by preparing students for the next step in an art career. Students will create a series of new works that span from drawing, painting and mixed media, showcasing a core understanding of a variety of materials as well as the courage to experiment and break the traditional boundaries of each medium and subject matter. Our objective is to provide students with a professional portfolio that can offer admission to high-ranking universities with scholarships. In addition to creating art, our Portfolio Development course will prepare students to become fluent in the art language. Through artist statements, participating in group critiques, and photographing and digitizing artworks, students will become familiar and comfortable in speaking about not only their own art, but others' works as well. Prerequisite: Studio Art II, or AP Art I.

## **STUDIO ART II**

***Ms. Folk***

Studio Art 2 is a second-year course that provides an opportunity for students to expand on the drawing and painting concepts introduced in Studio Art 1. Emphasis is placed on a deeper understanding of design principles, drawing techniques and painting skills leading to the development of abilities that are necessary for advanced art courses. Students are given more in depth problems to solve creatively while becoming more adept through a broad exposure to various media. Students will advance both technically and conceptually, preparing them for the next level of art at North Shore. Alongside refining their artistic skill set, the students will learn about 21st century art and have the opportunity to visit contemporary art institutions. Prerequisite: Studio Art I.

## **AP ART II**

***Ms. Folk***

Advanced Placement Studio Art is a distinctive and rigorously demanding course of study which teaches students how to elevate their creative process, critical thinking, investigative skills and 'student voice' in preparation of effectively completing The College Board requirements of the AP Studio Art Exam administered at the end of the school year. The AP Studio Art Exam consists of a student developed body of successful artwork which will be submitted in a portfolio. The culmination of the student produced artwork during the school year is aimed at targeting and exploring their chosen sustained investigation which was selected in AP Art 1. The investigation focuses on a body of work based on a "Central Theme" and focuses on a process of INVESTIGATION, GROWTH and DISCOVERY. Students are required to attend to their sketchbooks and continuously explore and research their Art Assignment topics so that they may develop the vital skills needed to successfully complete their investigation. Prerequisite: AP Art I.

# Fashion



## FASHION II

### ***Ms. Dammacco***

This design course further encompasses the fashion design process from inspiration through production learned in Fashion Design 1. Focus is on developing the fashion silhouette and fabric rendering techniques using a variety of materials. Students will study the interconnectivity between fabric weight/texture and garment representation based on rendered croquis. Principles and creative standards common to all design fields will be introduced. Projects will deal with pragmatic and creative issues. Assignments are progressive so that students will have the opportunity to establish their professional identity. They will utilize a range of media and a variety of techniques to create versatility in their work and portfolio. Additionally, sewing basics will be introduced to students. Students will be exposed to how a historical timeline of fashion is reflective of society. This will help to illustrate the ways in which material use has been affected by the technological changes in manufacturing. Museum, fabric store trips, and fashion show trips are planned. Prerequisite: Fashion I.

## FASHION III

### ***Ms. Dammacco***

This design course further encompasses the fashion design process from inspiration through production learned in Fashion Design 2. Focus is on draping, sculpting and 3D textile design and exploration. Projects will deal with pragmatic and creative issues. Assignments are progressive so that students will continue to have the opportunity to establish their professional identity and brand. They will utilize a range of media and a variety of techniques to create versatility in their work and portfolio. Museum, fabric store trips, and fashion show trips are planned. This course aims to broaden and deepen the students' awareness of fashion as a discipline as they work on completing a portfolio for presentations to colleges. Prerequisite: Fashion Design II.

# Architecture



## ARCHITECTURE II

### **Ms. Dammacco**

This course is for the student who has completed the requirements for Introduction to Architecture 1 and plans possibly to pursue his or her architectural studies as part of their college education. Students will reinforce skills they learned in the earlier course and focus in on design techniques, as well as review and study the history of architecture, build scale models from plans and build vertically, understand shape, convex and concave, space, light, acoustics, circulation, enclosure, boundaries, path, threshold and portal, understand the use of planes and their relationship to patterns, consider issues dealing with commercial/public space, render hand illustrations using a variety of media, become aware of the need for conservancy and the need for buildings that reflect respect for environments and future generations and learn about the history and evolving technologies of modern architecture. Emphasis will switch to vertical construction and consideration of public space vs. private space as well as architectural production as a process of analysis, critique and synthesis. Students will study architectural design as a mode of cultural communication and imaginative experimentation. They will work at a variety of scales, with a variety of techniques in a variety of research situations while being asked to comprehensively address architectural problems. This course aims to broaden and deepen the students' awareness of architecture as a discipline as they work on preparing a portfolio for presentations to colleges. Prerequisite Architecture I.

## ARCHITECTURE III

### **Ms. Dammacco**

Students will reinforce skills they learned in the earlier courses and focus on design techniques, as well as review and study the history of architecture. Emphasis will switch to conceptual design and planning on larger urban scales. Students will study Urban planning, also known as town planning, city planning, regional planning, or rural planning, is a technical and political process that is focused on the development and design of land use and the built environment, including air, water, and the infrastructure passing into and out of urban areas, such as transportation, communications, and distribution networks and their accessibility. They will work at a variety of scales, with a variety of techniques in a variety of research situations while being asked to comprehensively address architectural problems. This course aims to broaden and deepen the students' awareness of architecture as a discipline as they work on completing a portfolio for presentations to colleges. Prerequisite: Architecture II

# MUSIC



***AP Music Theory is an elective course.  
Enrollment requires teacher and  
administrative approval.***

## **AP MUSIC THEORY**

***Mr. Torres***

This course prepares the student for the College Board AP Music Theory exam, which places emphasis on the music of the “Common Practice Period” in Western Music (1650-1900). Areas of focus will include: tonal harmonic analysis, formal analysis, harmonic/melodic/rhythmic dictation, sight-singing, and part writing.

(Prerequisite Class - Music Theory Fundamentals)

NORTH SHORE  
HEBREW ACADEMY

ישיבת חוף הצפון

