

# Manlius Pebble Hill School

## **Upper School Course Descriptions 2025 – 2026**



## UPPER SCHOOL PROGRAM INFORMATION

- Students must be enrolled in six classes each semester.
- Five essential academic courses are required each semester.
- An essential academic course is defined as a course that:
  - has a system of formal assessments, and
  - has regular and consistent assignments that are completed outside of class.
- Students in Grades 10 – 12 may be enrolled in a maximum of 8 classes each semester with permission from the Head of Upper School.
- Students in Grade 9 may be enrolled in a maximum of 7 classes in the first semester and 8 classes, with permission from the Head of Upper School, in the second semester.
- Students may enroll in a maximum of 3 Advanced Placement or Advanced Studies courses in a semester.
- Permission from the Head of Upper School or Coordinator of Studies is required to enroll in more than 3 Advanced Placement or Advanced Studies courses in a semester.
- Continuous enrollment in Core Health Physical Education and English is required in each semester for four years.
- A Senior Capstone must be completed by the end of senior year.

## GRADUATION CREDITS REQUIRED

- Graduation credits earned begin in 9<sup>th</sup> grade, even when advanced in Mathematics and World Language.
- A total of 28 credits are required for graduation.

Department	Required Credits
Core Health Physical Education (each semester)	4 credits
English (each semester)	4 credits
History (including 1 credit of U.S. History)	3 credits
Mathematics (including Algebra, Geometry, Algebra 2/Trigonometry)	3 credits
Science (including Biology, Chemistry, Physics)	3 credits
World Language (three years of the same language to Intermediate level)	3 credits
Visual and Performing Arts	1 credit
Computer Technology	0.5 credit
Core Health Wellness	0.5 credit
Senior Capstone Seminar	0.5 credit
Electives	5.5 credits
<b>Total</b>	<b>28 credits</b>

# Advanced Coursework at MPH

In February 2022, MPH announced its transition beyond Advanced Placement (AP) courses and toward an advanced independent curriculum. That transition is now complete. Here are a few important points to keep in mind:

- Courses that carry the “AS” designation (for Advanced Studies) are MPH’s most challenging, college-level courses that are not AP courses.
- Some departments have courses categorized as “advanced” because they are part of a progression of courses or require additional preparation to enroll in them. Only courses with the AS prefix are Advanced Studies courses.
- AS courses require independence, maturity, motivation, and skills beyond the expectations for most MPH courses.

These are the designated AS courses for 2025-2026, several of which are new for next year, and the departments that offer them:

- AS American Ghosts (English, first semester)
- AS Literature of Dungeons & Dragons (English, first semester)
- AS Angry Books: Literature of Protest (English, second semester)
- AS World History (History, full year)
- AS The American Experience (History, full year)
- AS Philosophy and Ethics in the Modern World (History, first semester)
- AS Model United Nations (History, first semester)
- AS Imagining the Unimaginable: A Critical History of Genocide (History, second semester)
- AS Pre-Calculus (Mathematics, full year)
- AS Calculus 1 (Mathematics, full year)
- AS Calculus 2 (Mathematics, full year)
- AS Statistics (Mathematics, full year)
- AS Biology (Science, full year)
- AS Physics: Mechanics (Science, full year)
- AS Chemistry I: Intro. to Organic and Biochemistry (Science, first semester)
- AS Chemistry II: Math-Intensive Inorganic Chemistry (Science, second semester)
- AS Twentieth-Century Spanish Literature (World Language, full year)
- AS French Art and Architecture (World Language, full year)
- AS Vergil and Caesar: The Literature of Empire (World Language, full year)

Additional information about this transition is available under the Academics tab of the MPH website. Visit <https://www.mphschool.org/ap-transition/>.

# Computer Technology

## Courses for Graduation Credit

### First Semester

#### **Introduction to Programming**

Through a series of hands-on projects, you'll learn the fundamental building blocks of programming, the essential skills that power everything from games to websites. You'll tackle challenges, build projects, and gain a deep understanding of how code translates into real-world applications. The course also examines the way in which programmers approach solving problems and how that can be applied to other areas of your life. By the end of the course, you'll be comfortable writing basic programs and possess the skills to tackle more complex problems in the future.

#### **Artificial Intelligence: A Human Perspective**

This introductory course invites students from diverse academic backgrounds—including arts, humanities, and sciences—to explore artificial intelligence in an approachable, engaging way. Rather than emphasizing technical details, the course highlights the historical evolution of AI, its current capabilities, and its profound societal, ethical, and creative impacts. Through hands-on projects, and thoughtful Socratic discussions, students critically examine AI's role in daily life, grapple with questions of fairness, bias, and misinformation, and develop informed perspectives on how AI is shaping the future. By fostering critical thinking, creativity, and responsible citizenship, the class ensures that all students leave with the literacy and confidence to participate meaningfully in an AI-powered world.

#### **The Psychology of Algorithms**

This course delves into the intriguing intersection of psychology and algorithms. We'll explore how these sets of instructions, shaping everything from social media to search engines, influence our thoughts, behaviors, and even our brains. Through lectures, discussions, and activities, we'll uncover the mechanics of algorithms, their impact on human cognition, and the ethical considerations surrounding their use in the age of artificial intelligence.

#### **Introduction to Robotics**

This introductory course offers an exciting journey into the world of robotics, providing students with hands-on programming experience using Python with AI coding assistance (GitHub Copilot). Students will learn fundamental robotics concepts—such as sensors, actuators, and control systems—through engaging projects like line-following, obstacle avoidance, and mapping within simulated environments. Students will examine real-world autonomous systems, including home robots, advanced vehicles such as Waymo and Tesla autonomous cars, and planetary explorers like NASA's Mars rovers. Students will critically analyze how robotics technologies influence society, the ethical considerations of robotic integration into daily life, and the transformative implications of humanoid robots increasingly entering the workforce. By combining technical skills with discussions on robotics' societal impacts, students will emerge well-prepared to understand and thoughtfully engage with our increasingly technologically driven world.

## **Second Semester**

### **Video Game Design**

This course builds upon previous coding experience to introduce the world of game design. Through a series of fun and interactive projects, you'll learn the fundamental skills needed to make your very own video games. You'll code your way through creating small games, tackling coding challenges, and analyzing existing games to see what makes them work. By the end of this course, you'll be well on your way to bringing your creative game concepts to life.

### **Artificial Intelligence: A Human Perspective**

This introductory course invites students from diverse academic backgrounds—including arts, humanities, and sciences—to explore artificial intelligence in an approachable, engaging way. Rather than emphasizing technical details, the course highlights the historical evolution of AI, its current capabilities, and its profound societal, ethical, and creative impacts. Through hands-on projects, and thoughtful Socratic discussions, students critically examine AI's role in daily life, grapple with questions of fairness, bias, and misinformation, and develop informed perspectives on how AI is shaping the future. By fostering critical thinking, creativity, and responsible citizenship, the class ensures that all students leave with the literacy and confidence to participate meaningfully in an AI-powered world.

### **Artificial Intelligence: Models, Minds, and Machines**

This course is designed for students with a strong interest in technology, science, mathematics, or programming, offering an exploration of artificial intelligence through both theoretical understanding and practical application. Students will learn fundamental AI concepts, dive into the inner workings of artificial neural networks, and build and train their own simple models, culminating in the creation of a fully functional handwritten digit classifier in Python (with support from AI coding tools). Alongside technical skill-building, the course integrates essential discussions on the ethical, historical, societal, and future implications of AI. Students will critically engage with real-world scenarios, debating how we want AI technology to ethically and responsibly shape our future. This course blends rigorous technical training with thoughtful reflection, preparing students to become knowledgeable creators and informed critics of AI technology.

### **Electronics in Action: Building Interactive Programs**

This hands-on course will introduce you to the exciting world of electronics by building interactive projects using the Raspberry Pi and Raspberry Pico. You'll learn the foundational concepts like voltage, current, resistance and how to use breadboards and soldering tools to build circuits. The Raspberry Pi Pico, a small and powerful microcontroller, makes electronics projects accessible and will allow you to control a wide range of electronic components and express your creativity.

# Core Health

At Manlius Pebble Hill, our students' health, safety, and well-being is our priority. Instruction on health and wellness is rooted in the interactions of the various components of each individual's life: social, emotional, physical, functional, and intellectual. In these course offerings, and across our academic curriculum and co-curricular programming such as Advisory, students learn about and reflect on the many factors that influence their health and wellness, including behavior, environment, relationships, decision making, critical thinking skills, and knowledge based on current research.

*There are two components to the Core Health graduation requirement: the one-semester Core Health Wellness course that is taken by tenth graders, and the four-credit physical education requirement, which may be fulfilled in a variety of ways described below.*

## **Core Health Wellness (Grade 10)**

This course emphasizes the consequences, both positive and negative, of personal choices, decisions, and behaviors. Students learn about the impacts of controllable factors on long-term health and wellness, and they improve their understanding of the external influences on their ideas and opinions. The study of nutrition, exercise, sleep, hydration, reproductive health (including discussion and activities related to contraceptive methods and abstinence), stress management, and healthy relationships form the core of the course. As the course progresses, students gain an appreciation of how the health of the mind, body, and spirit reinforce one another. On occasion, speakers from health-related community agencies present to and facilitate the class. Students acquire CPR/AED certification through this course. The semester this course is taken is determined when schedules are created.

## **Upper School Physical Education**

The Core Health Department's main point of emphasis is to instill healthy, lifelong fitness and wellness habits in our students. The department is committed to providing the knowledge and tools necessary for all of our students to become lifelong learners in physical fitness practices while finding physical activities that are not only age-appropriate, but also ones that they actually enjoy performing and can regularly participate in well beyond graduation.

The Core Health Department wants to ensure that all Upper School students have the chance to participate in activities that interest them as well as learning about the science behind and benefits of physical fitness. The school offers a range of physical education options for students to choose from in order to obtain the proper Physical Education credits that are required for graduation. Students can choose from a wide variety of sports, classes, or participate in a dance elective. In addition, students have the choice to do a combination of these options to meet the proper credit requirements.

### **Graduation Requirement**

Each student is required to complete one credit per year, for a total of four credits, by graduation. Students have several options to meet this criterion during each academic year.

## Options for Graduation Credit

### **Participate on Two Athletic Teams**

MPH's athletic teams participate in Section III of the New York State Public High School Athletic Association (NYSPHSAA). The following NYSPHSAA sports are offered at MPH: boys basketball, boys and girls cross country, boys and girls soccer, boys and girls tennis, boys and girls track and field, boys and girls golf, boys and girls alpine skiing and girls volleyball. In addition, we combine with other schools to offer boys baseball, and girls softball.

### **Participate in Dance**

Students may take dance for an entire school year or for one semester when combined with another option. Dance can satisfy either the Physical Education requirement or the Visual and Performing Arts requirement, not both concurrently.

### **Participate in Fitness Activities Outside of MPH**

Students can choose to pursue a dedicated and supervised physical activity or multiple activities of their choice outside of school. Examples of previous independent studies include gymnastics, martial arts, figure skating, swimming, and rock climbing. Students in grades 10 to 12 who do not participate in these activities can work with the Upper School Physical Education advisor to create a plan for their own fitness.

### **Participate in Physical Education Courses**

Both fall and spring semesters offer classes in Physical Education: Explorations in Fitness, Introduction to Strength Training, and Intermediate Strength Training. See the course descriptions below for more details.

**Participate in a combination of two of the options described above, e.g., one sport and a semester course.**

## Physical Education Courses

### **First and Second Semester**

#### **Explorations in Fitness**

This class is designed to educate students on the various opportunities to achieve physical fitness in regular life. We will be exploring outdoor activities, group exercise at local fitness locations, yoga and various recreational activities that offer improvements to physical and mental health. We will also get to know the Manlius Pebble Hill weight room and all it has to offer as well as creating routines and consistency to maintain physical activities in our lives going forward. This is a great option for those students who do not participate in a sports team or a physical activity outside of school.

#### **Strength Training**

Throughout this course students establish their fitness level, set goals, and design their own resistance training program. We will study muscular anatomy and learn specific exercises to strengthen each muscle or muscle group. Students focus on proper form and technique while training, and they will record their progress throughout the semester. Students will be introduced to topics such as proper nutrition for muscle building, stretching and flexibility, and weight room safety. In addition, students will learn proper spotting, lifting, and warm up routines and focus on the importance of goal setting while creating individualized workouts. Students will learn to navigate the weight room with confidence.

# English

English classes at MPH combine seminar discussions, group collaborations, independent in-class writing, quiet reflection, and other sorts of experiences that allow students to explore literature creatively and analytically. Through survey courses, electives, and Advanced Studies offerings, Upper School students explore a culturally diverse range of fiction, nonfiction, drama, and poetry, as well as journalism, art, film, and music. Our students assume increasing responsibility for their learning as they design projects, work collaboratively, evaluate their work, and reflect on the connections between classroom experiences and their own lives. The English Department provides additional learning opportunities through *the Pebble*, MPH's student news and culture magazine. Students must be continuously enrolled in an English class through all of their semesters in the Upper School.

Students are eligible to enroll in Advanced Studies (AS) English courses when they have maintained an A- average in the first semester of their current English class. Students who do not meet the criteria but are highly motivated to enroll in an AS course must complete a writing prompt in addition to achieving an A- in the subsequent grading period to demonstrate their readiness.

## Courses for Graduation Credit

### Full-Year

#### **World Literature 9**

World Literature 9 builds a foundation of content and skills essential to all US English courses. In this course, students practice and refine writing and critical thinking skills such as generating thesis statements, integrating and analyzing quotes to support an argument, organizing paragraphs, and establishing coherence and unity throughout an essay. Students engage in frequent collaborative discussions that emphasize identity and encourage students to develop empathy. A wide range of ancient and modern texts serve as the content and context for developing these skills. Recent major texts include *The Odyssey*, *Brave New World*, *Persepolis*, *Romeo and Juliet*, and *The Bluest Eye*. Throughout the year, additional readings in poetry, fiction, and nonfiction serve as supplements, including but not limited to short stories from Latin America, the United States, and Europe in the magical realism genre. This combination of readings induces students to appreciate and examine long-held ideas about character and culture, and to explore how the individual can find meaning within a larger world.

#### **World Literature 10**

In tenth grade, students encounter voices from around the world, as well as ones often left out of the canon of American and English literature, in modern short fiction, novels, plays, poetry, and essays. Some of the book length readings may include *The Arabian Nights*, *Medea*, *Macbeth*, *Oedipus Rex*, *Like Water for Chocolate*, *Frankenstein*, *Night*, and *The Glass Palace*. With each text, students consider the historical and cultural contexts (both the writers' and their own) that contribute to the layers of meaning available in the literature. Students practice writing in many modes - analytical, creative, descriptive, satirical, and more - often using the texts they have read as models for their own work. While exploring and experimenting with new perspectives and writing styles in World Literature 10, students think deeply and critically about these new experiences as well as their own assumptions and habits of thought.

### First Semester 11<sup>th</sup> and 12<sup>th</sup> Grade Courses

#### **American Literature and the Misfit**

This course will explore the causes and effects of alienation and nonconformity in 19th and 20th century American Literature. Students will examine how authors throughout American history have portrayed individuals who

challenge norms or expectations - whether these individuals did so by choice or due to circumstance. Through close reading, literary analysis, and thoughtful discussion, students will consider the extent to which societal expectations shape individual identity. The course will explore, in depth, how American authors have used the figure of the misfit to critique American culture and values. Text will include *The Awakening* by Kate Chopin, *Invisible Man* by Ralph Ellison, *Little Women* by Louisa May Alcott, "A Good Man is Hard to Find" by Flannery O'Connor and other short stories, and selected poetry by Dickinson, Poe, Whitman, Ginsburg, and Hughes. **There will be an AS section and a non-AS section of this course.**

### **Belief and Rhetoric in the Public Sphere**

Students will read from fiction, journalism, and nonfiction as they prepare to ask the questions of how beliefs are formed and what role they play in the formation of larger communities. Why do we believe what we believe? Is it important to believe things that are verifiably true, or do our beliefs serve another purpose? How does one situate the language of belief within the rhetoric of journalists, politicians, and educators who prize empiricism and the scientific process? Should our beliefs help us create a better and more functional community, or is it enough for them to give meaning to our individual lives? This class will look at several fringe beliefs through primary and secondary documents as a way of understanding how beliefs might or might not drive our private and shared worlds.

### **AS American Ghosts**

"The past is not dead. It's not even past," according to William Faulkner. In this course, students will examine the ways in which our history and cultural past reemerge in ghostly forms and hauntings in our literature. The spectral events and characters in works by authors such as Faulkner, as well as Toni Morrison, Shirley Jackson, Jesmyn Ward, and Louise Erdrich materially affect the lives and events of the narrative present, just as our historical and cultural legacies echo through our daily experience. Students will investigate both the ghostly emanations themselves and the reactions they elicit from living characters in these narratives and how they reveal our national preoccupations, burdens, and character. Readings will include poetry, short fiction, and novels.

### **AS Literature of Dungeons & Dragons**

This course looks at the various literary traditions that inform the "world's greatest role-playing game" and the ways D&D taps into dramatic and narrative instincts more ancient and powerful than an archlich. Primarily, this is a course about genre—how a particular type of story develops and/or deconstructs familiar forms conventions to make new meanings. Students will examine the genre of fantasy and how it combines and/or comments on other genres and subcultures, including those of the epic, noir, science fiction, and gaming. What particular preoccupations and obsessions—positive or negative—does fantasy allow readers to indulge, explore, or interrogate? Students will read widely from literature that has inspired the creators of D&D, and will look critically at some D&D material as well, both through reading and playing. Students should expect assignments in creative writing. Familiarity with Dungeons & Dragons is not a prerequisite.

### **MSON The Politics of Horror (Or, The Horror of Politics)**

In 1982, Stephen King wrote that "the horror movie is innately conservative, even reactionary." In 2025, this statement seems less dated than nonsensical. Contemporary filmmakers and horror writers like Jordan Peele, Stephen Graham Jones, and Carmen Maria Machado have turned horror stories into a go-to genre for progressive cultural criticism. So which is it? Yard signs may urge us to vote our hopes, not our fears, but anyone who's lived through campaign season knows that politics and fear are as well-matched as the Frankenstein monster and his bride. Students in this class will use contemporary and classic horror novels, stories, and films to identify and analyze the political preoccupations of its authors and readers, and will ask whether "scary stories" are uniquely positioned to identify and critique our political beliefs.

## **Second Semester 11<sup>th</sup> and 12<sup>th</sup> Grade Courses**

### **Children's Literature**

What are the children reading? Answering this question in any place and time will tell you much more than just what stories are in style. In this course, we will read a variety of children's literature from different eras and analyze what they reveal about our changing attitudes toward children and childhood, as well as toward parenting, education, and our cultural values. These texts demonstrate our beliefs about right and wrong, citizenship, relationships, and a whole slate of other cultural ideals. Readings will include fairy tales and fables, nursery rhymes and poems, picture books, classic literature, and graphic novels, as well as visual texts, like scenes from Sesame Street.

### **Contemporary Drama**

This course looks at the elements—formal, cultural, and historical—that make up great contemporary drama. Students will use both primary texts and nonfiction to get a sense of the movements that have defined and driven theater throughout the past century. Students will consider the opinions of writers from Aristotle to Peter Brook as they try to define the unique artistic challenges and opportunities theater offers to writers, performers, and viewers. In addition to writing about theater as literature, they will stage their own short performances as they try to discover and articulate what makes a play successful.

### **Irish Literature**

This class will serve as a survey of Irish literature, focusing on drama, poetry, and short stories. Students will explore the mythology that has shaped Irish literature and learn why storytelling has been such an important feature of Irish culture. Students will track, from texts that were critical to the Irish Literary Revival through contemporary literature, how identity has withstood shifting political and social contexts. Featured authors include James Joyce, John McGahern, Claire Keegan, Martin McDonagh, G. B. Shaw, Patrick Kavanagh, Seamus Heaney, and W. B. Yeats.

### **AS Irish Literature**

This class will explore Irish Literature, including novels, drama, poetry, and short stories. Featured authors will include James Joyce, W. B. Yeats, Seamus Heaney, Lady Gregory, Claire-Louise Bennett, and Kevin Barry. The class will examine the early mythology and storytelling specific to Ireland to provide context for Irish literature. Using land, religion, language and nationality as entry points to understanding, we'll explore how Irish literature has evolved over time. The course will emphasize the importance of the Irish Literary Revival and its impact on contemporary works. Through inquiry-based learning surrounding identity, storytelling, truth, and perspective students will further hone their reading, writing, and speaking skills.

### **AS Angry Books: Literature of Protest**

What do you do when life seems outrageously unfair, unjust, or frightening? The authors in this class chose to respond to these feelings by writing fiction. This course examines the novel as a means of articulating and enacting protests against governments, cultures, and sometimes life itself. Does literature of protest afford authors or readers a wider range of moral or emotional expression than nonfiction, journalism, or activism? Is literature an effective way of enacting change in the world? Or does writing or creating art about injustice address a human need entirely separate from its ability to inspire social change? This class will acquaint students with the long tradition of texts that use art as a way of registering displeasure, disapproval, or resistance.

# History

The History Department prepares students to critically examine the human condition from pre-history to the contemporary world. We foster empathy and citizenship in our students, exploring individual and group identities through a myriad of views. A particular emphasis is placed on doing the work of a historian: research, analysis, criticism, perspective, narrative, and argument. To clearly articulate our understanding, we emphasize clear, concise historical writing, all to better understand contemporary socio-political issues. MPH History students, engaged in the historical process and marked by an atmosphere of respect, become informed global citizens.

## Courses for Graduation Credit

### **History 9 - Comparative Civics and Government**

In an increasingly interconnected world, the social contract between citizens and government has become increasingly scrutinized, where protests, activism, and civic engagement have become part of our international experience. This course aims to provide students with an enhanced understanding of civics and government, helping shape them into engaged and informed civic actors and providing opportunities to develop the historical skills necessary for success throughout high school. The course examines democratic, authoritarian, and theocratic governmental systems from the past to the present. Additionally, students will study the role of the individual citizen in the US system, the centrality of voting, the influence of lobbying, and the role of the media in modern US democracy. The class will focus on developing specific historical skills (historical significance, research, historical writing, textual source analysis, especially primary sources) through the content. Later in the year, students will take their understanding of government systems and apply historical research, writing, and critical thinking skills to their independent research.

### **History 10 - World History Survey**

World History Survey provides students with a solid background and context for understanding today's world. Building on the skills they developed in 8th grade, the course will begin with the foundations of civilization and the role of world religions in developing civilization. The major themes examined in the course include class, government, trade, cultural development, and conflict. Through a chronological approach, the goal of this class is to gain an understanding of human processes that dictate world development. Students will develop specific historical skills (historical significance, analysis, chronological thinking, historical writing). Throughout the course, students will work on synthesizing commonalities between civilizations, warfare, and cultures, evaluating current situations in historical terms, writing thesis papers, and completing two long-term projects. In addition to traditional assessments, class discussions and mini-projects will occur frequently.

### **AS World History (Grade 10)**

Making the connection between history and identity, this course surveys the human condition from the post-classical era to the present. Broadly, the college-level course examines the patterns that develop across historical periods, continuities and changes within periods, and the causal effects of major historical developments on future events. Thematically, the course explores the development and transformation of social structures, state-building, conflict, the interaction between humans and the environment, the intersection between cultures, and the development of economic systems in theory and practice. Additionally, the course focuses on developing the historical thinking skills of perspective and context, periodization, argumentation, analysis, and synthesis. Although this course uses standard forms of assessment, students will also engage in class discussions and debates, write lengthy, college-level research papers, and explore history creatively through projects and multimedia presentations. A student-interest research project and presentation mark the end of the year.

## **History 11 - US History Survey through Primary Sources**

This course examines the narrative of our national history through the lens of American primary sources, emphasizing critical moments in US history. Examining US history through the rich collection of historical documents not only grounds the student in an understanding of the narrative history of the country, but the examination of these texts develops critical thinking that inspires the student to question the historical moments they are studying. From the Iroquois' Great Law of Peace to the Federalist papers to the Emancipation Proclamation, these seminal documents will help students navigate through the story of our nation, addressing topics such as fundamental American political principles, the development of an American identity, the institution of slavery, growth of business, and America's role in the world during the 20th and 21st centuries. As well as textual analysis, students are expected to complete written papers of varying lengths that focus on the thesis and narrative aspects of historical writing. Additionally, students are expected to participate in class discussions and debates and complete oral presentations.

## **AS The American Experience (Grade 11)**

Operating under the premise that the "language of the United States is protest," from its revolutionary origins to the modern fight for civil rights, this course allows students to navigate US history through social-cultural lenses. While this interdisciplinary course will investigate the US's social, political, economic, and cultural trajectory over time, it will use voices that have often been marginalized in the national story, such as women, enslaved Americans, Native Americans, and immigrants. It will also examine the moments of social and political change throughout the nation's history, looking at how the nation's founding ideals were incorporated into protest movements and expanding inclusion into the American identity. The readings for this course will include modern historical scholarship and primary sources, supplemented with American novels, poetry, photography, and film. Students will have the opportunity to produce research-based historical writing, oral presentations, and documentary filmmaking, as well as engage in college seminar-style discussions of the texts.

## **Elective Courses**

### **First Semester**

#### **Model United Nations (Grades 9-10)**

Model United Nations is a first-semester class open to any high school student and may be taken for multiple years. Students routinely enroll in MUN for all four years of Upper School. This course allows students to represent assigned countries at Model United Nations conferences. Students are required to attend a specified number of local or regional conferences. The long-term goal of the course is to produce students prepared to go out into the world with intellectual, psycho-social-emotional, and communicative skill sets necessary to be change agents in their communities and the world. These skills are developed as students conduct in-depth research, write position papers and resolutions from different perspectives, negotiate policy, and agree on resolutions. Students learn about a host of world issues, such as international economics, nuclear proliferation, the weaponization of space, biopiracy, and the trafficking of women and children. During conferences, after being assigned a UN committee, students adopt the perspective of a country and must maintain this perspective while formulating their arguments and creating solutions to global issues. During the research process, students are challenged to verbalize and communicate what they are learning through debate and public speaking. MPH MUN students learn the importance of being informed global citizens. MUN can be taken in multiple years.

### **AS Model United Nations (Grades 11-12)**

Advanced Studies Model United Nations is a first-semester class for grades 11 and 12 students. This course closely follows the Model United Nations course, and it is encouraged, although optional, that students have the requisite Model United Nations course before taking the AS component. The Advanced Studies course allows students to represent assigned countries at Model United Nations conferences. Students are required to attend a specified number of local or regional conferences. The long-term goal of the course is to produce students prepared to go out into the world with intellectual, psycho-social-emotional, and communicative skill sets necessary to be change agents in their communities and the world. These skills are developed as students conduct in-depth research, write position papers and resolutions from different perspectives, negotiate policy, and agree on resolutions. Advanced Studies students model research and writing skills to the underclassmen and peer review underclassmen's work. Further, Advanced Studies students learn International Relations theory and produce an extensive paper on a current world issue similar to the *Council of Foreign Relations Backgrounders*.

### **AS Philosophy and Ethics in the Modern World**

Is it ok to lie to protect yourself? Is anyone inherently good or evil? Is a society better served with an individualist ideology or a social contract? This course is designed to explore the intersections between philosophy, ethics, morality, and popular culture in the modern world. Students will examine how philosophers across history have been inspired by and influenced the human condition, and how interpretations of human nature impacts society, politics, and culture. Serving largely as an introduction to philosophy, this course also looks at how philosophical concepts, theories (e.g., postmodernism) and movements (e.g., the Enlightenment) influence both individuals and society, as well as inspire popular culture. While the reading of primary texts of philosophers is a necessity, these philosophical ideas and concepts are often communicated through movies, TV shows, music, and other forms of media, which will also be used to gain a better understanding of these concepts. Students will examine the major ideas and arguments of leading philosophers and ethical theorists, including but not limited to, Aristotle, Laozi, Rousseau, Descartes, Hume, Wollstonecraft, Nietzsche, Mill, and Foucault. Topics covered in this course include metaphysics, epistemology, ethics (in science, medicine, and business), political philosophy, philosophy of language, and aesthetics. As an Advanced Studies course, this class will use college-level texts, discussing the material and the "big questions" in seminar-style classes. Students will reflect on the topics through various writing assignments, and will ultimately have an opportunity to do some extensive research on a particular philosophical question, topic, field or individual that inspires them.

## **Second Semester**

### **"Dealers in Hope": The Psychology of Leadership**

Napoleon Bonaparte called a leader "a dealer in hope," someone who not only provides vision, clarity, and direction in their decisions, but someone who is able to inspire and energize those they lead. How is it that effective oratory, delivered in a speech, can mobilize millions? How important is charisma in leadership, and why does it motivate those around them? Why do some leaders project authority and others empathy, with equal impact on their supporters? While this course will focus on leadership in all areas of life, it will examine them through the lens of psychology, in order to better understand the psychological conditions of the relationship between leaders and their supporters. This course will serve as both an introduction to psychological theory as well as an examination of notable leaders and leadership theory. Topics covered in this course include: cognitive, behavioral, developmental, occupational and social psychology, as well as spending time extensively studying political psychology and the psychology of leadership. Once students have established a foundational understanding of the theory, they will research leaders they revere or find inspiring. This is a course designed for students interested in psychology, political science, and inspired by leadership.

### **Galileo to Google: The History and Philosophy of Science**

This course guides students through an exploration of scientific revolutions, from Galileo's pioneering observations in Sidereal Messenger in 1610 to the groundbreaking AI achievements exemplified by Google's AlphaFold, winner of the 2024 Nobel Prize. Students will engage with Kuhn's insights on paradigm shifts, Popper's concept of falsifiability, and read Thomas Levenson's book *The Hunt for Vulcan*, developing a deep appreciation for how curiosity and anomalies drive scientific progress. Through deriving Einstein's time dilation equation with simple algebra and discussing profound implications of quantum mechanics – including entanglement and the "many-worlds" hypothesis – students will uncover the continuous thread linking Galileo's telescope to today's quantum computers and advanced artificial intelligence systems.

### **AS Imagining the Unimaginable: A Critical History of Genocide**

This course critically examines the causes, implementation, and response to the major genocides of the 20th century. Key among them are the Armenian Genocide, the Holocaust, and the Rwandan genocide. Students in the course will identify the patterns and conditions that create a suitable environment for genocide to occur. Additionally, students will debate the definition of genocide using the examples of the treatment of Native Americans and the African slave trade. Finally, students will study current examples of what could be defined as genocide. Run like a college seminar, students are expected to participate frequently in discussion and debate, produce academic papers, and complete projects oriented towards the future prevention of this black stain on humanity.

# Innovation and Leadership

Our Innovation and Leadership classes are created to help students grow into innovative, impactful leaders. Classes emphasize leadership and service skills development and facilitate experiential learning opportunities for students, often with local businesses and organizations.

## Elective Courses

### First Semester

#### **Communication Break Down: Developing Voices for Leadership**

In Communication Break Down, we will “break down” the art of impactful communication through various mediums, including public speaking, persuasive conversation, and Ted Talk-style presentations. Students will gain a deeper understanding of their own communication style and develop those skills to become stronger conversationalists, presenters, and leaders. We will also explore the art of the question as an essential component of daily conversation and use it to build rapport and understand diverse perspectives. Through research, hands-on projects, and practice, students will build your confidence and mastery of the spoken word to become the effective, influential communicators that the world needs.

### Second Semester

#### **Entrepreneurial Studies: The Small Business**

Entrepreneurial Studies is an experiential based course that provides real-life opportunities for students to experience the challenges and opportunities people face in sustaining a small local business. Using local businesses as a laboratory, students explore opportunities for growth and innovation and then pitch a strategy on pursuing those opportunities to real life business owners. Beyond the small list of required readings, most research will be done independently when preparing strategies for each business pitch. Students explore strategic visioning through the framework of the business model canvas and develop a familiarity with basic economic principles and business terminology. Students in The Small Business should be prepared to develop course skills that include: public speaking, interpersonal communication, collaboration, and strategic thinking.

# Malone Schools Online Network

Manlius Pebble Hill School is the only school in New York State to be included in the Malone Schools Online Network (MSON), a consortium of 28 of the nation's most highly regarded independent schools. Together with our MSON partners, MPH offers students an interactive distance learning experience. Our students have access to an expanded advanced curriculum and can take courses taught by other member schools – and by MPH faculty – in real time with students from across the country.

## MSON FAQ's

### Academic Information

- Available to Juniors and Seniors.
- Courses are comparable to, or more advanced than, Advanced Placement and Advanced Studies courses.
- Courses are considered essential academic subjects (count toward 6 each semester).
- Courses are available in full-year and semester (fall and spring) options.
- Go to <https://maloneschoolsonline.org/> to view the 2025-2026 Course Catalog.
- Hard copies of the MSON catalog, schedule, and calendar are available in the Division Office
- Submit MSON Course Registration Form to MSON Academic Liaison (Mr. Twomey-Smith) by the end of the course registration process.
- Courses may be dropped before the 4<sup>th</sup> class meeting.
- Courses may be added before the 3<sup>rd</sup> class meeting depending on space availability.
- Classes meet 2 times per 5-day week.
- Class meeting times are not aligned with MPH class times.
- Students must attend a minimum of 80% of their MSON classes.
- Students are responsible for attending classes when MPH is not in session for reasons including, but not limited to planned school closures (holidays, in-service days), sports practices and games, class trips, field trips, snow days, illness.
- It is essential that students communicate regularly with their MSON instructor via email, particularly regarding specific circumstances that affect participation in class. To this end, students must regularly check their MPH email account for both instructor and MSON communications. All student email communication with instructors must be carbon copied to Mr. Twomey-Smith.
- MSON classes that meet during the MPH school day must be attended from the designated MSON space.
- MSON classes that meet after the MPH school day has ended may be taken on a student laptop in another location outside of the MSON classroom.
- The MPH MSON Academic Liaison (Mr. Twomey-Smith) coordinates with the course instructors and students to arrange for taking quizzes and exams outside of class time.
- All quizzes and exams must be taken in a location designated by the MSON Academic Liaison unless otherwise directed by the course instructor.

### Registration Information

- Students register for MSON courses by turning in the Course Registration Form to Mr. Twomey-Smith during the course selection period.
- MSON courses are included in the maximum number of courses that students may select in their Course Requests.
- Students who request MSON courses will be contacted by the MPH MSON Academic Liaison to provide additional information for enrollment in their MSON course(s).
- Enrollment in MSON courses is ultimately determined by the MSON Registrar.

# Mathematics

Manlius Pebble Hill math classes are multi-grade level to allow students to complete an appropriate three-year sequence of college preparatory mathematics. Most students take four years of math in Upper School. The Math Department offers two vigorous pathways for students to be invested in their study of math: one is rooted in algebraic skills and statistical analysis, and the other in theory and proof leading to the study of calculus. Whenever possible, we utilize a five-point approach to presenting material: numerically, algebraically, graphically, descriptively, and concretely (through an activity or with a picture). Teachers blend the best of traditional pedagogy with proven contemporary teaching practices, including frequent collaborative projects and open-ended investigative activities. Students are encouraged to take intellectual risks by raising questions and formulating conjectures using mathematical arguments. As part of the MPH's support of writing for life, students are required to express mathematical concepts in clear, coherent prose in their math courses. Courses are designed to encourage students to embrace conceptual challenges, function independently, and enjoy delving into problem solving.

To ensure that students are successful in their upcoming course, summer assignments are given to provide continued practice with the material to strengthen skills and reinforce content knowledge. Some students may be requested to seek guided summer work with a tutor in preparation for the next year's course.

## Courses for Graduation Credit

### **Algebra 1 S**

*Pre-requisite: Math 8*

This algebra course is offered to 9th grade students interested in studying statistics and analyzing data. In this course, students pursue traditional topics of algebra: solving equations and inequalities, linear functions and graphing, systems of linear functions and inequalities, operations with polynomials, quadratic functions, and rational and irrational numbers. In addition, students pursue basic topics of statistics: linear regression, data spread, and summarizing categorical data in a two-way frequency table. The course pays special attention to algebraic manipulation skills, communication of ideas, developing the relationship between algebraic models and graphs, data fluency, and the use of the graphing calculator.

### **Algebra 1 C**

*Pre-requisite: Math 8 and teacher recommendation*

This algebra course is offered to 9th grade students interested in studying calculus. This course is for students who enjoy delving into how and why mathematical concepts work. Students pursue a variety of topics of algebra: solving equations and inequalities, graphing functions, systems of linear functions and inequalities, operations with polynomials, quadratic functions, rational and irrational numbers, functional notation, and mathematical fluency. The course devotes special attention to problem solving skills, abstract thinking, written communication of ideas, developing the relationship between algebraic models and graphs, and the use of the graphing calculator.

### **Geometry S**

*Pre-requisite: Algebra*

The second course in this mathematics sequence for statistics introduces students to geometric concepts. Students examine topics in plane geometry using algebra as a foundation for each unit. Euclidean geometry is introduced as an axiomatic mathematical model founded on postulates. Theorems and definitions are used to justify equations for solving problems focused on segments, angles, triangles, parallel lines, quadrilaterals, and circles. Through activities, students explore the properties of geometric shapes using hands-on explorations, including constructions with the compass and straight edge. In addition, statistical concepts will be used to summarize large data sets by reducing their complexity to a few key values that model their center and spread. Distributions will be used to analyze data sets.

### **Geometry C**

*Pre-requisite: Algebra 1C*

The second course in the mathematics sequence for calculus is offered to students who have successfully completed Algebra 1C. This course introduces Euclidean geometry as an axiomatic mathematical model founded on postulates, and students experience its development through the proof, exploration of theorems and properties, and applications of algebra. Students focus on creating two-column proofs of properties and theorems for triangles, parallel lines, quadrilaterals, and circles. Constructions with a compass and straight edge are used to create designs and explore the properties of geometric shapes.

### **Algebra 2/Trigonometry S**

*Pre-requisite: Geometry*

The third course in the mathematics sequence for statistics stresses algebraic manipulations, problem solving, exploring rational, radical, and quadratic equations. Students continue their study of algebraic structures, including the real number system and the development of function theory. Algebraic manipulations involving whole number, integral, and fractional exponents are examined. Trigonometric functions are introduced from the viewpoint of the unit circle, and students analyze their graphs and applications. The graphing calculator is used to explore and solve equations, to check solutions, to discover properties of functions, and to simplify calculations. Topics in probability focus on the use of conditional probability. Extensive statistics work is done to help students understand how population parameters can help to infer properties about populations.

### **Algebra 2/Trigonometry C**

*Pre-requisite: Geometry C*

This course stresses algebraic techniques, problem solving, and exploring rational, radical, and quadratic equations. Students continue their study of algebraic structures, including the real and complex number systems. The course focuses on the theory of functions. Trigonometric functions are introduced from the viewpoint of the unit circle, then analyzed through graphs and applications. The algebraic and graphical characteristics of exponential and logarithmic functions are introduced. The graphing calculator is used to solve and check equations, and to discover the properties of all the functions studied.

### **College Algebra S**

*Pre-requisite: Algebra 2/Trigonometry*

This course is for those students who would like further practice with algebraic manipulations and the study of functions. Topics include a review of algebraic manipulations, linear and quadratic equations and inequalities, characteristics of functions, and manipulations with linear, quadratic, and higher degree polynomial functions, rational, exponential, and logarithmic functions. The unit circle, right triangles, graphs, and applications of trigonometry are also studied. Students will pursue several topics in statistics: solve problems using permutations and combinations of compound events, use probabilities to influence decisions, summarize, represent, and interpret data on two categorical and quantitative variables. The calculator plays an integral role in discovering mathematical concepts.

### **AS Pre-Calculus**

*Pre-requisite: Algebra 2/Trigonometry C*

Pre-calculus builds on the skills developed in the Upper School mathematics calculus sequence. It places a strong emphasis on problem solving. Sound manipulative algebra skills are necessary. Students analyze the relationships between numeric, algebraic, and graphic representations of linear, quadratic, exponential, logarithmic, polynomial, rational, and trigonometric functions, along with the special characteristics of each function. The graphing calculator, Calculator Based Laboratory (CBL), various probes, programs, computer software, and applications provide a variety of ways to explore and create mathematics. Algebraic proofs are discussed to provide a greater understanding and appreciation of our mathematical system in preparation for college-level math courses.

### **AS Calculus 1**

*Pre-requisite: AS Pre-Calculus*

AS Calculus 1 builds on the intuitive approach of AS Pre-Calculus to develop the concepts of derivatives and integrals and their algebraic processes. Using derivatives to describe rates of change of one variable with respect to another or using definite integrals to describe the net change in one variable over an interval of another, enables students to understand change in a variety of contexts. The relationship between integration and differentiation as expressed in the Fundamental Theorem of Calculus is a central idea in AS Calculus 1. Using definitions and theorems to build arguments and justify conclusions are a major emphasis.

### **AS Calculus 2**

*Pre-requisite: AS Calculus 1*

The second year of calculus covers topics unique to the Advanced Placement Calculus BC curriculum and numerous applications of calculus. Topics include vector and parametric functions and their derivatives, polar coordinates, rigorous definitions of limits, advanced integration techniques with improper integrals, and an extensive treatment of infinite sequences and series. Using definitions and theorems to build arguments and justify conclusions are a major emphasis of the AP course. The course includes thorough preparation for the AP Calculus BC exam, including a demanding review of Calculus AB from an advanced viewpoint.

### **AS Statistics**

*Pre-requisite: Algebra 2/Trigonometry*

AS Statistics focuses on the analysis of data with an emphasis on observing patterns in data and the departures from those patterns. Students produce models of data using regression analysis, probability, and simulation in order to anticipate and predict patterns beyond the measured data. They observe the normal distribution and learn how to mathematically describe variations from the norm. Students study the process of sampling and sampling distributions to produce a confidence interval and to make an inference about a population based on the sample. The binomial and normal distributions provide good models for inference. Students use several tests of significance to make inferences, including the “z,” “t,” and Chi-Square tests.

## **Elective Courses**

### **First Semester**

#### **Financial Algebra**

*Pre-requisite: Algebra 2 & Trigonometry*

This course introduces students to the practical application of mathematical functions in personal finance. Through real-world examples, students will learn to analyze and understand key financial concepts, including: taxation, banking (checking and savings), budgeting, investment strategies, credit management, insurance principles, and college financing. This course equips students with the essential mathematical skills to make informed financial decisions and effectively manage their personal finances.

### **Second Semester**

#### **The History of Mathematics**

*Pre-requisite: Geometry*

This course investigates the historical journey of mathematical ideas, focusing on the contributions of ancient Egyptian and Chinese civilizations. We will examine the origins of key mathematical concepts, such as decimal systems, negative numbers, and early algebraic and geometric principles, and explore how these developments were shaped by the social and cultural contexts in which they emerged. The course aims to provide a historical perspective on mathematics as a product of human ingenuity and cultural influence.

# Science

The Science Department believes students must attain scientific literacy to be informed global citizens. This literacy enables them to evaluate differing ideas, facts, and opinions when making ethical decisions. As a department, we view these competencies as essential thinking skills and are dedicated to fostering them through hands-on and inquiry-based learning. Rather than simply presenting facts, we guide students in formulating questions based on their observations and systematically answering them.

At MPH, our approach to science is open-ended. We provide opportunities for both individual and team-based work, allowing students to develop the skills needed to test questions using the scientific process. This process involves researching questions, designing and executing experiments, problem-solving, data analysis, drawing conclusions, and communicating findings. This approach ensures that studying biology, chemistry, and physics lays a solid foundation for lifelong learning.

## Courses for Graduation Credit

### **Biology (Grade 9)**

Introductory topics include the diversity and classification of living things, ecology, evolution, genetics, cell biology, and human environmental impact. Unifying themes stressed throughout the year are evolution, energy transfer, the relationship of structure to function, interdependence in nature, and regulation. Laboratory activities help students to understand that science is a process and to develop essential skills in scientific expression and qualitative and quantitative analysis. Biology challenges students to think critically to understand the larger significance of the life sciences.

### **Chemistry (Grade 10)**

This introductory course covers the basic concepts of inorganic chemistry. The major units are matter and energy, atomic structure, the periodic law, chemical bonding and reactions, stoichiometry, solutions, gasses, and the reactions of acids and bases. The course encompasses both the conceptual aspects of chemical theories and the application of mathematical formulas to the course concepts. Involving both quantitative and qualitative methods, laboratory exercises reinforce the course content and allow hands-on experience with each of the topics.

### **General Physics (Grades 11-12)**

*Prerequisite: Algebra 2/Trigonometry*

Physics is an in-depth study of physical phenomena. The topics covered include vector analysis, mechanics, electricity, magnetism, waves, and optics. Physical problem-solving is emphasized throughout the course, and laboratory investigations reinforce concepts and develop analytical skills. Because the course is highly mathematical and requires familiarity with algebra, trigonometry, geometry, and graphical analysis, students must have completed Algebra 2/Trigonometry or the equivalent before enrolling in Physics. General Physics students must be concurrently enrolled in an advanced math class such as College Algebra S, AS Pre-Calculus, or AS Calculus.

## Elective Courses

### Full-Year

#### **AS Biology**

*Pre-requisite: Biology and Chemistry*

This year-long advanced studies course explores our biological world, building from molecular to cellular, organismal, population, and ecological interactions. Topics covered will include biochemistry, cell structure and function, cellular energetics, cell communication and signaling, molecular genetics, heredity, ecology, and evolution through natural selection. In each unit, students will do inquiry-based lab activities and present them in digital poster formats. Students will also learn skills to help them read and critique primary scientific literature. In addition, students will design and carry out their independent research projects.

#### **AS Physics: Mechanics (Grades 11-12)**

*Pre-requisite: Completion of or enrollment in Calculus*

The Advanced Studies Physics C course forms the first part of the college-level sequence that serves as the foundation in physics for students intending to major in the physical sciences or engineering. Strong emphasis is placed on solving various challenging problems, many requiring calculus. The primary emphasis of Advanced Studies Mechanics is on Newtonian mechanics. The use of calculus in problem-solving, derivations, and formulating principles increases as the year progresses. Topics include the laws of motion; work, energy, power, and conservation of energy; momentum; rotation and rolling motion; simple harmonic motion; and gravitation. Advanced Studies Physics is taught as a first-year college course; although prior enrollment in physics is not required, enrolled students must have the approval of the Advanced Studies Physics instructor.

### First Semester

#### **AS Chemistry I: Intro. to Organic and Biochemistry (Grades 11-12)**

*Pre-requisite: Biology and Chemistry*

For many STEM majors, organic chemistry and biochemistry are two of the most challenging classes taken in their undergraduate years. This class provides students with a robust knowledge base, offering them a jump start by introducing them to the major classes of biological compounds, their structures, and their chemical properties. Additionally, students will develop a fundamental understanding of organic chemistry topics including organic functional groups, nomenclature, stereochemistry, visualization of organic structures, and organic reactions. This course is intended for juniors and seniors with a demonstrated and motivated interest in STEM fields.

#### **AS Physics I: Electricity and Magnetism (Grade 12)**

*Prerequisites: General Physics or AP Physics C: Mechanics*

*Next offered 2026 - 2027*

Electricity and Magnetism is an advanced examination of the fundamental principles that underpin many aspects of contemporary society. This comprehensive course delves into the intricacies of electric forces and fields, the dynamics of charged particles, circuitry, magnetic fields, and the principles of electromagnetism. The curriculum is designed to foster proficient problem-solving skills, with a focus on practical applications and the development of analytical capabilities through laboratory experimentation.

## Second Semester

### **The Biology of Brains and Behavior (Grades 10-12)**

The Biology of Brains and Behavior invites you into the living language of neurons—how tiny electrical signals create sensation, movement, and behavior. In this hands-on biology course, you'll explore neural circuits in accessible live model organisms like crickets, flies, and crayfish. You will experience the wonder of hearing and recording real nerve activity on an audio monitor and see it flashing across your computer screen. You will also be able to modify activity by stimulating the animal, yourself, through its senses of sight, sound, touch, and maybe even smell. You will learn about the neural networks that underlie simple and complex reflexive movements or behaviors and connect what you observe to core ideas in physiology, from senses to synapses and circuits, using simple, curiosity-driven experiments and clear, student-friendly analysis. Developed in collaboration with Cornell University's Department of Neurobiology and Behavior through a grant-supported partnership, this course is designed for any motivated learner.

### **MPH Goes CSI: Forensic Science (Grades 11-12)**

Have you ever wondered how DNA can be manipulated to prove guilt or innocence? Did you know that lipstick left on a glass can be evaluated and then linked to a specific brand and, perhaps, a person? Are you interested in learning how to lift fingerprints left on an object? This forensic course will apply new and well-established lab techniques to the evidence left at a staged crime. The course is a series of experiments that lead a team of investigators to decide upon a possible perpetrator from a field of suspects. The final project involves solving a crime staged in the classroom with faculty serving as suspects.

### **AS Chemistry II: Math-Intensive Inorganic Chemistry (Grades 11-12)**

*Prerequisites: Biology and Chemistry*

This chemistry class introduces the fundamentals of equilibrium, kinetics, acid-base theories, and thermodynamics. This Advanced Studies course will further examine the mathematical basis for these topics in greater detail. Topics include reaction orders, determining rate constants, equilibrium constants, ICE tables, Gibbs free energy, and other topics typically covered in the second semester of a college chemistry sequence. This course is intended for juniors and seniors and will be mathematically intensive, requiring the successful completion of, or co-enrollment in, either College Algebra or AS Pre-Calculus.

### **AS Physics II: Light and Sound (Grade 12)**

*Prerequisites: General Physics or AP Physics C: Mechanics*

*Next offered 2026 - 2027*

This calculus-based physics course delves into the intricate world of waves, with a specific emphasis on the phenomena of light and sound. Through a combination of theoretical analysis, mathematical modeling, and hands-on experimentation, students will explore the fundamental principles governing wave motion, propagation, and interaction. From the wave nature of light and its behavior in various mediums to the propagation of sound waves through different materials, students will gain a deep understanding of wave mechanics and its applications in fields such as optics, acoustics, and beyond. By mastering the calculus-based approach to wave physics, students will develop critical thinking skills and analytical abilities essential for tackling complex problems in the study of light and sound.

### **Independent STEM Projects (Grades 9-12)**

The Science Department offers an exciting opportunity for students to continue the thread of independent scientific research. The Department designed benchmarks to support interested students in their quest to complete independent STEM fair projects culminating with participation in the MPH and Central New York Science and Engineering Fairs. Interested students enroll in the third quarter class and meet on an as-needed basis with a

mentoring member of the Science Department. Over the years, participating Upper School students have enjoyed great success with their independent science research.

## **Senior Capstone Seminar**

This course will meet once per cycle for the full school year to prepare and support students throughout their Senior Capstone. Students will study the methods and conventions of academic research to understand how project management might vary across different academic disciplines. Students will research and discuss citation methods, writing, and revision strategies, and as the year goes on, this course will serve as a workshop and peer community for students to brainstorm, experiment, and troubleshoot their capstone projects. In addition to their capstone-specific preparation, this course will equip students to approach their post-high school career with experience and confidence. This is a required course for all seniors.

# Visual & Performing Arts

The Visual and Performing Arts Department is a vibrant community that inspires students to express themselves creatively through diverse forms of artistic expression, including movement, music, drama, visual art, and design. Our department fosters an environment where students develop the skills and confidence to engage in meaningful and reflective artistic practices. We meet students where they are, fostering an inclusive environment that nurtures individual growth and artistic exploration at every level. Our curriculum empowers students to communicate visually and performatively, encouraging them to take creative risks, experiment, and articulate their unique voices. Students explore their creative processes, learning to critique and refine their work both collaboratively and through self reflection. Through cross-disciplinary connections, students explore how the arts intersect with other fields, deepening their understanding of the world and their place within it. Through community engagement, such as participation in All-County and All-State ensembles or showcasing work in public exhibitions, our students connect with broader audiences, cultivating an appreciation for the arts within and beyond MPH. Our goal is for each student to leave the MPH arts community with an enduring appreciation for the transformative power of art and fond memories of their creative journey, equipped with the tools to express themselves authentically and contribute to the cultural richness of any community they join.

## Performing Arts

### Courses for Graduation Credit

#### **First and Second Semesters**

*(Selecting two semesters of ensemble classes is preferred for continuity and development.)*

#### **Music Ensembles: Band, Orchestra, and Vocal Ensemble (Grades 9-12)**

Music ensembles present an opportunity to study and perform music literature while experiencing the joy and love of music. Students will explore a variety of musical styles and genres, develop overall musicianship, and build teamwork amongst one another. Each semester will conclude with a performance. In addition to rehearsals during class time, students will have one group lesson per 8-day cycle during tutorial to continue building individual skills and do sectional work. Students may take both an instrumental ensemble (band and orchestra) and Vocal Ensemble at the same time but will split the music block and credit between the two groups. Playing experience and a playing proficiency of at least a NYSSMA Level II are prerequisites for Band and Orchestra enrollment. New players may participate in a tutorial lesson group to prepare for future enrollment in an instrumental ensemble. Students are encouraged to be members of performing ensembles in consecutive semesters and over multiple years to continue developing their overall musicianship and the ensembles as groups.

#### **Stagecraft (Grades 9-12)**

Stagecraft explores components of stagecraft for theatrical production (including scenery, lighting, costume, and sound) and how they are designed and utilized safely in the theatre. In addition, the course enhances the collaborative process of production through the planning, design, stage management, and stage crew support for MPH productions. These productions include the Middle and Upper School plays, musicals, and dance concerts. This course may be taken more than once so that students can continue developing advanced skills.

## **First Semester**

### **Dance History and Repertory (Grades 9-12)**

Dance History and Repertory introduces the legacies of great dance companies and choreographers of the 19<sup>th</sup> through 21<sup>st</sup> centuries. Students deconstruct and study original historic choreography, recognizing and understanding the unique styles originated by dance icons. The semester culminates with the annual Repertory Dance Concert. Students receive Performing Arts or Physical Education credit for this course. This course may be taken more than once so that students can continue developing their skills.

## **Second Semester**

### **Dance Composition and Performance (Grades 9-12)**

Dance Composition and Performance explores dance as a performing art and medium for artistic expression. The curriculum includes movement technique classes, improvisation, and the choreographic process, culminating with the Annual Student Choreography Concert. Student choreographers use class time to discover their unique style, develop choreography, conduct rehearsals, and learn elements of production planning. Students receive Performing Arts or Physical Education credit for this course. No prior dance experience is necessary for participation. This course may be taken more than once so that students can continue developing their skills.

### **Music Theory I (Grades 9-12)**

Music Theory I examines the inner workings of music through an in-depth analysis of rhythm, melody, harmony, notation, and compositional techniques. Students develop aural skills through the rudiments of sight-singing and melodic, rhythmic, and harmonic dictation. The study of music theory promotes the development of overall musicianship and a greater appreciation and enjoyment of music. Fluency in music reading is a prerequisite for this course. This is an essential academic course and counts as one of the five essential courses each Upper School student must enroll in per semester.

## **Advanced Course**

## **Full Year**

### **Advanced Recital (Grades 9-12)**

Advanced Recital is an opportunity for instrumentalists and vocalists to prepare twenty to thirty minutes of solo or chamber music at a shared recital in the Spring. Advanced Recital students will meet twice a quarter to plan repertoire, discuss practice techniques, and present their work to their teacher and peers for critique. Before the recital performance, students will participate in a recital jury where they play their program for the music faculty for a formal evaluation. A commitment to practicing five hours a week is required for this course.

# Visual Art and Design

## Courses for Graduation Credit

### First Semester

#### Introductory Courses

##### **Introduction to Photography (Grades 9-12)**

This course introduces students to the fundamental technical, compositional, and editing skills necessary for successful photography. Through a series of games and photoshoots, students learn everything from shooting in manual mode and capturing decisive moments to studying influential photographers and designing their own photoshoots. Collaboration is a key component, as students work together to generate ideas, shoot, and edit. The primary areas of learning include camera control, understanding light and composition, developing collaborative skills, and building creative confidence. Additionally, students gain proficiency in Adobe Photoshop. This is an active class that frequently involves movement. While access to a personal camera is beneficial, it is not required. This course is highly recommended as a foundation for further studies in Art and Design.

##### **Elemental Studio (Grades 9-12)**

Elemental Studio is an intensive 2D (two-dimensional) course focused on technical skill development and idea generation. Through structured exercises and projects, students enhance their speed, confidence, and artistic quality. This course emphasizes technical skill-building and introduces the practice of artistic reflection. Students have the opportunity to experiment with various mediums and materials. Major assignments are student-driven, incorporating significant elements of critique and reflection. Students also explore the elements of art, design principles, and postmodern art concepts. This course is highly recommended as a foundation for further studies in Art and Design and may be taken multiple times.

##### **Introduction to Design (Grades 9-12)**

This course introduces students to the fundamentals of design and design thinking. Through hands-on challenges, students creatively solve problems and develop products that are both useful and desirable. Working collaboratively as a design team, students identify and address unique problems with the end user in mind. Projects range from building boats and sleds to designing and selling t-shirts—even attempting to walk on water. The primary focus is on design thinking and collaborative problem-solving. This is an active, movement-based class requiring teamwork and innovation.

#### Advanced Course

##### **Portfolio & Supplemental Preparation (Grades 11 and 12)**

*Prerequisite: Other Visual Arts Coursework*

This course is designed for students seeking to build a strong portfolio—whether for college applications, creative career preparation, or personal artistic growth. Students planning to pursue creative fields will develop a polished and articulate body of work suitable for submission to visual arts programs and schools, while non-visual arts majors can create supplemental materials for college applications. Regular feedback is a key component, and students will have the opportunity to attend National Portfolio Day, explore professional aspects of creative careers, learn documentation techniques, and develop presentation skills. This self-directed course adapts to individual student needs, providing a space to explore personal artistic interests. May be taken multiple times.

## Second Semester

### Introductory Course

#### **Introduction to Ceramics (Grades 9-12)**

This course introduces students to the art and techniques of working with clay, providing a foundational overview of ceramic principles. Students develop creative expression while mastering essential skills, including hand-building, wheel throwing, surface decoration, glazing, and firing. The course explores the historical and cultural significance of ceramics, examining its evolution and relevance in contemporary art. Students will work with different clay types, tools, and equipment while experimenting with various forms, shapes, and textures to create both functional and sculptural pieces. Emphasis is placed on individual creativity, problem-solving, and craftsmanship. Students will also learn to critique and analyze their work to develop a deeper understanding of aesthetic principles.

### Advanced Courses

#### **Design 2 (Grades 9-12)**

*Prerequisite: Introduction to Design*

Building on the foundation of Introduction to Design, this course immerses students in the role of professional designers working within a collaborative design collective. Students tackle engaging design challenges, work on real-world projects, and develop essential business skills. This course provides an exciting balance of creativity and practical application. May be taken multiple times.

#### **Elemental Studio 2 (Grades 9-12)**

*Prerequisite: Elemental Studio or permission from teacher*

Elemental Studio 2 expands on the foundational techniques developed in introductory courses, offering students the opportunity to dive deeper into a specific technique or medium of interest. The course emphasizes productive studio habits, thoughtful critique, and creative exploration. Students will work with postmodern art principles and drive the majority of their projects, making this an ideal space for taking artistic risks. May be taken multiple times.

# World Language

At MPH, we believe that proficiency, and ideally, fluency, in a world language is the gateway to global citizenship. We value the study of languages not only for the immediate practical benefits, but also for the way in which learning a new language enables the student to learn a new culture, and thereby see their own more clearly. MPH offers instruction in French, Latin, Mandarin Chinese, and Spanish. Students often pursue their language of choice through the most advanced courses, and over the years, many also have taken advantage of our international travel and immersion programs.

Small classes are essential to MPH's excellence in language instruction. Students are immersed in the cultural products of the countries whose language they are studying. They may do as the Romans did, prepare a Spanish meal, read a French magazine, or watch a Chinese film. Because the study of a world language entails a progressive acquisition of linguistic skills, our program is intentional in its vertical articulation. Our students' progress over time from beginners to proficient speakers and connoisseurs of the culture, and several attain fluency and even choose to master more than one language.

## Graduation Requirement

Every student must take at least three years of the same world language in the Upper School and reach the intermediate level of proficiency. These graduation requirements are supported by the variety of courses offered in a wide range of topics and levels. Instruction is offered in French, Latin, Mandarin Chinese, and Spanish.

## Courses for Graduation Credit

### French Sequence

#### **French Novice B**

This course entails the same program as the French Novice course but in greater detail and complexity while maintaining the same emphasis on oral communication. Students read and comprehend passages that focus on cultural affairs in France and in French-speaking countries. The course develops writing skills, from simple sentences to paragraph compositions in French. Greater attention is given to written compositions and reading selections. Integrating the cultural material into the learning process, students acquire an awareness of youth-related life in the French-speaking world. Students will maintain a portfolio of work and present a final project to demonstrate their acquired level of proficiency in all three modes of communication at the end of the course.

#### **French Intermediate**

French Intermediate is an immersion course designed with acquisition-driven instruction principles and a proficiency-oriented approach. The students will continue to develop interpretive reading, presentational writing, and interpersonal speaking skills through increasingly complex readings and authentic texts, videos, and social media. At this level, students develop the ability to analyze authentic resources and apply their language skills to create oral and written arguments about current and historical events in the Francophone world. This course provides a path to intermediate proficiency based on high-frequency words, grammar, and cultural themes of the Francophone world. Students will maintain a portfolio of work to demonstrate their progress and present a final project to demonstrate their acquired proficiency level in all three modes of communication at the end of the course.

### **French Storytelling**

The human experience is conditioned by narratives, that is the stories we hear, tell others, and tell ourselves. In this advanced intermediate French language class, students will develop their ability to understand French stories in a variety of texts like poems, tales, songs, short stories, graphic novels, films, and social media in a variety of historical time frames and contexts. Students will continue developing their competency in the three modes of communication. This is an immersion language course in which students are expected to contribute to daily discourse and conversation, as well as daily creative writing exercises. This course is for students who have completed the Intermediate course or can demonstrate an Intermediate Mid level of proficiency.

### **Current Issues in the Francophone World**

*Next offered in 2026-2027*

This immersive conversation course will explore the breadth of the Francophone world and introduce students to its many cultures. With daily exposure to authentic articles, video clips, films, radio segments, songs, and social media, students will be invited to discuss, write about, research, and present on current issues and perspectives in the Francophone world. This course is for students who have completed the Intermediate course or can demonstrate an Intermediate Mid level of proficiency.

### **AS French Art and Architecture**

This advanced French course designed for fifth-year French students, explores the evolution of art and architecture from pre-history to contemporary developments, emphasizing their cultural, historical, and social significance. Students will analyze key artistic movements, architectural styles, and influential figures while engaging with authentic French-language materials, including texts, documentaries, and critical essays. The course examines France's architectural legacy, from cave paintings, gothic cathedrals, and Renaissance châteaux to Haussmann's urban transformation of Paris and the innovations of modern and contemporary architects like Le Corbusier and Jean Nouvel. Additionally, students will explore how French artistic and architectural principles have shaped city planning and design in the United States, as well as their influence on global architectural trends. Through discussions, presentations, and written analyses conducted entirely in French, students will deepen their linguistic proficiency while developing a nuanced understanding of art and architecture as cultural expressions. The course culminates in a research project in which students investigate and present a specific architectural or artistic influence in a global context.

## **Latin Sequence**

### **Latin Novice B**

The Novice B Latin course develops awareness and mastery of Latin grammar. Specifically, it stresses proficiency in a language based on an understanding of basic forms and syntax. Additionally, vocabulary building is fundamental to this process, and Latin forms and endings are practiced daily. While the ultimate goal is the reading and writing of the language, there is practice in speaking. Classical pronunciation is used. The class also emphasizes the impact of Greek and Roman civilizations on literature, culture, and art.

### **Latin Intermediate**

The Intermediate Latin course continues the sequence begun in Latin A. The first half of the year is devoted to a student's development of a secure knowledge of grammar and a mastery of reading Latin prose. The second semester is devoted to reading Caesar's Gallic Wars: Book I. There is much emphasis on the student's awareness of ancient culture.

### **Latin Literature**

Students in Latin Literature read two ancient authors: Cicero and Ovid. Selections from Cicero's essays, speeches, and letters begin the year. Considerable time is spent discussing the historical context of his writing, including the causes of the Civil War and the eventual breakdown of the Roman Republic. Selected portions of the Amores and Metamorphoses of Ovid, which introduce the student to authentic Latin poetry, complete the year. Students learn all aspects of Ovid's work including style, meter, and literary devices.

### **Advanced Latin Literature**

The Advanced Latin Literature course is designed for students to review Latin grammar and develop skills in reading Latin passages from Catullus' and Horace's lists of works. Skills include the ability to translate, analyze, interpret, read aloud, and scan the meter appropriate to the text. The course places a strong emphasis on the historical, social, cultural, and political context of Catullus' and Horace's poetry. Also, students learn how Latin literature has influenced the art and literature of the modern world and culture.

### **AS Vergil and Caesar: The Literature of Empire**

This course's goals are to develop the student's abilities to translate the required passages from Caesar's De bello Gallico and Vergil's Aeneid into English, to help them understand the context of the written passages (including the political, historical, literary, and cultural background of each author and text), and to help them understand the reasons behind the particular style of writing and the rhetorical devices employed. The course also helps students to be successful in analyzing Latin passages and in understanding how and why the author uses the language in a particular way and the effects he is hoping to produce.

## **Mandarin Chinese Sequence**

### **Mandarin Chinese Foundations A/B**

Mandarin Chinese Foundations is a two-year course designed for high school students that builds a strong foundation in the Chinese language while sparking a passion for language learning. Through a combination of speaking, listening, reading, and writing, students will develop essential vocabulary and grammar skills. The course emphasizes real-world conversations and cultural insights, allowing students to use Mandarin in everyday situations. In addition to language development, students will explore the cultures, geography, art, music, and social studies of Mandarin Chinese-speaking countries, including China, Taiwan, Singapore, and others.

### **Mandarin Chinese Novice B**

Introduction to Mandarin Chinese is designed for students who have no previous or little experience with the Chinese language. This course provides an introduction to the fundamental principles of the Chinese language: tones/phonetics, characters writing system, and cultures at a faster pace. The emphasis is on reading, writing, speaking, and listening communicative skills. Students will be expected to present information about everyday topics using simple sentences through spoken and written language.

### **Mandarin Chinese Intermediate I**

This is a sequential course after the Novice Mandarin Chinese course. Students will continue to build upon their communicative skills in listening, speaking, reading, and writing. There is a more in-depth look at grammatical structures and vocabulary. Students will be expected to present information about everyday topics by creating and using simple sentences, through spoken or written language.

### **Mandarin Chinese Intermediate II**

Intermediate Mandarin is designed for students who have completed Beginner's Mandarin or have demonstrated competency in basic Chinese language skills. Intermediate Mandarin helps students construct and engage with longer and more complex language structures. Students will build on interpretive modes of communication and practice using those skills in personal and professional scenarios. Course topics will also introduce students to literary knowledge and cultural perspectives embedded within the Chinese language. By the end of the course, students will be able to write in a short essay format and perform short monologues in Chinese.

### **Mandarin Chinese Advanced I**

The Advanced Mandarin course is aimed at helping students express themselves with longer and more complex sentence structures. Students will build on interpretive modes of communication developed in the previous year and practice accessing those skills in personal and professional environments. The topics focus on cultural perspectives, linguistic knowledge, and exposition. By the end of the course, students will be able to write in a short essay format and speak in a 2-3 minute presentation.

## **Spanish Sequence**

### **Spanish Novice B**

This Spanish immersion course is designed to develop the student's interpersonal, interpretive, and presentation skills. In this course, the students will apply their knowledge and skills to complete a variety of written and oral projects to demonstrate their learning. Students will continue to develop their understanding and appreciation of Spanish Culture with authentic texts, realia, music, and dance from the 21 Spanish-speaking countries. Students will maintain a portfolio of work and present a final project to demonstrate their acquired level of proficiency in all three modes of communication at the end of the course.

### **Spanish Intermediate**

This Spanish immersion course is designed to develop the student's interpersonal, interpretive, and presentation skills. In this course, students will develop their ability to sustain conversations and written presentations on a variety of topics and themes using authentic texts and multimedia materials. Students will learn to construct oral and written arguments to narrate, persuade, compare, and analyze a variety of contemporary and historical topics of the Spanish-speaking world. Students will maintain a portfolio of work and present a final project to demonstrate their acquired level of proficiency in all three modes of communication at the end of the course.

### **Spanish Theater, Cinema, and Culture**

This Spanish class is an immersion course designed to further develop students' abilities in the three modes of communication: interpersonal, interpretive, and presentational. The students will analyze and compare different genres of theater, film, and documentaries of the 20th- and 21st-centuries. Students will research, analyze, compare, and reflect on social issues, fashion, food, social media, and music. They will also gain an understanding of how all twenty-one Spanish-speaking countries are connected by the Spanish language and still preserve their own unique culture and identity. Students will lead discussions on the meaning of being a global citizen, current issues and trends of the Spanish-speaking world, and analyze how technology is transforming cultural traditions and identities, specifically with the use of social media. In this course, the students will produce videos in a variety of genres; for example, commercials, horror video clips, short plays, video stories, short movies, and critiques of films that have been discussed in class. This course is for students who have completed the Intermediate course or can demonstrate an Intermediate Mid level of proficiency.

### **Current Issues in the Spanish-Speaking World**

This course is a language immersion course designed with an emphasis on the interpersonal, interpretive, and presentational modes of communication. The students will develop the ability to analyze and compare the diverse Spanish and Latin American Cultures with daily discussions, readings, news, video clips, and guided writing practice. Some of the topics discussed will be global challenges, science and technology, contemporary life, personal and public identities, families and communities, and beauty and aesthetics. Students will be introduced to idiomatic expressions of the Spanish language and will continue to refine their pronunciation and comprehension by participating in class discussions, preparing rehearsed speeches, and participating in debates. A variety of Spanish realia, as well as historical and cultural topics, are used to increase the depth of student appreciation of Spanish culture. Contemporary authentic Spanish news, video clips, and Podcasts are used to engage in advanced language discussions. This course is for students who have completed the Intermediate B course or can demonstrate an Intermediate Mid level of proficiency.

### **AS Twentieth-Century Spanish Literature**

Advanced Studies in Twentieth-Century Spanish Literature is a rigorous, discussion-based course designed for fifth-year students who have demonstrated intermediate-high proficiency in Spanish across the three modes of communication: interpersonal, interpretive, and presentational. Students will develop advanced-level reading, writing, listening, and speaking skills through the study of twentieth-century Spanish and Latin American literature. They will analyze literary texts within their historical, cultural, and socio-political contexts, express and defend their interpretations and critiques in formal academic discussions and presentations, strengthen their ability to compare and contrast Spanish and English literary traditions, and explore the genre of magical realism and its significance within Latin American literature. Throughout the course, students will engage in seminar discussions, leading and participating in in-depth literary dialogues to demonstrate analytical and critical thinking skills. They will conduct independent research on an author, literary movement, or theme, culminating in a multimedia presentation. Additionally, students will complete analytical essays and creative writing assignments inspired by the themes and techniques studied.