



# Course Catalog

2021-2022



# MSON Course Catalog

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The Malone Schools Online Network (MSON) provides motivated upper level students at participating Malone Schools with a variety of academically challenging courses that enhance each member school's existing curriculum. These interactive seminars bring students together from across the country with dedicated teachers in real time. MSON joins the best of independent school education with the latest video conferencing technology to chart new territory in online learning.

Students enroll in MSON classes through their schools, which make course requests to MSON by April 15th. Interested students should reach out to their MSON Academic Liaisons for more information and to understand the processes at their schools. MSON works with member schools to seat students in courses based on the requests of each school, course space constraints, and program goals.

# Participating Schools

2021-2022

Augusta Preparatory School (GA)

Brownell Talbot School (NE)

Canterbury School (IN)

Casady School (OK)

Chadwick School (CA)

Columbus Academy (OH)

Derryfield School (NH)

Ft. Worth Country Day School (TX)

Hopkins School (CT)

Indian Springs School (AL)

Manlius Pebble Hill School (NY)

Newark Academy (NJ)

Maret School (DC)

Mounds Park Academy (MN)

The Prairie School (WI)

Porter-Gaud School (SC)

Roeper School (MI)

St. Andrew's Episcopal School (MS)

Severn School (MD)

Stanford Online High School (CA)

Trinity Preparatory School (FL)

University School of Nashville (TN)

Waynflete School (ME)

Wichita Collegiate School (KS)

Wilmington Friends School (DE)

Winchester Thurston School (PA)



# CLASS SCHEDULE 2021-22

FALL SPRING YEAR

TIME (EST)	TERM	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:30 - 9:30A	Fall	Watching the Watchmen: The Role of Detective Narratives in a Carceral Culture	Turbulent Times: History of the First Amendment and Dissent During the American Wars	Watching the Watchmen: The Role of Detective Narratives in a Carceral Culture		Turbulent Times: History of the First Amendment and Dissent During the American Wars
	Spring		The History of Modern Germany: World War I to Present			The History of Modern Germany: World War I to Present
10:00 - 11:00A	Fall	Creative Writing in the Digital Age	Dynamic of Political Leadership	Advanced Microeconomics	Dynamic of Political Leadership Creative Writing in the Digital Age	Advanced Microeconomics
	Spring	Advanced Applied Math Through Finance			Advanced Applied Math Through Finance	
11:05A - 12:05P	Fall	Orwell's Exigence: Writing for an Urgent Moment		Orwell's Exigence: Writing for an Urgent Moment		
	Spring	Are We Rome?	Computer Science: Solving Problems with Computational Methods		Are We Rome? Computer Science: Solving Problems with Computational Methods	
	Year		French Seminar: The Question of Evil from Voltaire to Camus	Chinese Seminar	French Seminar: The Question of Evil from Voltaire to Camus	
12:15 - 1:15P	Fall	Establishing Equality: The History of Feminisms and Gender, 1792-1992 Positive Psychology		Establishing Equality: The History of Feminisms and Gender, 1792-1992 Genetics & Genomics Linear Algebra	Advanced Spanish Through Film & Literature Positive Psychology	Genetics & Genomics Linear Algebra
	Spring	Ensuring Equity: Women in 21st Century American Culture	Adv. Spanish Through Film & Literature Freedom and Equity in LGBTQ Literature	Ensuring Equity: Women in 21st Century American Culture Vector Calculus	Adv. Spanish Through Film & Literature	Freedom and Equity in LGBTQ Literature Vector Calculus
	Year	Arabic I: Section A	Arabic II		Arabic I: Section A	Arabic II Chinese Seminar
1:20 - 2:20P	Fall	Political Identity, American Democracy & Civic Engagement	Positive Psychology	Political Identity, American Democracy & Civic Engagement	Positive Psychology	
	Spring	Building Empathy, Bridging the Divide: Using Dialogue to Help Heal American Democracy "It's better to speak:" One Hundred Years of Women Writing for Change	Advanced Latin Lit CSI: MSON - Forensic Science Positive Psychology Philosophy in Pop Culture	Building Empathy, Bridging the Divide: Using Dialogue to Help Heal American Democracy "It's better to speak:" One Hundred Years of Women Writing for Change	CSI: MSON - Forensic Science Positive Psychology Philosophy in Pop Culture	Advanced Latin Lit
	Year		French Seminar: National Identities			French Seminar: National Identities
2:30 - 3:30P	Fall	Intro to Organic Chemistry	Einstein's Relativity and the Evolution of the Quantum Model Etymology of Scientific Terms		Intro to Organic Chemistry	Einstein's Relativity and the Evolution of the Quantum Model Etymology of Scientific Terms
	Spring	Advanced Topics in Chemistry			Advanced Topics in Chemistry	
	Year	Multivariable Calculus			Multivariable Calculus	
3:35 - 4:35P	Fall		Diversity in a Global Comparative Perspective Making Ethical Choices in a Diverse World	Global Voices of Oppression: Literature for Social Justice	Diversity in a Global Comparative Perspective Making Ethical Choices in a Diverse World	Global Voices of Oppression: Literature for Social Justice
	Spring	The Fiction of James Joyce	Environmental Bioethics - Exploring the Challenges of Local and Global Choices	The Fiction of James Joyce		Environmental Bioethics - Exploring the Challenges of Local and Global Choices
	Year	Ancient Greek I	Arabic I: Section B	Ancient Greek I	Arabic I: Section B	
4:40 - 5:40P	Fall	Bob Dylan's America	Think Local; Debate Global	Bob Dylan's America	Think Local; Debate Global	
	Spring		A Mathematical Modeling Approach to Social Justice		A Mathematical Modeling Approach to Social Justice	
	Year	Data Structures & Design Patterns			Data Structures & Design Patterns	

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# WORLD LANGUAGES

## ADVANCED LATIN LITERATURE (SPRING) \* *New Course* \*

*Tuesday / Friday, 1:20-2:20pm EST*

**Target Grade Level:** 11-12; advanced grade 10 students with permission of instructor

**Prerequisite:** AP Latin or equivalent

**Instructor:** David Jackson, Canterbury School, Fort Wayne, IN

This course will delve into both the prose and poetry of Roman authors. Students will translate and analyze Latin in the original, with an emphasis placed on morphology, syntax, literary devices and style, and a contextual study of the literature's deeper meaning. Authors will vary based on student interest, but will generally revolve around the core of Catullus, Seneca the Younger, Cicero, Vergil, Ovid, Livy, Sallust, Caesar, and Horace. The instructor is, however, willing to read other authors based on student interest and commitment.

## ADVANCED SPANISH THROUGH FILM AND LITERATURE (SPRING)

*Tuesday / Thursday, 12:15-1:15pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Spanish 4 or equivalent

**Instructor:** Weslie Wald, Indian Springs School, Indian Springs Village, AL

This course exists to equip students with at least 4 years of Spanish exposure with the content knowledge, skills, and confidence necessary to communicate at an intermediate or advanced level of proficiency in Spanish (or higher), to enjoy and appreciate the Spanish language and associated cultures, and to continually reflect on how language both shapes and reflects culture. We will watch films and shows and read literary works, all in the Spanish language. We will use the content of the films and readings as fodder for discussion and analysis. As we are not limiting the content to one geographic area nor to a time frame, this will be a random but diverse sampling of film and literature choices. Therefore, we will also focus on creating and then using a list of course 'Essential Questions' whenever approaching a new selection to guide our understanding and discussion.

# WORLD LANGUAGES

## ANCIENT GREEK I (YEAR)

*Monday / Wednesday, 3:35-4:35pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Briana Titus, Casady School, Oklahoma City, OK

This is a beginning course for students who have not studied ancient Greek before or whose background in Greek is not sufficient for more advanced work. Students proceed through a study of grammar and vocabulary to the reading and writing of sentences and short narratives in the language of Athens of the fifth century B.C.E. Selected topics in Greek history and art are also considered.

## ARABIC I (YEAR)

*Section A: Monday / Thursday, 12:15-1:15pm EST*

*Section B: Tuesday / Thursday, 3:35-4:35pm EST*

**Target Grade Level:** 9-12 (Juniors receive priority)

**Prerequisite:** None

**Notes:** First of a two-year sequence

**Instructors:** Farha Abubaker, Hopkins School, New Haven, CT,  
Kaveh Niazi, Stanford Online High School, Stanford, CA

This first-year course of a two-year sequence is an introduction to Modern Standard Arabic, the language of formal speech and most printed materials in the Arab-speaking world. Students will learn to read and write the Arabic alphabet and will develop beginning proficiency in the language. Through frequent oral and written drills, students will develop their basic communication skills.

## ARABIC II (YEAR)

*Tuesday / Friday, 12:15-1:15pm EST*

**Target Grade Level:** 10-12

**Prerequisite:** Arabic I

**Notes:** Second of a two-year sequence

**Instructor:** Farha Abubaker, Hopkins School, New Haven, CT

This course is a continuation of the introduction to Modern Standard Arabic, the language of formal speech and most printed materials in the Arab-speaking world. Students will learn to read and write the Arabic alphabet and will develop beginning proficiency in the language. Through frequent oral and written drills, students will develop their basic communication skills.



# WORLD LANGUAGES

## CHINESE SEMINAR (YEAR)

*Split Schedule: Wednesday, 11:05-12:05pm EST / Friday, 12:15-1:15pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Chinese 4 or Honors Level. Placement test required.

**Instructor:** Lan Lin, Hopkins School, New Haven, CT

This intermediate level course, conducted entirely in Chinese, involves the reading of authentic texts of modern Chinese society and culture. Students explore current cultural topics through stories, dialogues, and documentaries using multimedia materials ranging from Internet, television, and films to traditional textbooks. Throughout the year, students write papers, critique films, and participate in oral discussion and debates.

## FRENCH SEMINAR: NATIONAL IDENTITIES (YEAR) \* *New Course* \*

*Tuesday / Friday, 1:20-2:20pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Level 5 French/AP French Language and Civilization or equivalent.

**Instructor:** Tilden Daniels, Hopkins School, New Haven, CT

This course is designed for students who have successfully completed French level 5. The college level topics are chosen to prepare students for studying French beyond high school and to provide deeper insight into French and Francophone cultures. Students examine various topics in French language, history, culture, cinema, and literature while interpreting authentic documents. Faithful to the idea of a seminar, the course requires students to be responsible for extensive reading and preparation. Activities including compositions, oral presentations, and discussions enable students to achieve a high level of proficiency in speaking and writing. The literary texts studied are often paired with a film in order to give students an opportunity to gain a deeper understanding of francophone culture and to improve their listening skills. Each work is also studied with an historical perspective. For example, *La Chanson de Roland* is studied along with the hit comedy *Les Visiteurs* (1993) and an exploration of Charlemagne, the Battle of Hastings, and the crusades. Similarly, *L'Exil et le Royaume* by Albert Camus is studied along with the film *Loin des Hommes* (2014) and an exploration of France at the time of Algerian War (1954-1962). With an eye towards the theme of “national identities,” students are asked to consider how each work helps to reinforce and question an individual’s sense of identity and belonging to a nation and its values. *This class is conducted entirely in French.*

# WORLD LANGUAGES

## FRENCH SEMINAR: THE QUESTION OF EVIL FROM VOLTAIRE TO CAMUS

\* *New Course* \*

*Tuesday / Thursday, 11:05-12:05pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** AP French or equivalent

**Instructor:** Jaime Estrada, Maret School, Washington, DC

Students explore how Francophone literature represents and makes sense of the manifestation of evil in the modern world. From *Candide*'s satirical treatment of theodicy and optimism to *The Plague*'s absurdist yet hopeful approach, students examine the many facets of evil, how they face it, and its sources. Students also explore in detail the historical events that frame their readings, with a particular emphasis on the impact those events have had on the arts and philosophy.

By the end of the year, students will possess the skills to read any literature that might be presented to them in college; to write a cohesive, well-articulated academic paper in French that is linguistically fluid and intellectually inquisitive; to deliver a TED Talk-style presentation on a literary or philosophical topic. Readings include: *La peste* (Camus), *Huis-Clos* (Sartre), *Antigone* (Anouilh), *Le Horla* (Maupassant), *Tous mes amis* (Ndiaye), *Candide* (Voltaire), *Le Petit Prince* (Saint-Exupéry). *This class is conducted entirely in French.*

## HISTORY OF THE SPANISH LANGUAGE: AN INTRODUCTION TO LINGUISTICS AND ADVANCED GRAMMAR (FALL)

*Tuesday / Thursday, 12:15-1:15pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Spanish 4 or equivalent

**Instructor:** Weslie Wald, Indian Springs School, Indian Springs Village, AL

This course exists to allow students with at least 4 years of exposure to Spanish to dive deeper into the study of the language itself, including its history, sounds (phonetics and phonology), structure (morphology and syntax), words (lexicon), their meaning (semantics and pragmatics), changes over time in the language, and advanced grammar topics. The instruction will be conducted in English, and the main course text is in English with Spanish and Latin examples.

# HUMANITIES & SOCIAL SCIENCES

## ADVANCED ECONOMICS (YEARLONG 2022-23) \* *New Course* \*

*Alternating Year Offering*

*Wednesday / Friday, 10:00-11:00am EST*

**Target Grade Level:** 11-12

**Prerequisite:** Completion or concurrent enrollment in Precalculus

**Instructor:** Julien Meyer, Severn School, Severna Park, MD

Advanced Economics is a year-long course that covers microeconomics, decision making at the individual consumer, producer and market levels; and macroeconomics, the study of an economic system as a whole. Microeconomic topics include scarcity, supply and demand, elasticity, international trade and the theory of the firm. The role of the government, both distortive and restorative, in the areas of regulation, public goods, market failures and the environment, will be debated. Macroeconomic topics include economic performance measures, price-level determination (inflation and deflation), the financial sector, monetary and fiscal policies, economic growth, productivity, unemployment, and the balance of payments. Students will manipulate economic models and “think like an economist.” While the course does not follow the AP curriculum, students will be positioned to take the AP exam if they wish. While preference will be given to students who wish to take the course for the full year, students may enroll in Macroeconomics for the second semester on a space available basis if they have already taken a microeconomics course from MSON or otherwise.

## ADVANCED MACROECONOMICS (FALL 2021)

*Alternating Year Offering*

*Wednesday / Friday, 10:00-11:00am EST*

**Target Grade Level:** 11-12

**Prerequisite:** Students who have not taken a microeconomics course will need to read some chapters of the text and watch some screencasts prior to the beginning of the class

**Instructor:** Julien Meyer, Severn School, Severna Park, MD

Advanced Macroeconomics is a semester course that covers the study of an economic system as a whole. Topics include economic performance measures, price-level determination (inflation and deflation), the financial sector, monetary and fiscal policies, economic growth, productivity, unemployment, and international trade and the balance of payments. Students will manipulate economic models and “think like an economist.” While the course does not follow the AP curriculum, students will be positioned, with extra work on their own, to take the AP exam if they wish.

# HUMANITIES & SOCIAL SCIENCES

## ADVANCED MICROECONOMICS (FALL 2023)

*Alternating Year Offering*

*Wednesday / Friday, 10:00-11:00am EST*

**Target Grade Level:** 11-12

**Prerequisite:** Students who have not taken a microeconomics course will need to read some chapters of the text and watch some screencasts prior to the beginning of the class

**Instructor:** Julien Meyer, Severn School, Severna Park, MD

Advanced Microeconomics is a semester course that covers decisions at the individual consumer, producer and market level. Topics include scarcity, supply and demand, elasticity, international trade and the theory of the firm. The role of the government, both distortive and restorative, in the areas of regulation, public goods, market failures and the environment, will be debated. Students will manipulate economic models and “think like an economist.” While the course does not follow the AP curriculum, students will be positioned, with extra work on their own, to take the AP exam if they wish.

## THE AMERICAN FOOD SYSTEM: PAST, PRESENT, FUTURE (FALL, 2022)

*Alternating Year Offering*

*Monday / Thursday, 11:05-12:05pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** none

**Instructor:** Lindley Shutz, Derryfield School, Manchester, NH

The American Food System consists of the interrelated components of how we get food from “farm to fork,” including the producing, harvesting, processing, transporting, marketing, distributing, and the eating of food. Through a humanities-based, interdisciplinary approach the course will examine the political, social, economic, and environmental aspects of the system, as well as the challenges and opportunities in moving from our current industrial food system to a more sustainable one. Students will engage in a variety of projects, allowing them to understand their regional and local food systems, while learning from their classmates throughout the country. Topics to be covered include animal agriculture, organic farming, local production and distribution, the debate over GMOs, the marketing of unhealthy food to children, and the problem of hunger in America.

## ARE WE ROME? (SPRING)

*Monday / Thursday, 11:05-12:05pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Completion of US History (may be concurrent); background in Classics not required

**Instructor:** Michael Leary, Derryfield School, Manchester, NH

Inspired by Cullen Murphy's 2007 book of the same name, "Are We Rome" will examine the similarities between the Roman empire and the United States. This course is designed to be a capstone for study in classics and history. The interdisciplinary nature of this course will serve as a vehicle by which students of Latin and history can expand their knowledge and apply that knowledge in an intercultural comparison. Since 1776, from our system of government to the architecture of government buildings, the United States has used Rome as a foil for itself, and forefathers of the US created many institutions using Rome as a model. This course will be structured around one basic question: How can the United States learn from Rome?

We will examine political and social ideologies, privatization, globalization, borders, and exceptionalism. Taking our beginnings from the founding of these two nations, we will discuss the governing practices and bodies, the rhetoric of politics, and the public view of governmental institutions with emphasis on how these progress and change. The course will culminate with analysis of the most recent political and social events in the U.S. and form a final conclusion on our topic. Our class discussions will be centered around primary sources from both Rome and the US. Weekly reading and writing assignments will be required.

## BOB DYLAN'S AMERICA (FALL)

*Monday / Wednesday, 4:40–5:40pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Previous or concurrent enrollment in American Literature and American History

**Instructor:** Dean A. Masullo, Ph.D., University School of Nashville, Nashville, TN

Arguably the most influential, important, and closely scrutinized American artist of the past six decades, Bob Dylan is as difficult to define as the nation that produced him. Connecting his work to contemporary theories of cultural memory, this course looks at the ways in which Dylan, both in his music and his cultivation of various public personae, maps the contours of the national imagination and explores the prevailing attitudes of class, race, gender, and place in American culture.

Proceeding chronologically and using Dylan's masterworks and subsequent official "bootleg" recordings as touchstones, students will consider a variety of texts, including poetry, fiction, and cultural history; biography and autobiography; and popular and documentary film, including Greil Marcus' *The Old, Weird America: The World of Bob Dylan's Basement Tapes* (2001), Murray Lerner's *Festival* (1967), D. A. Pennebaker's *Dont Look Back* (1967), and Martin Scorsese's *No Direction Home* (2005) and *Rolling Thunder Review: A Bob Dylan Story* (2015). Access to a music streaming service such as Spotify or Apple Music is required; access to video streaming services such as Netflix and Amazon Prime is strongly recommended.

## BUILDING EMPATHY, BRIDGING THE DIVIDE: USING DIALOGUE TO HELP HEAL AMERICAN DEMOCRACY (SPRING) \* *New Course* \*

*Monday / Wednesday, 1:20-2:20pm EST*

**Target Grade Level:** 10-12

**Prerequisite:** One year of U.S. History, Civics, or other relevant history class

**Instructor:** Jeannemarie Halleck, Waynflete School, Portland, ME

Have you ever wondered what it would be like to engage in meaningful conversations with peers from across the political divide? Curious to learn more about how civil and uncivil discourse and actions have shaped the course of U.S. history? Are you willing to challenge your own ideas and beliefs by learning how to listen and speak respectfully with others? Part political philosophy, part U.S. History, and part practical skill building, this class is for anyone interested in a future in law, politics, civil service or policy. We will use contentious political and social issues to converse with peers from across the country while seeking better understanding of others' perspectives, as well as creating common ground, where possible.

Throughout the semester, the class will focus on the following content:

- The origins of western political parties and what they represent today
- The foundations of US democracy from a new perspective, including how moments of civil unrest and civil cohesion have shaped U.S. history
- The implications and consequences of an increasingly divisive politics through the lenses of social cohesion, foreign policy, domestic policy, media literacy, economics and equity
- Whether democracy relies on the notion of “informed citizens” cultivating the habit to respond to something that challenges one’s values or beliefs in a way that invites more information instead of vilifying others, and if so, why this is undervalued in current politics
- Why the political left and political right are so polarized and if there is a way to forge creative solutions to pervasive social issues through dialogue

In confronting these issues, you will hone the skills to engage in dialogue across differences, including self-awareness, perspective-taking and deeper inquiry. You will build your capacity to engage in contentious conversations around issues of politics, religion, social change, etc. and learn how to facilitate and lead these conversations with others. The semester will culminate with a group project in creative collaboration, including proposing possible solutions to pressing issues such as gun control, environmental policy, policing, or any other number of current challenges.

# HUMANITIES & SOCIAL SCIENCES

## CREATIVE WRITING IN THE DIGITAL AGE (FALL)

*Monday / Thursday, 10:00–11:00am EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Julia Maxey, Severn School, Severna Park, MD

Storytelling is as important today as it was hundreds of years ago. What has changed, in many cases, is the media through which writers tell their stories. Today’s literary artists take advantage of digital tools to spread their messages and tell their stories in new ways that combine narrative and contemporary form. Students will begin with the traditional forms of poetry, short prose, and literary non-fiction and then go beyond those forms to explore how contemporary tools can enhance expression. We will study master writers in each of the traditional forms and be inspired by their examples. Then, we will look at how communication in the 21st century has provided us with even more ways to share our thoughts and to be creative. Possible explorations include hyperlinked narratives, social media as inspiration and tool, animated text, audio, videos, and all manner of non-linear narrative. The class will ask an essential question: what happens when communication becomes wider and has an instant audience? The class routine, based around writing, reading, and discussion, will include weekly critiques of student work and required writing, including in some non-traditional, contemporary formats.

## DIVERSITY IN A GLOBAL COMPARATIVE PERSPECTIVE (FALL)

*Tuesday / Thursday, 3:35–4:35pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Dr. John Aden, Ph.D., Canterbury School, Ft. Wayne, IN

This course examines the ways our Human Family has sought to create, marshal, contest, and maintain identities through Culture and relations of power. These identities can be appreciated through “lenses of analysis.” The course critically engages the traditional “Big Three” lenses of analysis: Race, Class, and Gender, understanding that Culture serves as an important backdrop against which these identities emerge. Once students appreciate the important ways the Social Sciences have engaged with, written about, and debated these three core modes of analysis, the course expands to incorporate other, equally rich, lenses: age, ableism, intellectual diversity, geographic diversity, cognitive and neurological diversity, and the business case for Diversity, as well as how to study synergistically intertwined phenomena. Film and Critical Film Studies, as well as the role Colonialism has played in the major conflicts of the last 500 years, each serve to enrich student understandings of Diversity.



# HUMANITIES & SOCIAL SCIENCES

## DYNAMICS OF POLITICAL LEADERSHIP (FALL) \* *New Course* \*

*Tuesday / Thursday, 10-11am EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Matthew J. Twomey-Smith, Manlius Pebble Hill School, Syracuse, NY

This course takes an academic approach to understanding great political leaders. While the course will look at leadership across modern history, it will also take a theoretical approach similar to a political science course. The goal is not only to examine the traits and styles of political leaders transcending history, but also to think more critically about the function of leadership in modern society. Essential questions include: How do great political leaders instill a desire in the public to follow them? What are the characteristics of great political leadership? What leadership styles are more effective than others? What personal attributes are required for effective leadership? How do leaders manage crisis situations? And how do the constraints of a political system affect a leader's decisions?

Beginning with a broad examination of leadership qualities and styles, as well as the constraints of political systems, the course then focuses on the contemporary American political system and examines political leadership in "real time." Using the analytical lenses developed in the first half of the course, students will assess and evaluate political leadership in both the past and the present. The course will culminate with each student conducting a qualitative analysis of a political leader during a crisis.

## ENSURING EQUITY: WOMEN IN 21<sup>ST</sup> CENTURY AMERICAN CULTURE (SPRING) \* *New Course* \*

*Monday / Wednesday, 12:15-1:15pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** American History a plus, but not required; MSON’s “Establishing Equality” is strongly suggested, but not required.

**Instructor:** Diane M. Hotten-Somers, Ph.D., Derryfield School, Manchester, NH

At the 2014 VMAs, Beyoncé performed in front of a 20-foot lit sign that read “FEMINISM,” and her performance ignited a flame for intersectional equity that has burned brightly ever since. In this course, not only will we consider, as the course title states, the experience and meaning of women in contemporary American culture, but we will also ask a series of questions to understand these experiences: What aspects of American culture shape the experience of being a woman today? How does focusing on contemporary American women allow us to explore and discover the issues that impact today’s American women? And, how and why is it that a pop culture icon like Beyoncé reignited the flame of feminism in 2014? By reading texts from many disciplines and perspectives (i.e. film, music, sociological theory, fiction, feminist and cultural studies – to name a few) we will look closely at the issues, experiences, and representations that shape American women today. And while a strict definition of “contemporary” means the here and now, we will take a broader approach to contemporary by looking at American women and women’s issues from the past 30 years, making our starting point the beginning of third wave feminism and then coming up to the present. In the end, this course will help us all as a learning community to question, explore, and draw conclusions about the multiple aspects of American culture that give shape and meaning to American women.

## ENVIRONMENTAL BIOETHICS - EXPLORING THE CHALLENGES OF LOCAL AND GLOBAL CHOICES (SPRING)

*Tuesday / Friday, 3:35–4:35pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Ellen Johnson, Ph.D., Wilmington Friends School, Wilmington, DE

This course will focus on such cases as environmental sustainability, global energy and food resources, gathered from sources in literature, journalism, and film. The academic study of ethics examines how people make the decisions. Curricula will build on a foundation of theoretical moral theories, more specifically, how one makes decisions when faced with complex, often controversial, issues. No prior knowledge of philosophy is assumed, however, authentic assessment of students’ initial facility with logical analysis will ensure that all students are challenged to grow and deepen their theoretical and practical understandings of the subject.

# HUMANITIES & SOCIAL SCIENCES

## ESTABLISHING EQUALITY: THE HISTORY OF FEMINISMS AND GENDER, 1792-1992 (FALL) \* *New Course* \*

*Monday / Wednesday, 12:15-1:15pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** American History a plus, but not required.

**Instructor:** Diane M. Hotten-Somers, Ph.D., Derryfield School, Manchester, NH

On January 20, 2021, just over 100 years since women won the right to vote, Ms. Kamala Harris was sworn in as the first female Vice President of the United States of America. What socio-cultural developments occurred to create this historic moment for women? In this course, we will answer this question by focusing on the development of U.S. feminism and feminist theory, the lives and work of American women, and the significance and meaning of ‘sex’ and ‘gender’ at different periods in American history, using the publication date of the first feminist treatise, Mary Wollstonecraft’s *A Vindication of the Rights of Woman*, 1792, as our starting point and ending with the beginning of 3rd wave feminism in 1992. It will explore the intersection of gender with race, ethnicity, sexuality, class, and able-bodiedness by reading essays from scholars of cultural studies, biology, history, philosophy, political theory, literature, and psychology, and viewing films and artwork. Central questions that this course will consider include: Is ‘feminism’ something to believe in or something to do? What is the difference between sex and gender? And, how does gender affect your understanding of who you are as a person? Through the study of historical accounts, theoretical articles, and artistic representations, this course foregrounds gender as a lens through which we can understand our society and ourselves in new and useful ways.

## ETYMOLOGY OF SCIENTIFIC TERMS (FALL)

*Tuesday / Friday, 2:30–3:30pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** David Seward, Winchester Thurston School, Pittsburgh, PA

The purpose of the course is, to quote the textbook, “By teaching ... the root elements of medical terminology – the prefixes, suffixes, and combining forms of Greek and Latin ... not only to teach students modern medical terminology, but to give them the ability to decipher the evolving language of medicine throughout their careers.” This is in many ways a language course and deals with elements that are used to create terms to meet the specific needs of medical scientists. As material is introduced, students will complete practice exercises during each class meeting, as well as complete approximately one quiz per week. Outside of class, students are expected to analyze and define fifty terms each week. Additional material deals with complex etymologies, the history of our understanding of certain aspects of medical science, and relevant material from Greek and Latin texts.

# HUMANITIES & SOCIAL SCIENCES

## THE FICTION OF JAMES JOYCE (SPRING) \* *New Course* \*

*Monday / Wednesday, 3:35–4:35pm EST*

**Target Grade Level:** 11-12

**Teacher:** Aaron Lehman, Porter-Gaud, Charleston SC

**Prerequisite:** Recommended past or concurrent enrollment in either AP Language & Composition or AP Literature & Composition or the equivalent

James Joyce created the most beautiful literature of the Twentieth Century, prose that has thrilled and at times confounded readers for generations. Simply put, *Ulysses*, his 1922 masterpiece, changed the landscape for the novel as a whole. This course will unpack the mystery and loveliness of two Joyce novels, *A Portrait of the Artist as a Young Man* and *Ulysses*, giving students the close-reading tools to appreciate and make sense of Joyce’s particular literary power, to scale the edifice of *Ulysses* to see it for what it truly is: a marvel of stylistic achievement, a testament to the ways in which language shapes us as we shape it, and, at its core, a gorgeous love story and an exploration of the everyday heroism that we often overlook.

In particular, we will explore how Joyce tried to render the authentic human experience through language: how Joyce wanted literature to look and feel more like life than like “art,” how he wanted literature to mirror the texture of the actual thinking and feeling mind. To that end, while the course will give students an intensive look at arguably the greatest literary mind since Shakespeare, it will also have us—teacher and student alike—consider what it means to inhabit fully our hearts, minds, and selves in the modern world.

## FREEDOM AND IDENTITY IN LGBTQ LITERATURE (SPRING) \* *New Course* \*

*Tuesday / Friday, 12:15-1:15pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** none

**Instructor:** Jonathan Freeman-Coppadge, Severn School, Annapolis, MD

Individualism and liberty are at the heart of American culture. The Declaration of Independence guarantees Americans the right to the pursuit of happiness. And yet the history of LGBTQ people in America has been marked by restriction, discrimination, and even violence. In this course, we will study the rise of queer culture through the 20th and 21st centuries and consider LGBTQ people as a unique embodiment of our nation’s core tenets. What do pride parades have to teach us about what it means to be American? What lessons from the HIV/AIDS epidemic will be important for those living in the wake of the COVID-19 pandemic? We will study pioneers of culture and research, such as Oscar Wilde and Alfred Kinsey, James Baldwin and Lisa Diamond, Audre Lorde and Kimberlé Crenshaw, to discover what it means to define one’s own identity, even against the demands and expectations of society.

# HUMANITIES & SOCIAL SCIENCES

## GLOBAL VOICES OF OPPRESSION: LITERATURE FOR SOCIAL JUSTICE (FALL)

*\* New Course \**

*Wednesday / Friday, 3:35-4:35pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Linda Rodriguez, St. Andrew's Episcopal School, Jackson, MS

This semester seminar is designed as a survey of literature that focuses on expressions of oppression. From protest to processing, persecuted populations have created many mechanisms to give voice to their suffering. Books, memoirs, songs, short stories, and documentaries will all be used to discover the power of personal experience. Additionally, the class will explore the ways in which oppressed voices have been instruments in forcing positive social change throughout the 20th century.

## THE HISTORY OF MODERN GERMANY: WORLD WAR I TO THE PRESENT (SPRING) *\* New Course \**

*Tuesday / Friday, 8:30-9:30am EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Emily Philpott, St. Andrew's Episcopal School, Jackson, MS

Germany has played a major role in the global events of the past century. World War I was fueled by German aggression, and during the interwar period, the failures of the Weimar Republic and the Great Depression led to the rise of Hitler and the Nazi Party. At the end of World War II, a divided Germany became the center of the Cold War that lasted until reunification in 1990. Today, Germany remains at the forefront of many contemporary issues, such as immigration, environmental sustainability, and remembrance culture. In this course, students will investigate the last 100 years of history through a lens of Germany. Students will connect virtually with experts and eyewitnesses while developing a better understanding of the world as they encounter people and ideas that are different from their own.

This course was designed in partnership with the Transatlantic Outreach Program, and students will have access to the most recent scholarship and virtual experiences from within Germany. Founded in 2002, TOP seeks to be the leading provider of curriculum and experiences relevant to contemporary Germany and their partners include the Foreign Office of the Federal Republic of Germany, The Goethe-Institut, Deutsche Bank, the Robert Bosch Stiftung, and the Siemens Corporation.

### “IT IS BETTER TO SPEAK:” ONE HUNDRED YEARS OF WOMEN WRITING FOR CHANGE (SPRING) \* *New Course* \*

*Monday / Wednesday, 1:20-2:20pm EST*

**Target Grade Level:** 11-12 (occasional 10th, at the recommendation of home school administrator)

**Prerequisite:** None

**Instructor:** Ann Wheeler, University School of Nashville, Nashville, TN

In her poem “A Litany for Survival,” Audre Lorde writes, “when we speak we are afraid / our words will not be heard / nor welcomed / but when we are silent / we are still afraid / so it is better to speak.” In this course, we will read the words of women writing over the last century to highlight the injustices experienced by women in their societies and to envision a world in which women could find a more equitable place. Recognizing the intersectional nature of women’s experience, we will be sure to read work by women from different backgrounds, paying attention to the way that factors such as sexual orientation, economic class, ethnic identity or religious affiliation may distinguish one woman’s experience from another’s. We will begin with foundational nonfiction texts such as Virginia Woolf’s *A Room of One’s Own* and Alice Walker’s “In Search of Our Mother’s Gardens,” then move on to fiction, poetry and plays by writers such as Zora Neale Hurston, Tsitsi Dangaremba, Isak Dinesen, Gwendolyn Brooks, Adrienne Rich, Audre Lord, Muriel Rukeyser, Margaret Atwood, Joy Harjo, Carol Ann Duffy, Caryl Churchill, Maxine Hong Kingston, Gish Jen and Octavia Butler.

In response to their reading, students will have the opportunity to write not only expository essays analyzing the texts that we read, but also personal essays founded in their own experiences. Interested students may also choose to explore the possibilities of creative expression by writing their own poems or short stories.

# HUMANITIES & SOCIAL SCIENCES

## MAKING ETHICAL MEDICAL CHOICES IN A DIVERSE WORLD (FALL)

*Tuesday / Thursday, 3:35-4:35pm EST*

**Target Grade Level:** 11-12 (occasional 10th, at the recommendation of home school administrator)

**Prerequisite:** None

**Instructors:** Ellen Johnson, Ph.D., Wilmington Friends School, Wilmington, DE  
Joyce Lazier, Canterbury School, Ft. Wayne, IN

The objective of this course is to provide students with the tools and experience necessary to better make difficult, ethical decisions. In order to achieve this, we will study and evaluate critically several different ethical theories including Utilitarianism, Virtue Ethics, and Deontology. Which framework students choose to use as their guide is up to them, but by the end of this course they should be able to defend their choices and ethical decisions clearly. The course strives to develop a cross conversation between two academic disciplines - philosophy (ethics) and biology (medical research, molecular genetics).

This is a collaborative teaching effort between Joyce Lazier (background in philosophy and ethics) and Ellen Johnson (background in biology and genetics), and an evolution of two previously existing courses. Both teachers will be present for all classes, focusing on the growth that comes from a shared discourse.

## A NATION DIVIDED: THE LITERATURE OF CIVIL RIGHTS IN THE MODERN US (SPRING)

*Wednesday / Friday, 3:35-4:35 pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Linda Rodriguez, St. Andrews Episcopal School, Ridgeland, MS

The story of equality in America is a tale of achingly slow but steady progress. From the Civil War to the present day, the path toward equal rights has never been direct or secure. This semester course is designed as an interdisciplinary exploration of the quest for civil rights throughout the 19th and 20th centuries as it relates to African Americans, women, Native Americans, Asian Americans, migrant workers and the LGBTQ community. Special focus will be given to the indelible role that the deep South played in the struggle. Students will work with various texts including Supreme Court Cases, memoir, essays, poetry, short fiction, and primary source documents. Additionally, students will design and implement their own oral history projects as a culmination to the class.

## NATIVE AMERICAN LITERATURE (SPRING 2023)

*Alternating Year Offering*

*Tuesday / Friday, 2:30-3:30pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Joseph Addison, Hopkins School, New Haven, CT

To read Native American literature is to engage in decolonization. This course opens with a look at historical, political, and legal documents before shifting to novels, short stories, and poetry that focus on reservation life and Native urbanity. Our representative authors—Diaz, Erdrich, FastHorse, Nagle, Orange, and Silko—craft metafictional and metahistorical stories that tear down American exceptionalism and celebrate the truth that Native Americans “are still here.”

## ORWELL'S EXIGENCE: WRITING FOR AN URGENT MOMENT (FALL)

*\* New Course \**

*Monday / Wednesday, 11:05am-12:05pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** AP Language and Composition, or an equivalent writing class, strongly recommended

**Instructor:** Matt Low Ph.D., Brownell Talbot School, Omaha, NE

“As I write, highly civilized human beings are flying overhead, trying to kill me.” No writer was more effective than George Orwell in transforming a moment of social or existential crisis into an occasion for writing. Most students only encounter Orwell through his deeply allegorical novella *Animal Farm* (1945) or his prescient dystopian novel *1984* (1949), and thus he often carries the image of an author writing around, but not directly about, his moment in history. Yet, prior to these late-career works for which he is best known, Orwell was first and foremost a chronicler of the conflicts and controversies of the first half of the 20th century, as both a journalist and an essayist. This class will pose Orwell as the most incisive and insightful writer of prose in the English language by focusing on his short- and long-form nonfiction, including his ethnographies of poverty (*Down and Out in Paris and London*, 1933), exploited labor (*The Road to Wigan Pier*, 1937), and fascism (*Homage to Catalonia*, 1938). Using Orwell as paradigm for writing rooted in lived experience, this course sets its sights on mastering the craft of prose in a variety of forms, including traditional journalism, personal reflection, creative nonfiction, and critical analysis.



# HUMANITIES & SOCIAL SCIENCES

## PHILOSOPHY IN POP CULTURE (SPRING)

*Tuesday / Thursday, 1:20-2:20pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None, but some familiarity/experience with logic helpful

**Notes:** Netflix subscription required

**Instructor:** Joyce Lazier, Canterbury School, Ft. Wayne, IN

Have you ever had a realistic dream that you were sure was true and then work up confused? How do you know that you are not in the Matrix? What is real and what is not? This course will investigate the nature of existence. It will combine classic philosophic works, like Descartes, with contemporary movies like The Matrix and Inception, to contemplate what it is to exist and what the meaning of life is or should be.

## POLITICAL IDENTITY, AMERICAN DEMOCRACY, AND CIVIC ENGAGEMENT (FALL)

*Monday / Wednesday, 1:20-2:20 pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Instructor:** Geoff Wagg, Waynflete School, Portland, ME

Political Identity, American Democracy, and Civic Engagement is a study of our political beliefs and behaviors, the American form of Democracy, and what it means to be an engaged citizen. Students will learn how individual citizens form a political identity and how those identities form the foundation of U.S. political culture. We will look at the unique form of government found in the United States and have an opportunity to get involved with contemporary politics in an election year. We will pay particular attention to federalism, the separation of powers, and checks and balances.

The course takes advantage of the broad geographic diversity inherent in the Malone School Online Network to experience how political ideology and perspectives on democracy differ in various parts of the country. In this course, special emphasis will be placed on engaging in respectful conversation across the political divide.

# HUMANITIES & SOCIAL SCIENCES

## POSITIVE PSYCHOLOGY (FALL AND SPRING)

*Tuesday / Thursday, 1:20-2:20pm EST*

**Target Grade Level:** 10-12

**Prerequisite:** None

**Instructor:** Stephanie Hogan, Waynflete School, Portland, ME

This course begins by providing a historical context of positive psychology within broader psychological research and helps explain why the field is of particular importance to those in a high school or college setting. Students will be introduced to the primary components and related functions of the brain in order to understand the biological foundation of our emotional experiences. Current research will be used to develop a broader sense of what positive psychology is and is not, and how it can be applied in students' own lives. Additionally, students will gain an understanding of basic research methods and their application to the science of psychology. This course will require substantial reading (sometimes on par with 100 level college courses) and writing. Students will be asked to reflect regularly on their individual experiences in order to integrate course material into their daily lives. One of the key learning outcomes is to have each participant identify his or her own strengths while simultaneously recognizing and respecting the attributes others bring to the course.

## SUGAR, TOBACCO, IRON AND SILICON: AN ECONOMIC HISTORY OF THE UNITED STATES (FALL 2022)

*Alternating Year Offering*

*Wednesday / Friday, 2:30-3:30pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** None

**Notes:** Reading a national newspaper is recommended

**Instructor:** Benson Hawk, Newark Academy, Newark, NJ

By 1871, the United States had emerged as the world's largest economy and was well on its way to achieving dominance across a number of fields, including manufacturing. Is it an accident that this growth occurred so soon after the Civil War? What linkage does it have to the end of slavery? And why is it, so close to this date, that America become what many referred to as "the Imperial Republic?"

Students in this course will be deeply engaged with examining the causes and consequences of the US's rise to global economic dominance over the past 150 years. They will critically analyze key primary texts as they explore relevant historical content and methodologies. Additionally, students will be taught how to use introductory micro and macroeconomic analysis, including the use of supply and demand and aggregate supply and aggregate demand graphs. Texts used in the course include Sidney Mintz's *Sweetness and Power* (1986) and Scott Nations' *A History of the United States in Five Crashes* (2017).

## THINK GLOBAL, DEBATE LOCAL (FALL)

*Tuesday / Thursday 4:40–5:40 pm EST*

**Target Grade Level:** 10-12

**Prerequisite:** None

**Instructor:** Dan Jacobs, Roeper School, Bloomfield Hills, MI

Water justice. Gentrification. Housing. Education. Race Relations. Public Safety. Environmental Issues. Is it wrong to shut off water service to households that are delinquent on their water bills? Is access to affordable housing a human right? Should environmental issues take priority over the needs of businesses? Do we have an obligation to help asylum seekers? People all around the world struggle with these and other challenges. In Think Global, Debate Local, we use issues in our own neighborhoods to take deep dives into the facts and philosophies underlying the challenges, values, and perspectives that shape our world on scales ranging from the personal to the global.

The overarching goal of this course is for students to teach each other about important topics in their own neighborhoods, towns, states, and regions, and to use debate as a tool to examine the perspectives surrounding those topics. Other goals include achieving a better understanding of complex issues by taking on and arguing for the viewpoints of various stakeholders; discovering ways to shift from an adversarial to a cooperative relationship when disagreements arise; and understanding the ways different values can be used as filters through which a given issue can be viewed. Please note that this course is geared toward beginning debaters with an emphasis on basic argumentation, not competition, although more experienced debaters are welcome.

## TURBULENT TIMES: HISTORY OF THE FIRST AMENDMENT AND DISSENT DURING AMERICAN WARS (FALL) \* *New Course* \*

*Tuesday/Friday 8:30–9:30am EST*

**Target Grade Level:** 11-12

**Prerequisite:** AP US History or equivalent suggested

**Instructor:** Dr. John French, Prairie School, Racine, WI

Benjamin Franklin once said that “They that can give up essential liberty to obtain a little temporary safety deserve neither safety nor liberty.” An oft-cited quotation by champions of American civil liberties protections and anti-war activists, Franklin’s passage illustrates how dilemmas regarding the balance between free speech and national security have tested and often perplexed American politicians, courts, and citizens since the inception of the country. During wars the government reserves the right to draft men into the armed services, confiscate the property of individual citizens, set prices, ration food and fuel, and drastically increase taxes. Viewing them through the prism of the nation’s existential crisis, most citizens accept these compromises on their liberty. Ben Franklin, however, lived in a premodern world devoid of anthrax, drones, Internet communication, and long-range nuclear weapons. The Founding Fathers could not have foreseen the awesome power nor puissant pressure of commanders-in-chief who, obligated to protect the lives of millions, regularly criticize dissenters. And thus, lines must be drawn between civil liberties and national security - but where?

Through reading, discussing, and critically analyzing primary and secondary sources from each American war (from the Revolutionary War through the War on Terror), students will emerge with a better understanding of American wars, their dissenters, and the meaning of freedom under its most intense stress tests.

## WATCHING THE WATCHMEN: THE ROLE OF DETECTIVE NARRATIVES IN A CARCERAL CULTURE (FALL) \* *New Course* \*

*Monday / Wednesday, 8:30-9:30am EST*

**Target Grade Level:** 12

**Prerequisite:** None

**Instructor:** Jason Zencka, Manlius Pebble Hill School, Syracuse, NY

Writing about the hard-boiled detective novel he helped to invent, Raymond Chandler wrote, “Down these mean streets a man must go who is not himself mean...” This course investigates the cynicism and grittiness of detectives in relation to national incarceration rates. Is this relationship coincidental, or does our national fixation with hero detectives, warrior cops, and batmen suggest something more complex at work? Students in this class will examine portrayals of crime and crime fighting in fiction and film as a way of interrogating our national culture’s understanding of itself in relation to crime and policing.

## ADVANCED APPLIED MATH THROUGH FINANCE (SPRING 2022)

*Alternating Year Offering*

*Monday / Thursday, 10:00–11:00am EST*

**Target Grade Level:** 11-12

**Prerequisite:** Completion of Algebra II

**Instructor:** Julien Meyer, Severn School, Severna Park, MD

This one-semester course will provide students a mathematical and conceptual framework with which to make important personal financial decisions using algebraic tools. Specifically, the class will investigate i) the time value of money (i.e., interest rates, compounding, saving and borrowing) using exponential functions; and ii) the characteristics and risk/reward tradeoff of different financial instruments/investments, such as stocks, bonds and mutual funds, using algebra, probability and statistics. Other financial algebra topics selected with student input may include financial accounting, depreciation methods and foreign currency exchange.

The course will stress use of the TI-83/84 calculator, Excel spreadsheets and iPad apps. Students should be comfortable with exponential growth models and, preferably, the concept of the number  $e$  for continuous compounding. They should be willing to exhibit an interest in mathematical reasoning and display a hefty dose of curiosity about the language and problem-solving nature of personal finance.

## ADVANCED TOPICS IN CHEMISTRY (SPRING)

*Monday / Thursday, 2:30–3:30pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Chemistry

**Instructor:** Jocelyn Rodgers, Ph.D., Maret School, Washington, DC

This semester course explores aspects of chemistry that are often skimmed over or omitted in most chemistry courses—chemical applications and the history of chemistry. Real-world applications abound in areas such as nuclear, medical, atmospheric, industrial, food, water, and consumer product chemistry. We will begin with an exploration of energy sources such as nuclear power, solar power, and lithium ion batteries. We will then explore computing—both the properties of the elements that power the computers we use every day as well as computational techniques that have revolutionized the ability of scientists and students to visualize and understand chemical processes at a molecular level.

Throughout the semester, we also explore the history and life events of scientists who discovered the chemical elements and have impacted the history of the world through chemistry. In independent projects, students will explore the periodic table for daily applications and technologies, from cell phones to photovoltaic cells to medical treatments. This course will be heavy in applications and theory, with less of the traditional problem-solving found in other courses.

## COMPUTER SCIENCE: SOLVING PROBLEMS WITH COMPUTATIONAL METHODS (SPRING) \* *New Course* \*

*Tuesday / Thursday, 11:05-12:05pm EST*

**Target Grade Level:** 10-12 (Students must have maturity and time management to succeed in a project-based, independent course.)

**Prerequisite:** None

**Notes:** Students will need access to a laptop and other devices and equipment, up to about \$100.

**Instructor:** Page Lennig, Waynflete School, Portland, ME

This project-based course will teach computational thinking skills through problem solving in computer science. Students will choose real projects based on their interests in the arts, humanities, STEM, and the world around them and then leverage the power of computer science to approach them. For example, students might design a website to bring attention to an issue in their communities, create a game that addresses a real-world issue, draw on big data to answer an environmental or historical question, compose music through code, or code a 3D scene in virtual reality to convey an emotion.

For each project, students will break down a problem into pieces, build a sequence of steps to solve the problem, and translate those steps into a digital or technological solution. Students will work independently as well as collaboratively in groups, give one another feedback, and discuss/debate ethical questions related to current topics in computer science and the world. The course is suited for students who wish to gain exposure to computational methods, coding, and other tools of computer science and those who wish to take their skills in these areas to a new level and apply them.

## CSI: MSON – FORENSIC SCIENCE (SPRING)

*Tuesday / Thursday, 1:20–2:20pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Completion or concurrent enrollment in Chemistry or Biology and Algebra II

**Notes:** Lab kit required (sent by teacher)

**Instructor:** Carrie Lopez, Trinity Preparatory Day School, Winter Park, FL

This course is designed for those interested in learning the discipline of forensic science and crime scene investigation. Students will be introduced to some of the specialized fields of forensic science and topics will include blood spatter and pattern analysis, death, ballistics, trace and glass evidence, toxicology, entomology, anthropology, serology, and DNA fingerprinting. Students will explore the forensic analysis of substances such as glass, soil, hair, bullets, gun powder, blood and drugs. This class includes a mixture of laboratory experiments, demonstrations, and speakers who are experts in the field.

## DATA STRUCTURES AND DESIGN PATTERNS (YEAR)

*Monday / Thursday, 4:40-5:40pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** AP Computer Science A or equivalent experience with the Java programming language

**Notes:** Laptop required

**Instructor:** J.D. DeVaughn-Brown, Chadwick School, Palos Verdes, CA

This course is a yearlong course that will give advanced students the strong foundation needed to build complex applications using object-oriented principles and the skills needed to gain a top-level internship at a tech firm. This course covers the design and implementation of data structures including arrays, stacks, queues, linked lists, binary trees, heaps, balanced trees (e.g. AVL-trees) and graphs. The course will also serve as an introduction to software design patterns. Each pattern represents a best practice solution to a software problem in a specific context. The course covers the rationale and benefits of object-oriented software design patterns. Numerous problems will be studied to investigate the implementation of good design patterns. Students will receive assistance in crafting an effective resume and go through sample interview questions.

## EINSTEIN'S RELATIVITY AND THE EVOLUTION OF THE QUANTUM MODEL (FALL)

*Tuesday / Friday, 2:30-3:30pm EST*

**Target Grade Level:** 11-12

**Prerequisites:** Physics or AP Physics 1; Co-requisite: AP Calculus AB

**Instructor:** Ben Taylor, Hopkins School, New Haven, CT

This is a mathematically rigorous course in which students study contemporary physics. The course begins with Einstein's theory of relativity, and then takes on a chronological exploration of the development of quantum mechanics. Time travel, quantum tunneling, and the acceptance of seemingly impossible dualities mark highlights of this course.

## GENETICS AND GENOMICS (FALL)

*Wednesday / Friday, 12:15-1:15pm EST*

**Target Grade Level:** 11-12

**Prerequisites:** Chemistry and Biology; AP Biology strongly recommended

**Notes:** Laptop required

**Instructor:** Audrey Yeager, Manlius Pebble Hill School, Syracuse, NY

This course will emphasize classic Mendelian genetics, molecular genetics, and population and evolutionary genetics. The topics include structure and function of genes (and the genome), biological variation, and regulation of gene expression. Subsequently, the course will explore current genome analysis methods, and genome manipulation technologies such as CRISPR. We will also discuss the implication of our use of this information in society. Topics include recombinant DNA technology, mathematical models and statistical methods for data analysis. Papers from the current and classic literature will supplement lecture materials.

## INTRODUCTION TO ORGANIC CHEMISTRY (FALL)

*Monday / Thursday, 2:30-3:30pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Chemistry

**Instructor:** Jocelyn Rodgers, Ph.D., Maret School, Washington, DC

This semester course will provide useful background information in organic chemistry by covering topics not typically found in high school chemistry courses. The course will give insight into the importance of the chemistry of carbon compounds to our daily lives. Topics covered will include organic nomenclature, structural formulas, stereochemistry, bonding, reaction mechanisms, and chemical transformations of functional groups. Completion of the course should make students more confident in their chemical background when entering college biology or chemistry courses.



## LINEAR ALGEBRA (FALL) \* *New Course* \*

*Wednesday / Friday, 12:15-1:15pm EST*

**Target Grade Level:** 11-12

**Teacher:** Jon Gray, Indian Springs School, Indian Springs Village AL

**Prerequisite:** Calculus BC

A standard treatment of linear algebra as presented to university-level science and engineering majors. Course topics will include row-reduction, matrix equations, linear transformations, matrix operations, invertibility, subspaces of Euclidean space, dimension, rank, determinants (elementary product definition, expansion by minors, and row-reduction), vector spaces, null and column spaces, linear independence, bases, change of basis, eigen-theory, algebraic and geometric multiplicity, diagonalization, inner product, length, orthogonality, orthogonal sets, projections, the Gram-Schmidt process, QR-factorization, and the method least-squares. Basic programming in Python will be introduced and used to reinforce concepts and speed-up some of the more mundane computations characteristic of Linear Algebra. Regular problem sets will allow the students to practice and master the techniques introduced in class. Topic mastery will be exhibited through written and oral exams and group projects. Prior programming experience is not expected.

## A MATHEMATICAL MODELING APPROACH TO SOCIAL JUSTICE (SPRING)

*Tuesday / Thursday, 4:40–5:40pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** Precalculus (prior or concurrent)

**Instructor:** Jay Noland, Mounds Park Academy, St. Paul, MN

The main purpose of this course is an introduction to mathematical modeling through graphical, numerical, symbolic, and verbal techniques. We will focus on data from and explore social justice issues such as the Wealth Gap, Achievement Gap, Climate Change and others. We will use elementary functions (polynomial, exponential, logarithmic, etc.) to build models and address questions with the goal of developing scientific reasoning and problem-solving skills. Students will also use technology in a range of ways to effectively communicate their hypotheses and conclusions.

## MATH SEMINAR (FALL) \* *New Course* \*

*Time: TBD. This course may meet on a modified MSON schedule.*

**Notes:** This course has limited enrollment

**Target Grade Level:** 10-12

**Prerequisite:** BC Calculus; Linear Algebra and/or Multivariable Calculus recommended (prior or concurrent). Placement process may be required.

**Instructor:** Dr. Josh Zelinsky, Hopkins School, New Haven, CT

This course is designed for those students who have successfully completed Linear Algebra and Multivariable Calculus (in MSON or outside). The college-level topics are chosen according to the interests of the students and the instructor and may include subjects such as Differential Equations, Dynamical Systems and Chaos, Number Theory, Complex Analysis, Topology, Combinatorics, or the History of Mathematics. Faithful to the idea of a seminar, the course requires students to be responsible for much of the mathematical inquiry. They may be expected to write papers, give presentations, create class investigations, solve problem sets, and lead class discussions.

## MATH SEMINAR (SPRING) \* *New Course* \*

*Time: TBD. This course may meet on a modified MSON schedule.*

**Notes:** This course has limited enrollment

**Target Grade Level:** 10-12

**Prerequisite:** Enrollment in Math Seminar (Fall)

**Instructor:** Dr. Josh Zelinsky, Hopkins School, New Haven, CT

This course is designed for those students who have successfully completed Linear Algebra and Multivariable Calculus (in MSON or outside). The college-level topics are chosen according to the interests of the students and the instructor and may include subjects such as Differential Equations, Dynamical Systems and Chaos, Number Theory, Complex Analysis, Topology, Combinatorics, or the History of Mathematics. Faithful to the idea of a seminar, the course requires students to be responsible for much of the mathematical inquiry. They may be expected to write papers, give presentations, create class investigations, solve problem sets, and lead class discussions. Students may not enroll for Spring without enrolling in Fall.

## MULTIVARIABLE CALCULUS (YEAR)

*Monday / Wednesday, 2:30-3:30 pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** BC Calculus or equivalent

**Notes:** Laptop required

**Instructors:** Rene Van Lingen, Stanford Online High School, Stanford, CA

The mathematics of three dimensions is the emphasis of this college-level course. Multivariable Calculus will explore the geometry of three-dimensional space, including vector arithmetic. It will also explore three-dimensional surfaces, using the tools of derivatives and integrals expanded into multiple dimensions. A robust unit on differential equations will allow students to review the topics of single-variable calculus. The emphasis throughout the course will be on problem-solving and on real-world applications of the tools students learn in fields such as economics, astronomy, physics, engineering, and medicine.

## VECTOR CALCULUS (SPRING) \* *New Course* \*

*Wednesday / Friday, 12:15-1:15 pm EST*

**Target Grade Level:** 11-12

**Prerequisite:** BC Calc (LinAlg preferred)

**Instructor:** Jon Gray, Indian Springs School, Indian Springs Village AL

An accelerated approach to vector calculus intended for future math, physics, and CS majors. Course topics include generalized vectors, functions of several variables and partial derivatives, the gradient, optimization including gradient descent, potential functions and conservative vector fields, line integrals, double and triple integrals, cylindrical and spherical coordinate systems, surface area, divergence and curl, Greens Theorem and Stokes Theorem, and general change of coordinates. Time-permitting, differential forms will be introduced.

MSON