



Winchester Thurston School

Curriculum Guide 2026-27

To Our Students:

“Think also,” begins our Credo, and the courses described in these pages will invite you to do just that. The curriculum at Winchester Thurston offers students opportunities to cultivate existing passions, deepen expertise, examine alternate perspectives, and develop new interests. You will develop the intellectual and ethical skills needed to understand, solve, and act on the most pressing challenges of our age. You will speak and write clearly in both English and a second world language and listen to others with respect. You will study computer science to understand and better use the technologies on which we all depend. You will cultivate your bodies and your imaginations through athletics and the arts. And of course, through our City as Our Campus program, you will have ample opportunities to dive into all Pittsburgh has to offer and teach us.

When choosing courses, keep these strategies in mind:

- Outline the courses you may want to take later in your WT career. Pay attention to graduation requirements and prerequisites. Some courses require prior experiences, understandings, and approvals!
- Alternate choices are critical, as schedule conflicts and enrollment may change what you can take in any given term.
- Your advisor, classroom teachers, college counselors, and Mr. Sadowski can be very helpful to you as you make your decisions. Ask questions and take good advantage of their wisdom and guidance.

At our best, WT students are engaged and independent learners, creative and critical thinkers. Commit yourself to a learning experience that will inspire, expand, and transform you!

Dana Kooistra
Upper School Director

Overview and Requirements

Course Load. At Winchester Thurston, fully enrolled students in 9th through 11th grades carry **six** courses: five in the core disciplines of English, History and Social Science, Math, Science, and World Language, and electives in the Arts and Computer Science. Students also take a required, grade level seminar focused on academic skills, social-emotional learning, and physical health and wellness. Performing Arts ensembles in music and dance also meet during the day for academic credit. From time to time, a student will need to withdraw from a course during the school year. Non-senior students wishing to take fewer than six courses must secure permission from the Upper School Director.

Senior Year. While we strongly recommend all students take six courses, seniors who have completed their elective requirements have the option to enroll in five core courses. Seniors also take the 12th-grade seminar, which supports students through the college application and matriculation process.

Graduation Requirements. The table below describes the *minimum* number of credits a student must earn to graduate from WT (**140 credits**). Nearly all of our students exceed our baseline requirements and choose either to take courses in all five core departments for all four years of high school OR double-up in one core discipline if they have completed their requirements in another.

	Requirement	Credits Met	Total Credits
English	4 Years	24	
Mathematics	3 Years and Algebra 2	18	
History and Social Studies	3 Years	18	
Science	3 Years of Lab Science**	18	
World Languages & Cultures	Two years and Level 3	12 (minimum) - 18*	
Computer Science	1 Year (2 semesters)	6	
Performing and Visual Arts	1 Year (2 semesters)	6	
Grade Level Seminar	4 Years	8	
Credits for Required Courses		110 to 116*	} 140 minimum
Additional Earned Credits		24-30*	

*The range reflects a student's achieved credits in World Language

**Lab science includes 1 year each of physics, chemistry, and biology

Winchester Thurston does not award credit on our transcript for courses completed at schools attended before enrolling at WT. However, we will determine appropriate placement for students entering with high school credits. Students enrolled at WT may not meet graduation requirements through courses taken at other institutions or pursued independently.

Sample Schedules. Students in 9th and 10th grade follow a foundational curriculum designed to prepare them for the more complex courses to come. Upperclass students enjoy a broader range of electives in the core disciplines and beyond. Below, find typical schedules for each year at WT. 9th, 10th, and 11th graders typically take six courses plus the grade level seminar. Seniors may take five or six courses and the grade level seminar, which supports the college application process.

9	SEMESTER 1	SEMESTER 2
	Eng 9: Literature of Journeys and Discovery Contemporary World History Physics Math World Language Art or Computer Science Grade Level Seminar	Eng 9: Literature of Journeys and Discovery Contemporary World History Physics Math World Language Art or Computer Science Grade Level Seminar

10	SEMESTER 1	SEMESTER 2
	Eng 10: American Voices American Foundings Chemistry Math World Language Art or Computer Science Grade Level Seminar	Eng 10: American Voices American Foundings Chemistry Math World Language Art or Computer Science Grade Level Seminar

11	SEMESTER 1	SEMESTER 2
	English History, Science, or Computer Science* Biology: Cells, Genetics, and Evolution Math World Language Elective (any discipline) Grade Level Seminar	English History, Science, or Computer Science* Biology: Cells, Genetics, and Evolution Math World Language Elective (any discipline) Grade Level Seminar: College Counseling

**Students may defer their third history course to senior year if they wish to double in STEM or world language.*

12	SEMESTER 1	SEMESTER 2
	English Electives (4 required, 5 encouraged)* Grade Level Seminar: College Counseling	English Elective Courses (4 required, 5 encouraged)* Grade Level Seminar: College Readiness

**Students have considerable latitude in designing their senior schedules. They work with their advisor and college counselor to ensure they meet their graduation requirements, explore their passions, and distinguish themselves as scholars while creating space for co-curricular activities and leadership opportunities.*

Additional Requirements. Social-emotional learning and physical wellness are part of every Winchester student's experience and required elements of our program.

GRADE LEVEL SEMINARS and PHYSICAL HEALTH & WELLNESS	
Grade Level Seminar	4 Years (pass/fail)
Physical Health & Wellness	Two seasons per year of a team sport, school-based dance ensemble, or PE class offered through the grade level seminar. Students participating in a sport or robust physical activity outside of school may also apply for an athletic exemption.

INTERSCHOLASTIC SPORTS		
Fall	Winter	Spring
Crew (Coed) Cross Country (B, G) Field Hockey (G)) Soccer (B, G) Tennis (G) Volleyball (G)	Basketball (B, G) Fencing (Coed) Indoor Track (Coed) Squash (Coed)	Crew (Coed) Lacrosse (B, G) Tennis (B) Track (Coed)

WT offers additional club sports, activities, and player development opportunities based on student interest.

Academic Standing

To be in good academic standing in the Upper School, a student must earn a C average at year-end and have no more than four credits at the D or F level for the year. A student who fails to meet the minimum academic expectations at the end of a year may be asked to do summer work or depart the school.

With the approval of the Upper School Director and Department Chair, a student may make up a failed course in one of the following ways:

- The student may repeat the failed course at WT.
- The student may repeat the failed course in an approved summer school program.

In completing the course, the student must demonstrate sufficient mastery to continue at WT. In some cases, the student may be required to complete a final assessment administered at Winchester Thurston.

A senior who does not end the year in good academic standing may be asked to take summer courses (or complete summer work) to earn their diploma.

Winchester Thurston will not award a diploma until the student successfully completes the required work by a date set by the school.

Adding, Dropping, and Withdrawing from Courses

Add/Drop Period	A student may change their schedule before a term begins or during the first two weeks of the term. To request a change, a student should: ☐ Discuss the desired change with their advisor and, if in 11th or 12th grade, their college counselor. ☐ Discuss the desired change with their parent or guardian. ☐ Email Mr. Sadowski, cc'ing their advisor and Ms. Kooistra, to request the change. <i>NB: Some requested changes will require a Department Chair's approval.</i>
Withdrawing from Courses	A student may drop a course <u>before</u> the interim point of the term in which the course began. Courses dropped before the interim do not appear on the transcript. After that time, any withdrawals will be noted on the student's transcript. Students who withdraw from a course for documented medical reasons will receive a Withdraw-Medical (WDM) on their transcript. All other students will receive either a Withdraw-Pass (WDP) or a Withdraw-Fail (WDF), based on their grade at the time of withdrawal. Students must initiate a withdrawal before final grades are reported. No partial credit will be given for a yearlong course not completed.¹ To withdraw from a course, a student should: ☐ Follow the procedure described above, cc'ing the Department Chair on the request email.
Adding a course in progress after the Add/Drop Period	Students may not add a course in progress after the add/drop period unless the teacher, Department Chair, and Division Director concur that the student is misplaced in our curriculum and requires a schedule change.

¹ On rare occasions, the Bear Care Team, in consultation with the Department Chair, may recommend a student withdraw from a course in progress. Course withdrawals initiated in this way must occur before final grades are reported and do not appear on the transcript.

Advanced Offerings

WT has replaced test-driven, cookie-cutter courses with imaginative, advanced offerings designed for *our* students and rooted in *our* educational mission. These capstone courses match the intellectual rigor of the College Board's Advanced Placement (AP) classes while allowing for greater depth of exploration and expanded opportunities for interdisciplinary and project-based experiences. Colleges and universities across the nation recognize the rigor and sophistication of our advanced curriculum.

Advanced Topics courses, designated **(AT)** on the transcript:

- prioritize deep understanding and transferable knowledge;
- respect and nurture students' intellectual curiosity;
- demand student investment, independence, and agency;
- integrate expert thinking across disciplines;
- provide opportunities for experiential learning and independent research;
- forge real-world connections through our City as Our Campus program;
- develop students' capacities for critical and creative thinking, communication, and collaboration.

WT also offers **Upper-Level (UL)** electives in all disciplines. These unique-to-WT courses echo our Advanced Topics courses in significant ways. They incorporate interdisciplinary and experiential approaches to learning, challenge students to refine and apply enduring skills and understandings, and center student voice. However, the pace and rigor of these courses are intentionally more measured, guided, and scaffolded. Most 11th—and 12th-grade students take a balanced mix of Advanced Topics and Upper-Level Courses.

AP Testing

Because WT has replaced test-driven AP offerings with advanced courses of our own design, colleges do not expect WT students to take AP exams. That said, WT offers limited testing for students wishing to submit AP scores to U.S. colleges and universities that still offer credit for them, and for students *required* to submit AP scores to international colleges and universities.

Students registering for AP tests should keep the following in mind:

- ✓ WT courses are *not* tailored to AP exams, and test preparation is *entirely* a student's responsibility. Any student registering for an AP exam must, on their own, research the exam's format and master both content and question types not covered in the WT curriculum — all while keeping up with daily coursework.
- ✓ We highly discourage students from taking AP exams when extensive preparation is required. With respect to college admissions, students are better served by building a strong record of success in their academic courses.
- ✓ WT does not offer course credit or allow curricular acceleration on the basis of an AP exam.

Acceleration in Science and Computer Science

While most students follow WT's foundational curriculum, a few students demonstrate early readiness for a more accelerated course of study. This is particularly the case when students begin 9th grade enrolled in an advanced math course or with significant programming experience.

Students attempting to place into a more demanding course in our sequence must **seek permission from their advisor, the Department Chair, and the Upper School Director**. College Counselors may also weigh in on this decision. To demonstrate readiness for advanced coursework, the student must:

- Take a course, in person or online, that covers content and skills roughly equivalent to WT's offering. The course must provide a complete curriculum with topics and a transcript or report card evincing student progress through both test scores and a final grade of B or higher.
- Self-study a WT-approved curriculum either independently or with a qualified tutor. Students electing this option must earn a minimum grade of 85% on a placement exam by the first Friday in August.

When accelerating, a student must take the more advanced course in our curricular sequence to satisfy WT's graduation requirements. For example, a student testing out of *Biology: Cells, Genetics, and Evolution* would elect *Advanced Cell Biology and Human Disease (AT)* or *Biotechnology (AT)*.

WT does not offer grades or credit for skipped courses and they do not appear in any form on the WT transcript. **Students attempting to accelerate in Science or Computer Science should register for the course they hope to take in the next school year.**

Summer Study in Mathematics

Winchester Thurston does not permit self-study and placement testing to skip classes in the mathematics sequence. Experience tells us that the limited domain of self-study too often leads to significant challenges in later math courses. Further, a single placement test, often taken after cramming, is not a reliable indicator of long-term retention of essential skills and content.

Winchester Thurston offers two in-person summer math courses that we recommend as the most appropriate program for students who wish to move ahead more quickly in the curriculum. Find full course descriptions in the Mathematics section of the Curriculum Guide.

- **WT Summer Geometry:** Summer Geometry allows students entering Upper School in Algebra 1 to take Calculus 1 before graduation. Students must earn a C+ or higher in Algebra 1 to enroll in this course.
- **WT Summer Calculus A:** Summer Calculus A, an abbreviated Calculus 1 course, allows students to move from Precalculus to Calculus 2.

In exceptional cases, students may apply to take an approved, non-WT summer course subject to the following criteria:

- **Eligibility.** Students must:
 1. Earn an A or A- in the prior course;
 2. Demonstrate strong study skills and mathematical curiosity (via teacher recommendation);
 3. Provide a clear and compelling motivation for acceleration before the WT course registration deadline.
- **Summer Coursework Requirements.** The course must be conducted by a qualified instructor at an approved program* and supply a final transcript.
- **Demonstrated Understanding.** Students must earn a grade of B or higher in the summer course to advance. Students should email a copy of their summer transcript to the Department Chair and Division Director by **August 15th**.
- **Concurrent Courses.** Students may not study a course (e.g., calculus) while enrolled in its prerequisite (e.g., precalculus).
- **Timing.** WT students take a maximum of six courses during the school year. We highly discourage students from taking on additional classwork during the school year.

WT does not grant credit for courses taken outside of WT or the MSON network. Only WT and MSON courses are included on our official transcript and calculated in a student's GPA.

***For a list of approved courses and the application form for summer study, please see the Mathematics Department Chair, Dr. Kelly VandenBosche. The summer study application opens during the course request period. Students approved for summer study should register for the course they hope to take in the next school year.**

Contact Information

On the pages that follow, find descriptions of courses offered at WT and through the Malone Scholars Online Network.

Please note that courses may be canceled due to insufficient enrollment or staffing changes. During the course request window, students must select not only first-choice courses but also alternates as we cannot accommdate every schedule request.

Questions? Reach out to your academic advisor, the appropriate Department Chair, or to...	
Dana Kooistra <i>Upper School Director</i>	kooistrad@winchesterthurston.org 412.578.7516
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English

Matthew Bachner, *Department Chair* | bachnerm@winchesterthurston.org

English 9: Literature of Journeys and Discoveries

(Required for freshmen) Year - 6 credits

What compels us to leave our comfort zones and explore the unknown? What are we willing to risk to obtain new knowledge or to ensure our freedom? How do we find our passions and our paths through life? How do we derive meaning from adversity? How can literature transport and transform us? In this course, students explore these questions and more. They engage in such literary study with the aim of developing their identities and skills as readers and writers. The texts we read serve not only as exemplary works worthy of critical reflection but also as mentor texts worth imitating in our own literary journeys as developing writers. Using published pieces as mentor texts, students examine both thematic patterns as well as a piece's craft moves (diction, detail, figurative language, etc.). Students develop skills as active readers, focusing on reading as a conversation with the text. They respond to anchor texts and self-selected texts through daily reading and writing practices. Using this method, students work toward several polished pieces of writing, spanning a variety of genres (literary analysis, creative pieces, and personal essays).

English 10: American Voices

(Required for sophomores) Year - 6 credits

What does it mean to be American? To what extent do Americans share a common identity? How do American authors respond to the influences of government, the natural world, race, class, and gender in their writing? How have American writers transformed what is possible with literature through innovation and experimentation with form and focus? American Voices aims to unpack the complex cultural fabric of American identity. In this course, students will study writers from a rich diversity of backgrounds in the genres of poetry, short stories, personal essays, music, novels, and drama. Students will learn to deepen their analysis of these genres through the use of literary lenses, form arguments and challenge assumptions about American identity through written work and dialogue, and add their voices to the landscape of American literature through their own creative and critical writing.

Comedies & Tragedies (UL)

(Next offered in 26-27. Open to juniors and seniors) Year – 6 credits

Playwright Sarah Ruhl once observed that the ancient Greeks purposefully paired comedies and tragedies during drama festivals to allow “both the humor and desperation of life [to be] illuminated on one day.” Through the study of drama, film, and other mediums of storytelling such as sketch comedy, short fiction, and creative nonfiction, students in *Comedies and Tragedies* will examine the fullness of the human experience, from the joys and absurdities to the sorrows and trials. Students will analyze the distinct conventions of both comedy and tragedy, develop an understanding of the meaningful ways in which these conventions overlap and inform each other, explore innovative artists who have worked to merge these genres into new modes of expression and develop their own works inspired by these genres to address contemporary life in all of its complexity.

Creative Writing Intensive: Crafting for Publication (UL)

(Next offered in 26-27. Open to juniors and seniors) Year – 6 credits

Have you ever wanted to write a screenplay but don't know where to start? Needed the space and time to begin the novel, memoir, or poetry manuscript you've been hoping to produce? Wished to have your writing reach a public audience but don't know how to navigate the publishing industry? *Creative Writing Intensive: Crafting for Publication* is designed for students who are serious about their craft and who wish to challenge themselves through the hurdles and rewards of the creative writing process. By participating in this course, students will explore craft elements from a range of literary genres, learn the ins and outs of the publishing industry, independently read and report out on what they have learned from mentor texts that might inform their work, and, through the course's writing workshop model, regularly practice the art of giving and receiving feedback. In the first phase of the course, students will study teacher-selected short- and long-form works to develop a shared understanding of craft elements before having the chance in the second phase to explore independent projects in a genre of their choosing, which they will refine by workshopping their efforts with educators, peers, and City as Our Campus partners through the drafting phase.

Those who enroll in this writing-intensive course should be prepared to present their work in public forums, submit their work to both school and outside publications and contests, and participate in the broader literary community in Pittsburgh by attending city events with published authors.

Song, Stage, and Screen (UL)

(Next offered in 27-28. Open to juniors and seniors) Year – 6 credits

The human spirit seeks to express itself by any means possible. It strives to be heard in language, image, movement, rhythm, and performance. And what does the human spirit express through these means? Rage, love, defiance—the experience of a single moment or of an entire lifetime. This course will explore the expressive forms of poetry, songwriting, drama, and film and will trace the ways that these forms explore and narrate the human experience. We will ask ourselves how these forms adequately capture the nuances of a life lived. We will inquire into the powerful relationship between the form and content of language, both through close analysis of mentor texts and through practice in our own writing and performance. Through a variety of reading and writing assignments, this course will engage both the creative and the analytical sides of the student. Students will learn to evaluate and appreciate the aesthetic qualities of a work, even as they analyze its grammar, style, and effects—including literary, poetic, and visual devices. This course asks students to take initiative with several ambitious projects in each of the genres we study. This course will ask students to wrestle with questions of authentic expression, communication, and empathy in artistic creation and to share their own responses through analytical and creative writing, and on the page and on the stage.

Speculative Fiction: Understanding the Unreal (UL)

(Next offered in 27-28. Open to juniors and seniors) Year – 6 credits

What does it take to speculate, to create your own universe, to make a story genuinely fantastical? Speculative fiction is an umbrella term for a “super genre”, or narratives that do not fully belong in the science fiction or fantasy genre. This can include steampunk, afro-futurism, dystopia, space opera, high

fantasy, paranormal fantasy, and so on. This course focuses on exploring the idea of the imagined world and the art of world-building itself as a reflection of issues within our own communities. These fantastical worlds can be futuristic and technologically advanced or even work through profound social, environmental, and political transformations. Literary and cinematic works will be paired with theoretical readings that critically frame speculative and science fiction in relation to questions of gender, race, class, colonialism, bio-politics, human rights, as well as environmental and social justice. Students will compose both analytical writing as well as make their own contributions to the subgenres within the realm of speculative fiction.

Rhetoric, Composition, and the Art of Persuasion (AT)

(Open to juniors and seniors) Year - 6 credits

What makes an argument effective? How can language and visual media be employed to galvanize audiences, elevate issues of importance, and inspire positive social change? This writing-intensive class, the equivalent of a first-year college English course, attempts to answer this question through the study of rhetoric--the art of persuasion. Students will explore and experiment with the rhetorical conventions of a diverse range of nonfiction texts and visual arguments, including essays, journalism and opinion pieces, advertising, humor and satire, documentary film, political speech, and other forms of public oratory and digital media. Using examples from these genres as models, students will cultivate skills in ethical argumentation and rhetorical analysis to utilize in developing original arguments that pursue lines of inquiry, convince and persuade audiences, and mediate opposing viewpoints. Students will experience a variety of assessments both written and visual, personal and research-oriented, scaffolded by the instructor and independently pursued by students themselves.

Critical Approaches to Literature and Power (AT)

(Open to juniors and seniors) Year - 6 credits

This writing-intensive, college-level course takes up the relationship between literary theory and social power. Students will think about how texts reflect, endorse, challenge, and remake the hierarchies that determine who has access and agency in our world. They will read and compare the frameworks of critical theorists from various schools of thought. These theorists will help to inform students' reading and writing about literary texts, events, and cultural objects from across the world. Overall, the course will challenge participants to articulate how identity and power intersect in literature and literacy practices, identifying a range of strategies that students can use to empower themselves and others through language. The course asks students to take initiative across several ambitious writing projects, culminating in a theory-driven article that students will workshop and revise for potential academic publication.

History and Social Studies

Michael Naragon, *Department Chair* | naragonm@winchesterthurston.org

Contemporary World History

(Required for freshmen) Year – 6 credits

In Contemporary World History, students examine and analyze important events, ideas, institutions, and developments throughout the world from the mid-twentieth century to the present. The course begins with a review of imperialism and the World Wars to establish the historical context for an interdisciplinary examination of the Cold War, decolonization, and globalization. Though global in its perspective, this course utilizes City as Our Campus partnerships to support the study of history, politics, and culture. In addition to developing a strong command over the material, students will develop reading, writing, and research skills essential to their success in future history courses and beyond, expand their capacities for critical thinking, and develop an appreciation of divergent perspectives. At the end of the year, students will apply their historical knowledge to better understand the roots of contemporary global issues and debates.

American Foundings

(Required for sophomores) Year – 6 credits

Who gets to claim American identity and citizenship? How, and through what struggles, has access to the full rights and guarantees of American citizenship expanded throughout the American experience? These questions inform this course, in which students challenge and interrogate basic assumptions about when, where, how, and by whom the United States was, and is continually being, founded. By positing multiple “foundings” of the United States, this course elevates voices beyond the powerful to include other Americans who have worked to realize the full promise of our Republic’s ideas. In this course, students begin with the Indigenous Communities and the American Revolution, considering to what extent and for whom the Revolution changed life in America. Next, students investigate the framework of the Constitution, tracing the evolution of our government and individual rights to see how the Constitution’s meaning and application have changed over time, particularly during the Civil War and Reconstruction Eras. Finally, students will examine in-depth case studies from later decades - the culture wars of the 1920s, the fight for civil rights in the 1950s and 60s, and the political revolution of the 1980s - that encapsulate the continuities, changes, and contradictions of American history. Throughout the course, we will pay special attention to the ways in which Americans’ complex and ever-shifting identities shaped their daily lives, political systems, and values. Assignments and assessments invite students to read primary and secondary texts critically; research honestly and effectively; and analyze, construct, and present compelling arguments on paper and in the classroom.

History Department Electives 26-27		
Y E A R L O N G	Economic Thought and Policy: Bridging Principles and Practice (UL)	
	Power and Protest: Social Reform Movements in America (UL)	
	Genocide: Global Perspectives on Crimes Against Humanity (AT)	
	Urban Research and Design (AT)	
	Machine Learning and the Social Implications of AI (AT)	
S E M E S T E R	Fall	Spring
	Environmental History (AT)	Sports and Society (UL)
	Death, Divinity, and Devotion: Cross-Cultural Perspectives (UL)	Global Power and Politics (AT)
	Europe: The Age of Revolution and Reform, 1789-1914 (UL)	Europe: The Turbulent 20th Century (UL)

American Politics and Constitutional Law (AT)

(Next offered in 27-28) Year - 6 credits

“The First Amendment is often inconvenient. But that is beside the point. Inconvenience does not absolve the government of its obligation to tolerate speech.” –Justice Anthony Kennedy, 1992

Questions will dominate this course as we seek to understand the complex values and principles lurking beneath Mr. Justice Kennedy’s call for tolerance and vision of government. What does it mean in practice to tolerate speech? Under what, if any, circumstances do the obligations of governance require the restriction of rights? To what extent should public policies become agents of social change? What is the proper balance between liberty and security? To address these and other questions, we will survey some of the great issues and controversies that surround American politics and constitutional law. To grapple with these issues, the course is divided into two discrete chunks. The first semester will be devoted to analyzing the principles behind the formation of the Constitution, paying particular attention to electoral politics and the looming presidential election, the federated nature of the American system, and the dispersal of political powers among the three branches of national government. Students will deepen their understanding of civic life, the rights and responsibilities of citizens, and the formation of public policies. The second semester focuses closely on the Supreme Court and its decisions, with a special emphasis on current issues before the court. We will read U.S. Supreme Court decisions and listen to selected oral arguments seeking to understand the nature of the Constitution, the contested nature of its interpretation, and the evolving meaning of civil liberties and civil rights. This course has an additional, somewhat practical side. It is hoped that students will be inspired to invest themselves in the political process, will think of ways to improve public policies, and will be inspired to press their ideas in the public realm. This course will emphasize critical thinking, the open exchange of ideas, and the occasional essay. Additional assessments will include case studies, objective tests, simulated debates, case presentations, and written analyses of legal issues throughout US history.

Death, Divinity, and Devotion: Cross-Cultural Perspectives (UL)

(Open to juniors and seniors) Fall semester – 3 credits

This semester-long interdisciplinary course grapples with several core questions. How do beliefs about death—and the reward that might follow— impart meaning to our daily habits and rituals? How do belief and faith impact the way people live their lives? Framed around two books about religion and death, *Coffinman: The Journal of a Buddhist Mortician* by Shinmon Aoki and *The Great Divorce* by C.S. Lewis, students will interrogate how and why systems of belief are central to the human experience. Students will analyze the influence of cultural and historical factors that motivate people and groups to put their faith in belief systems from Stoicism and prophets to God/s. They will read about worldviews such as Humanism and Confucianism, as well as from ancient texts such as the Bhagavad Gita, Sutras, Torah, New Testament, and Qur'an.

Students should prepare to read primary sources and literature, write analytical essays, and complete research projects. Additionally, students will participate in discussion-based classes and presentations. This class will also engage students through City as Our Campus opportunities, which will include visits to local places of worship to apply course questions first-hand.

East Asia: Politics of Memory (AT)

(Next offered in 27-28. Open to juniors and seniors) Spring Semester – 3 credits

This semester-long course asks students to explore two fundamental queries: How do the stories a nation tells orient its actions and position in the world? What happens when counternarratives challenge regional realpolitik? Thousands of years ago, China's Zhou Dynasty crowned itself "The Middle Kingdom," positioning China at the center of the known world culturally and cartographically. Narratives justifying China's control of East Asia, including Tibet and Taiwan, continue today to pervade the country's national consciousness and impact relations with neighboring Asian states. Through film, memoir, fiction, and historical articles, students will examine how national identity, hegemony, and global relations impact contemporary geopolitics in East Asia.

Students should prepare to read primary sources and literature, write analytical essays, and complete research projects. Additionally, students will participate in discussion-based classes and presentations. This class will also engage students through City as Our Campus opportunities.

Economic Thought and Policy: Bridging Principles and Practice (UL)

(Open to juniors and seniors) Year – 6 credits

Economics allows us to see how decisions are made when resources are scarce and have to be allocated. This advanced course explores the interplay between economic theory and policy, examining how foundational principles shape decisions that address contemporary social, political, and environmental challenges. Through case studies, simulations, and critical analysis, the course emphasizes applying theoretical frameworks to evaluate real-world policies across sectors like technology and athletics. Together, students will read policy papers and economic analyses to investigate themes including capitalism and to what degree it continues to function for everyone; poverty, the role of the government in the economy; monopolies and technology companies; and global trade and whether it is free or fair. In each of these case studies, students will read and analyze economic arguments and investigate to what degree theory is applied in practice. Students will engage the ideas of thinkers such as, but not limited to, Thomas Piketty, John Maynard Keynes, Yanis Varoufakis, and Milton Friedman. We will also engage the work of Kate Raworth on sustainability and economic thinking, Esther Duflo and development economics, and Claudia Goldin on gender and labor economics. This course places a

significant emphasis on class discussions and analytical skills. Students are not expected to find solutions but to think critically and develop questions for further study. Complexity is key and students will find all of our case studies exist in the gray area of black and white.

Environmental Histories: Humans and the Natural World (AT)

(Open to juniors and seniors) Fall Semester - 3 credits

By placing the environment at the center of this story, this course seeks to challenge and reshape our understanding of global history. Through readings, lectures, and discussions, students will explore the field of environmental history, which examines human responses to, interactions with, and impact on the more-than-human world. The course begins with a general survey of environmental history: indigenous relationships to the natural world; the impact of settlement, agriculture, and industrialization on the environment; cultural ideas about wildness and wilderness; acute environmental degradations and our attendant political, cultural, and economic responses; the manner in which ideologies and identities, such as race, class, and sexuality, structure access to and relationships with the environment. Second, the course will focus on case studies of a specific environmental actor, whether plant, animal, water, or mineral, to excavate a deeper understanding of how the natural world has influenced human history. How, for example, has the banana driven historical change? Finally, students will tackle an applied research project, and they will complete a Places & Events project, a multi-modal research framework where students investigate a specific moment of environmental historical change (think, for instance, of the Johnstown Flood).

Europe: The Age of Revolution and Reform, 1789-1914 (UL)

(Open to juniors and seniors) Fall semester - 3 credits

This course explores Europe's 'Long 19th century' from the French Revolution to World War I. The ideas that defined the century will be explored: capitalism, nationalism, socialism, imperialism, and feminism. Students will examine how revolutionary ideas, industrialization, nationalism, and imperialism reshaped both European and global societies. The rise and fall of empires and the emergence of nation-states will be key themes for the semester.

This extraordinary era witnessed fundamental change across the European continent. From the rise of mass politics to new patterns of labor and consumption to major scientific advances, Europe was forced to rethink its identity. Activists challenged accepted norms of class, gender, citizenship, and nation, while imperialism brought issues of race and "civilisation" to the fore. Philosophers, scientists, and artists sought in different ways to define the human condition and discover underlying truths about what makes us who we are. The Europe that emerged from this turmoil was substantially different, yet Europeans were no closer to agreeing on a unified identity and ideals. By exploring the conflicts, triumphs, and tragedies of the 19th century, we will develop our knowledge of Europe past and present and gain a deeper understanding of the issues that continue to shape Europe and the global space today.

Europe: The Turbulent 20th Century (UL)

(Open to juniors and seniors) Spring semester - 3 credits

This course explores the history of Europe in one of its most challenging eras, the "long" 20th century. The journey begins at the fin-de-siecle, a time of rapid technological advance, exciting artistic innovation, and troubling political developments, and carries through to the present moment, where these issues still echo in

surprising ways. As we investigate this tumultuous century, we will analyse a variety of themes, including rival theories of how societies ought to be governed, who ought to be included or excluded from the community, how individuals and groups ought to live, and what forms culture ought to take. We will encounter arguments for democracy, socialism, fascism, nationalism, internationalism, isolationism, and more. Recognising that modern European history is global in its reach, we will also examine imperialism, decolonisation and their consequences. Through close reading and discussion of primary and secondary sources, we will investigate how the idea of Europe has evolved over the long 20th century and make sense of where Europe finds itself today.

Genocide-Global Perspectives on Crimes Against Humanity (AT)

(Open to juniors and seniors) Year - 6 credits

This discussion-based seminar is designed to develop student awareness and activism centered on the issues associated with the concept of genocide and crimes against humanity in a global perspective. Students will explore historical manifestations of genocide through the lenses of history, literature, sociology, economics, the development of international law, and psychology. This interdisciplinary approach engages students intellectually, challenges them to think critically, and equips them to identify and connect themes—actors, reconciliation and remembrance, and historical memory—across historical events. Through the history of the Armenian genocide, the Holocaust, the genocide in Cambodia perpetrated by the Khmer Rouge, the Rwandan genocide, the violent disintegration of Yugoslavia, and the long Guatemalan civil war and genocide of the 1980s, students will grapple with primary and secondary sources, survivor testimony, and trial records. Utilizing the content of the class, students will study the conceptual and theoretical frameworks of historical genocides and the associated ideologies of racism, antisemitism, religious hatreds, and prejudices that preceded the violence. Together we will also promote a nuanced engagement with current events centered on crimes against humanity. Students will learn to think critically, research effectively, synthesize complex ideas, and present compelling arguments on paper and in class discussions.

Global Power and Politics (AT)

(Open to juniors and seniors) Spring semester - 3 credits

How does government organization compare between nations? What role do transnational corporations play in global politics? Throughout millennia, power has shifted from small hunting and gathering groups to large empires to 20th century nation-states. Now, a quarter into the 21st century, we see once-reliable forms of government compete for relevance and trust, while Intergovernmental Organizations (IGOs), Non-Governmental Organizations (NGOs), and Transnational Corporations (TNCs) play increasingly dominant roles in global decision-making. While the age of the internet once forecasted a more democratic role for peoples' voice, there is fear that AI is consuming power of the people. Where does global power reside? And how can people of individual countries, regions, and the world reclaim this power? Students will participate in discussion-based classes and presentations. Additionally, they should prepare to read primary sources, write analytical essays, and complete research projects.

More than a Game: Sports, Power, and Culture (UL)

(Open to juniors and seniors) Spring Semester - 3 credits

This course traces the history and significance of sports in the twentieth century, examining how the seemingly escapist world of athletics is shaped by—and in turn shapes—economics, politics, and identity, including race, gender, religion, and ability. After defining sport and considering why historians treat it as a powerful lens on social and cultural change, students will examine case studies where athletic events intersect with major turning points in modern history. They will make sustained use of WT's City as Our Campus program to investigate how Pittsburgh—through its past and present infrastructure and its complex cultural history—embodies both the promise and the contradictions of sports in society. The course culminates in an applied research project that invites students to synthesize their historical learning with their engagement in the city itself.

Machine Learning and the Social Implications of Artificial Intelligence (AT)

(Open to juniors and seniors) Year – 6 credits

Prerequisite: CS for Art and Humanities, CS for Mathematics and Science, Interactive Storytelling and Video Game Design, or any other year-long CS offering.

Machine learning is ubiquitous today, utilized in everything from curating recommendation lists on Netflix to diagnosing medical conditions to detecting credit card fraud. Engaged citizens should recognize the pervasiveness of this technology and assess its impacts critically. Students in Machine Learning ask questions and solve problems with big data to better understand the world from both historical and contemporary perspectives. They explore and grapple with issues—such as determining authorship, understanding political affiliations, optimizing transportation systems, and analyzing the criminal justice system—that require an interdisciplinary lens to comprehend. Further, students will learn the computer science techniques necessary to engage societal problems keeping in mind the historical forces that sired these issues in the first place, and the predictable social and political consequences of technological change. Students taking this course may earn computer science *or* history credit but not both, and will designate their choice at the time of enrollment.

Modern Middle East History (UL)

(Next offered in 27-28. Open to juniors and seniors) Year - 6 credits

This discussion-based course addresses the main economic, religious, political and cultural trends in the modern Middle East. Students will engage and learn about the cultural diversity of the Middle East, relations with Great Powers, the impact of imperialism, the challenge of modernity, the creation of nation-states and nationalist ideologies, the discovery of oil, radical religious groups, and war and peace. Significant time will be given to comparative religious understanding of the region, utilizing the work of scholars such as Gerrard Russell and Sari Nusseibeh. Throughout the course, significant changes will be evaluated in light of their impact on the lives of a variety of individuals in the region and especially how they have grappled differently with increasing Western political and economic domination. Topics of focus will include the collapse of the Ottoman Empire during World War I, European imperialism, the rise of nationalism and Zionism, the Arab-Israeli conflict, political Islam, and the role of the United States in the region. We will engage with the scholarship of Rashid Khalidi, Benny Morris, and Asef Bayat. Attention will be paid to the links between the history of the modern Middle East and contemporary events in the region. This course will emphasize critical thinking and the open exchange of ideas. Students will learn to think critically, research effectively, synthesize complex ideas, and present compelling arguments on paper and in oral presentations.

The Past in the Present: Public History and Contested Memories (AT)

(Next offered in 27-28. Open to juniors and seniors) Year - 6 credits

Historian Carl Becker famously intoned, “The history that lies inert in unread books does no work in the world.” This course intends to introduce students to the public dimensions of history and to challenge students to do the work of history outside of the classroom, engaging the wider world as Becker envisioned. Broadly defined as public history, this approach to the field of history relies on the ways in which the past appears in public-facing settings, such as museum exhibitions, battlefields, street names, historic houses, online memory sites, Hollywood films, monuments, and statues. By examining public discussions of the past, students will grapple with the ways in which disputes over the meaning of historical events reflect both the values of the present and efforts to imagine the future. We will explore the relationship between individual memories and collective commemorations, tracing the complicated ways in which personal experiences, popular media, monuments, and public ceremonies interact to create meaning. Why do some stories become “our” heritage, while others are forgotten? How and why do societies remember something? What moral choices inform the representation of the past and the ways in which individuals write their autobiographies? Students enrolled in this discussion-based course will investigate the scientific and psychological basis for memory, create time capsules, and write a portion of an autobiography. Unlike Becker’s unread books, students will continually do work in the world, and this course will rely heavily on City as our Campus excursions and field work to explore the often-contested stories and narratives Americans tell one another. Students will travel to Oakland, Lawrenceville, the North Shore, and Shanksville, PA, where they will analyze the Flight 93 Memorial. They also will leave the city and journey along the Civil Rights Heritage Trail, which will afford them an opportunity to examine first-hand how museums, monuments, and memorials in North Carolina, Georgia, Alabama, and Tennessee tell the stories of the Black Freedom Movement. Upon their return, students will draw upon their experiences throughout the year and complete a capstone project centered on memorializing a historical event of their choosing. *Note: Enrolled students will be charged a fee in connection with the Travel Seminar to cover meals and transportation. The fee will not exceed \$800 and support is available for students receiving financial assistance from WT.*

Power and Protest: Social Reform Movements in America (UL)

(Open to juniors and seniors) Year - 6 credits

*“We cannot claim to have answers to all the complex problems of modern society. That is too much to ask of a movement still battling barbarism in Mississippi. But we can agitate the right questions by probing at the contradictions which still stand in the way of the ‘Great Society.’” — Bayard Rustin (1965) from *Protest to Politics: The Future of the Civil Rights Movement**

This course examines the social movements that took up Rustin’s challenge and sought to agitate the right questions and address the complex problems of contemporary America, and it is centrally focused on struggles over the meaning of freedom and liberty. Americans have long tinkered with their Union, hoping, in the process, to render it more perfect. This course will scrutinize their efforts and ask students to grapple with various efforts and movements that often ignited bitter disputes over the meaning of rights, citizenship, and national identity. Students will assess the aspirations, limitations, and global dimensions of these movements for change. This course centers on student-led discussions grounded in a diverse array of source materials, including popular songs, political speeches, photographs, and memoirs. Students will engage these texts in order to produce original arguments, and the course will culminate in a major research project.

Urban Research and Design (AT)

(Open to juniors and seniors) Year – 6 credits

By 2050, human geographers believe that 75% of the world's population will live in urban areas, and the cities in which humans live, work, and raise families will face difficult challenges involving social inequality, housing, transportation, deteriorating infrastructure, post-industrial revitalization, environmental sustainability, crime, and food security. This advanced seminar immerses students in the study of urban systems through theoretical analysis, fieldwork, and a capstone research project. Students explore the city as interconnected social, cultural, political, ecological, and economic systems, using urban design as a tool to elevate the human condition. Broadly conceived, urban design fuses various disciplines—ranging from architecture to political science to environmental science—to promote the creation of communities that connect people and places, raise the quality of life, and address recognized impediments to long-term sustainability. Like all city planners, students will approach their work steeped in a set of design theories, including those of Liz Ogbu, Alejandro Aravena, Dana McKinney White, Teju Cole, Jan Gehl, Amanda Burden, and Mara Holt Skov. Students will also use the work of Robert Moses and Jane Jacobs to understand the ways in which historical disputes over the best design practices continue to shape approaches to urban development. Students will analyze the historical and modern implications of urban planning debates and conduct hands-on fieldwork, observing urban sites and engaging with experts and community stakeholders.

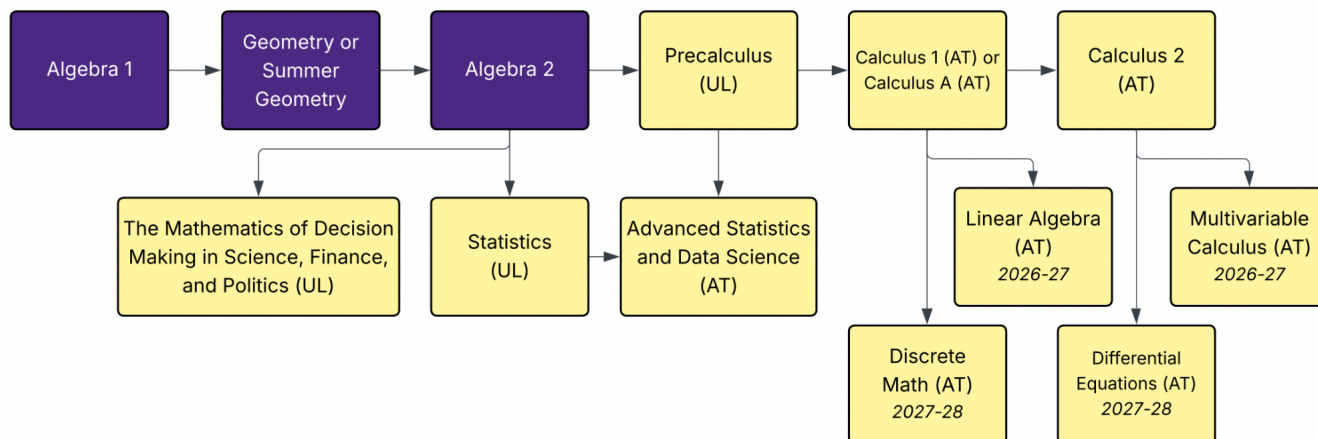
Through design challenges, analytical essays, and public presentations, students hone critical skills while addressing global urban issues such as affordable housing, sustainability, and social equity. The capstone project involves developing research questions, conducting field studies, analyzing data, and proposing evidence-based solutions, culminating in a multi-draft essay and a publicly presented studio project.

Mathematics

Kelly VandenBosche, Department Chair | vandenboschek@winchesterthurston.org

All WT students are required to complete up through Algebra 2 and a minimum of three full years of mathematics in the Upper School. We encourage students to take courses in the calculus sequence beyond Algebra 2, but these courses are not a graduation requirement. Teachers will provide recommendations to students for post-Algebra 2 elective courses.

Prerequisite Pathways



The arrows above indicate *prerequisite* pathways. Additional pathways are possible, for instance:

- Algebra 2 → Math Models → Precalculus (Alg 2 prereq complete) —or—
- Calc 1 → Linear Algebra → Calc 2 (Calc 1 prereq complete) —or—
- Calc 2 and Advanced Stats (for a Senior doubling up in mathematics)

Foundational Mathematics Courses

Algebra 1

Year - 6 credits

Prerequisite: None

In this course, students will explore relationships between variables and numbers and learn to represent relationships between variables mathematically, graphically, and verbally. To do this, students will work with algebraic expressions, equations, inequalities, and functions. Students will develop the ability to model and solve real-world application problems, demonstrate the appropriate use of graphing calculators, and communicate mathematical ideas clearly. This course helps students to develop the foundation for mathematical literacy that will help them to be successful in subsequent courses across STEM disciplines. Students will be assessed using a variety of methods including, but not limited to homework, quizzes, and tests.

Geometry

Year - 6 credits

Prerequisite: Algebra 1

In this course, properties and relationships between figures in two and three-dimensional space will be discovered with inductive reasoning, manipulatives, and dynamic Geometry software then later proven with deductive reasoning. While simultaneously applying their Algebra skills, students will solve complex problems, develop and present geometric arguments, and explore the possibilities of using geometry to design, create, and share geometric art that integrates concepts such as symmetry and transformation. Students will be assessed using a variety of methods including homework, tests, and projects.

Summer Geometry (alternative to the year-long course)

8-week summer intensive - 6 credits or enrichment

Prerequisite: Algebra 1 with a C+ or higher

In this course, properties and relationships between figures in two and three-dimensional space will be discovered with inductive reasoning, manipulatives, and dynamic Geometry software then later proven with deductive reasoning. While simultaneously applying their Algebra skills, students will solve complex problems, develop and present geometric arguments, and explore many applications of geometric thinking. The expectations for students in the Summer Geometry course differ from the year-long course in the following ways: students are expected to be self-motivated and able to focus on math for an extended period of time each day, there is not as much time available in class for extended practice, so students needing extra practice or review will be expected to do additional work at home, and assessments are primarily based on quizzes and tests as opposed to extended projects. This course is an excellent opportunity for students to reduce summer learning loss, enhance their mathematical skills, build confidence, and prepare for the following school year.

Algebra 2

Year - 6 credits

Prerequisite: Geometry (or Summer Geometry with a B- or higher)

In Algebra 2, students will build on skills developed in Algebra 1 to investigate and apply more advanced concepts such as systems of linear equations as well as non-linear quadratic, polynomial, radical, rational, exponential, and logarithmic functions. To do this, the fundamental skills are developed through active student inquiry, hands-on investigation, discussion, and paper-and-pencil approaches as well as projects in real-life problems and art where students wrestle with math numerically, graphically, and symbolically. Students will practice using technology tools, such as graphing calculators (Numworks or TI-84) and spreadsheet programs to facilitate the higher-level computation that they will encounter in upper-level courses, college, and beyond. Students will be assessed using a variety of methods including, but not limited to quizzes, tests, and projects.

Mathematics Electives

Precalculus (UL)

Year - 6 credits

Prerequisite: Algebra 2

The central theme of this course is comparing, contrasting, and transforming functions to model change. We emphasize that functions can be grouped into families – linear, quadratic, exponential, logarithmic, power, polynomial, rational, and trigonometric – and that these functions can be used as models for real-world behavior. Students will use technology and analytic methods to investigate and apply course material. An introduction to calculus concepts such as sequences, series, limits, and parametric equations will be included as time permits. This course prepares students for Calculus 1.

Calculus 1 (AT)

Year - 6 credits

Prerequisite: Precalculus

Calculus 1 focuses on developing students' understanding of the concepts, methods, and applications of limits and differential and integral calculus. The course emphasizes a multi-representational approach to calculus, with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. The focus of the course is neither manipulation nor memorization of an extensive taxonomy of functions, curves, theorems, or problem types. Thus, while facility with manipulation and computational competence are important outcomes, they are not the core of the course. Graphing calculators and other technology will be used regularly to reinforce the relationships among the multiple representations of functions, to confirm written work, to explore concepts, and to assist in interpreting results. Using the unifying themes of limits, derivatives, integrals, approximation, and applications and modeling, the course becomes a cohesive whole rather than a collection of unrelated topics. This course is comparable to a one-semester calculus course at the college level. While the Calculus 1 skills loosely align with the AP Calculus AB curriculum, our focus is on critical thinking, analysis, and novel application of concepts, not AP-style questions. Students wishing to sit for the AP exam should review Winchester Thurston's AP Testing policy.

Calculus A (summer - alternative to year-long Calculus 1) (AT)

6-week summer intensive - 4 credits or enrichment

Prerequisite: A or A- in Precalculus with teacher recommendation and approval of the Department Chair and the Director of the Upper School.

This course is an abbreviated version of Calculus 1 intended for strong mathematics students. Just as in the year-long Calculus 1 course, Calculus A emphasizes a multi-representational approach to calculus: see the description of Calculus 1 for the general approach.

Calculus A differs from Calculus 1 with respect to some content, pace, and volume of practice. Because the course is a summer intensive, it moves quickly and there is limited time for recursion and practice. Students are responsible for their own learning and can request extra practice as needed. Calculus A covers limits, derivatives, antiderivatives, and a foundational understanding of the *concept* of integrals. While Calculus 1 includes an in-depth treatment of integration skills and patterns, Calculus A does not. Calculus 2 begins with a strong review of integrals where students practice basic integration skills before developing more complex ones. Students intending to enter Calculus 2 from Calculus A must be prepared to learn the foundations of

integration during this review period. Students desiring more direct instruction, a more measured pace of learning, and time for practice and reassessment should take the full Calculus 1 course.*

Calculus 2 (AT)

Year - 6 credits

Prerequisite: Calculus 1 (or Summer Calculus A with a grade of B- or higher)

Calculus 2 is an advanced high school mathematics course designed to deepen students' understanding of calculus concepts and prepare them for higher-level mathematical studies. Building on the foundations of Calculus 1, this course covers a broad range of topics, including advanced integration techniques, sequences and series, parametric equations, polar coordinates, vector coordinates, and differential equations. The differential equations unit is designed to provide students with further study of the topic, which will give them an advantage when they take a more thorough differential equations course. Students will explore these topics through a mix of theoretical concepts and practical applications, enhancing their problem-solving skills and analytical thinking. While the Calculus 2 skills loosely align with the AP Calculus BC curriculum, our focus is on critical thinking, analysis, and novel application of concepts, not AP-style questions. Students wishing to sit for the AP exam should review Winchester Thurston's AP Testing policy.

The Mathematics of Decision-Making in Science, Finance, and Politics (UL)

Year - 6 credits

Prerequisite: Algebra 2

In this course, students are introduced to mathematical topics necessary for decision-making in today's world. Mathematical topics are developed in the context of solving problems from business, science, and daily life. Units of study include election theory, fair division, waves, sustainability, regression modeling, statistics, personal finance and managing resources. Course assignments include class activities, in-class practice, small-scale research, presentations, homework, simulations, and unit projects.

Statistics (UL)

Year - 6 credits

Prerequisite: Algebra 2

This course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. The course will prepare students for life in a world filled with data, as well as for many college majors that require statistics. Students will study the fundamental ideas of statistics in a context that relates to the personal experiences and needs of an informed citizen of the 21st century. Statistics helps us to understand our world: Health professionals need to understand statistics to interpret medical research studies; businesses use statistical methods (business analytics) to efficiently crunch numbers to support their bottom line; and citizens need to understand statistics to accurately interpret opinion polls and the Consumer Price Index. Because data are omnipresent, everyone will find statistics useful and perhaps even profitable. In this course, students will study exploratory data analysis, learn the fundamentals of designing a study, use probability models, and use inferential statistics. Students will apply these concepts to such fields as business, biology, engineering, industry, the social sciences and many others. Students will use technology to calculate and display real data. Graphing calculators that can manipulate lists of data and contain statistical applications such as confidence intervals, tests of significance, and probability distributions will be our main technological hardware. In addition, we will be using online apps/programs. Students will work individually

and frequently work together in groups. Students will be assessed using a variety of methods including, but not limited to, quizzes, tests, and projects.

Advanced Statistics and Data Science (AT)

(Open to juniors and seniors) Year – 6 credits

Prerequisite: Precalculus or Statistics (UL)

The integration of data, computation, and inferential thinking, or “data science,” is redefining how people and organizations apprehend and solve challenging societal problems. In this course, students learn to extract meaningful insights from data sets to better understand the world in which they live. Organized around the core concepts of statistical modeling and the practice of data analysis, this course introduces the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students will be exposed to three major themes: (1) Exploring Variation, (2) Modeling Variation, and (3) Evaluating Models. Topics include exploratory data analysis, data collection through sampling and experimental design, and inferential methods. In addition to the traditional normal-model inferential methods, students will learn modern computer-intensive methods, including randomization tests and bootstrapping. An integral part of the curriculum is the use of the R statistical programming language to carry out the analyses. Case studies woven throughout the curriculum and an end-of-course project will invite students to apply what they are learning in real-world settings.

Linear Algebra (AT)

(Runs every other year: Next offered in **2026-27**) Year - 6 credits

Prerequisite: Calculus 1 or Calculus A and teacher recommendation

This course provides advanced high school students with a fast-paced introduction to vectors, matrices, systems of equations, linear transformations, and eigenvalues. Students develop both computational skills and conceptual understanding, connecting algebraic techniques to geometric interpretations and real-world applications. Designed for motivated learners, the course prepares students for further study in higher-level mathematics, engineering, computer science, and data science.

Discrete Mathematics (AT)

((Runs every other year: Next offered in **2027-28**) Year - 6 credits

Prerequisite: Calculus 1 or Calculus A and teacher recommendation

This course is intended for advanced mathematics students who wish to further their studies beyond calculus. In this course, students will learn discrete mathematics, covering set theory, boolean logic, proof techniques, number theory, real-analysis, abstract algebra, and combinatorics. Students will learn how to read and write mathematical proofs, and more deeply understand the fundamentals of mathematics through rigorous in-depth analysis. This course will prepare students for work in a variety of disciplines, including engineering, mathematics, and computer science.

Multivariable Calculus (AT)

(Runs every other year: Next offered in **2026-27**) Year - 6 credits

Prerequisite: Calculus 2 and teacher recommendation

This course is intended for advanced mathematics students who wish to further their studies beyond calculus. Students at this level are expected to take a lead role in their learning through active inquiry and class discussion as opposed to a more passive role of listening followed by practice. In order to prepare students for academic work in advanced mathematics, this course has central learning objectives in accurate and precise communication (written and symbolic) in addition to computational skills. Computationally, students will learn multivariable calculus, which is a deeper exploration of the calculus covered in Calculus 1 and 2 but within the setting of higher dimensions. Students need to have a strong working understanding of Calculus 1 and 2 topics in order to learn the material covered in a standard college-level multivariable calculus course. Utilizing this exciting branch of mathematics, students will engage in applied project work. This course will prepare students for work in a variety of disciplines, including science, engineering, mathematics, and computer science.

Differential Equations (AT)

(Runs every other year: Next offered in **2027-28**) Year - 6 credits

Prerequisite: Calculus 2 and teacher recommendation

This course is intended for advanced mathematics students who wish to further their studies beyond calculus. Students at this level are expected to take a lead role in their learning through active inquiry and class discussion as opposed to a more passive role of listening followed by practice. In order to prepare students for academic work in advanced mathematics, this course has central learning objectives in accurate and precise communication (written and symbolic) in addition to computational skills. In this course, students will learn how to solve differential equations (DEs). Students will cover all of the material covered in a standard college-level differential equations course (ordinary differential equations) including but not limited to solving first order, second order, and higher order DEs, using transforms, solving systems of differential equations, and finding series solutions. In addition, students will have the opportunity to apply this exciting field of mathematics in project work. This course will prepare students for work in a variety of disciplines, including science, engineering, mathematics, and computer science.

Science

Graig Marx, *Department Chair* | marxg@winchesterthurston.org

All WT students are required to take three years of laboratory science including physics, chemistry, and biology, typically in this sequence. Ninth-grade students entering WT in Calculus 1 or higher may begin their science studies in Chemistry, provided they take Advanced Physics as a junior or senior. Students transferring to WT must meet our three-discipline science requirement but may do so in a different sequence.

Physics

(Required) Year - 6 credits

In this physics course, students explore and investigate the foundations of mechanics and the study of motion. Simple equations and conceptual modeling will be used to relate physical quantities and better understand linear and circular motion, projectiles, forces, momentum, and energy transformations. Later, topics in electricity and magnetism further an understanding of waves (sound and light), heat, electric circuits and magnetism. Teaching methods include interactive lectures, discussions, demonstrations, laboratory experiments, and hands-on engineering design challenges. As WT's foundational science course, the curriculum places a special emphasis on laboratory techniques, data analysis, and principles of experimental design.

Chemistry

(Required) Year - 6 credits

Prerequisite: Physics or by Department Chair approval

This math- and physics-based chemistry course introduces concepts such as the structure and properties of atoms, molecules, and ions; chemical reactions; chemical bonding; molecular geometry and bonding theories; intermolecular forces, liquids, and solids; and properties of solutions. Teaching methods include interactive lectures, discussions, demonstrations, computer simulations, laboratory work, projects, and group work. A special emphasis will be placed on applying content to hands-on laboratory work, data analysis, and the presentation of student findings in lab reports and class presentations. Students will be evaluated on their learning through frequent quizzes, laboratory reports, class presentations, short essays, and end-of-semester exams.

Biology: Introduction to Cell Biology, Genetics, and Evolution (UL)

(Required) Year - 6 credits

Prerequisite: Chemistry

Biology is a laboratory-based course comprising three major units: cell structure and function, genetics, and evolution. We will begin with biochemistry as a way to build on prior chemistry knowledge and prepare to dive into cell structure and function. After learning cell structure and function, we will hone in on the nucleus and learn about DNA and how information is transferred throughout the cell. We then examine the roles genes play in our everyday lives and how they make us who we are. We will finish the year by studying evolution, first on a microscale and then on a macroscale. During these units, students

will hone the scientific skills they began building in previous classes. Students will examine experimental design, analyze data, learn to use new tools such as micropipettes, and carry out experiments using molecular techniques such as DNA extraction and PCR and gel electrophoresis. Students participate in various active learning strategies, including diagramming biological processes, analyzing diagrams, questioning, and discussion. Students will be assessed through multiple methods, including frequent quizzes, cumulative tests, projects, inquiry-based labs, and written assignments.

Altruistic Engineering and Design (UL)

(Open to juniors, and seniors) Year - 6 credits

Prerequisite/Corequisite: Chemistry/Biology

Recommended: Physical Computing and Robotics

The Altruistic Engineering and Design course offers students a distinct learning opportunity by emphasizing the application of research through integrated projects that utilize the engineering cycle for prototype development. In this course students apply our credo, "Think also of the comfort and the rights of others" by designing products and processes that can improve the lives of individuals and communities, both locally and globally. In consultation with the course instructor, students will work in small groups on all projects, creating proposals and presenting both their successes and failures. This student-centered course is structured to highlight the creativity and design aspects associated with STEM concepts. There will be a heavy focus on CAD modeling and the use of technology for rapid prototyping. Students will be responsible for sharing their products with members of the broader scientific community through local symposia, print media, or other suitable modes of communication. *Note: This course complements but does not complete the WT graduation requirement for lab science.*

Biotechnology (AT)

(Open to juniors and seniors) Year - 6 credits

Prerequisites: Chemistry and Biology

Recommended: B or higher in both classes

Biotechnology is an advanced laboratory course designed for students who have completed foundational biology and chemistry courses. This course immerses students in rigorous research methodologies and cutting-edge laboratory techniques, including DNA cloning, plasmid mapping, CRISPR-Cas9 gene editing, cell culture, cell transformation, DNA sequencing, and Western Blotting. These skills will be applied to explore complex topics in biochemistry, molecular biology, and molecular evolution. In addition to technical proficiency, students will critically analyze the societal implications of biotechnological advances, debating topics such as gene editing ethics, the use of personal genetic information, and the role of animals in experimental research. By employing ethical frameworks, students will engage in meaningful discussions on how these technologies can and should shape modern society. The course emphasizes the development of scientific communication skills through writing, discussions, and presentations. Assessments include research papers, scientific writing, and oral presentations alongside traditional evaluations. The course culminates in an independent research project, where students will design, conduct, and present their findings at the STEM symposium. Exceptional projects may be submitted to the journal *Sigma*. This course prepares students for advanced studies and careers in biotechnology, research, and related STEM fields, fostering critical thinking, ethical reasoning, and innovative problem-solving.

Psychology (UL)

(Open to juniors and seniors) Year - 6 credits

Prerequisite/Corequisite: Chemistry/Biology

In Psychology, we focus on the scientific investigation of basic psychological processes and the latest findings in brain science to gain a deeper understanding of cognition and how it develops over the lifespan. We begin by exploring psychology from a historical perspective, examining early ideas of thought and behavior from ancient civilizations up to the present. We compare and contrast dated and unscientific explanations of human thought and behavior with the research that supports what we understand about these processes today. We also discuss how psychological research has been performed in the past, including the advancement of experimental ethics and how psychologists meet specific ethical criteria today. After we gain an understanding of how psychology functions as a science, students will have the choice of topics to explore through an experimental lens. These can include how our emotions and motivations tie together our brain and body; the mechanism for translating sensory input into perceptual experience; brain structure and organization; how we learn and process new information, and how that information is stored in our brains to create memory; how our brains and thought processes develop from prenatal stage through advanced age; and/or how psychology informs us about our social interactions. Interwoven throughout the course will be an analysis of the major historical and current scientific theories that have emerged from behavioral research, cognitive modeling, and AI. Student-directed investigations of various topics will be a cornerstone of the evaluation in this course, with students taking an active role in teaching each other about specific studies and concepts throughout the year. This will be done through informal presentations on readings, research papers on chosen topics, and presentations highlighting how topics apply to their own experiences. A goal for the course is for students to better understand how brain functions tie into behavior and learning, and to present on a topic of specific interest at the STEM symposium in May. *NOTE: This course complements but does not complete the WT graduation requirement for lab science.*

Advanced Cell Biology and Human Disease (AT)

(Open to juniors and seniors) Year - 6 credits

Prerequisites: Biology and Chemistry

Recommended: B or higher in both classes

This advanced course provides students with the conceptual framework, factual knowledge, and analytical skills necessary to critically approach the continually developing science of biology. The class will be divided into approximately four quarters, each with a major theme. The first quarter will focus on cell structure and function; the second quarter on cell growth and signaling; and the third quarter on the development and evolution of organisms. The final weeks of the course will allow students to specialize in different immunological, neurological, and organ systems. Throughout this course, we will use various diseases and disease processes to highlight the connection between basic cellular functions and their medical relevance in causing disease. Diseases discussed in class may include cystic fibrosis, diabetes, cancer, Alzheimer's, cholera, HIV, and COVID among others. This course differs significantly from the usual high school Biology course with respect to the kind of textbook used, the range and depth of topics covered, and the time and effort required by the student. Laboratory technical skills, analysis and communication of scientific information, and problem-solving abilities will be an integral part of the course. Students should expect a demanding workload including, but not limited to, daily textbook and article readings, homework, quizzes, lab activities and reports, tests, and projects.

Advanced Chemistry (AT)

(Open to juniors and seniors) Year – 6 credits

Prerequisites: Chemistry

Recommended: B or higher

Advanced Chemistry engages students through a rigorous treatment of college-level topics such as chemical behavior, bonding theory, thermodynamics, quantum theory, kinetics, equilibrium, electrochemistry, and organic chemistry. Sophisticated problems and extensive laboratory work support and deepen each student's understanding of these topics and prepare students for chemistry at the college level. The course enhances students' abilities to think clearly and to express their ideas, orally and in writing, with clarity and logic. Students will demonstrate their understanding through traditional assessments like quizzes and tests, and guided lab activities. Also, students will have the chance to work on student-centered experiments, designing their own projects and communicating their scientific findings.

Advanced Physics (AT)

(Open to juniors and seniors) Year – 6 credits

Prerequisite: Calculus 1 or Calculus A

This rigorous, calculus-based physics course introduces and prepares students for the challenges of college-level physics. Covering a broad range of topics, students will delve deeply into kinematics, forces, circular motion, energy, momentum, optics, thermodynamics, electrostatics, circuitry, and magnetism. The course combines direct instruction with hands-on, inquiry-based experiments and projects to foster both theoretical understanding and practical application of key physics concepts. Students will engage in collaborative investigations, problem-solving exercises, and the development of innovative projects to explore the real-world implications of physical principles. Assessments will include regular quizzes and tests to measure comprehension; detailed lab results and write-ups to evaluate experimental skills; and student-created projects and products to demonstrate the ability to apply physics concepts creatively and independently. Success in the class requires a strong understanding of algebra, trigonometry, and calculus. This course is ideal for students who seek a solid foundation in physics to prepare for advanced study in science, engineering, or related fields.

World Languages & Cultures

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Chinese

Chinese 1

Year - 6 credits

In this introductory course, you will learn to communicate in Mandarin Chinese through simple, interactive conversations with your teacher and classmates. We start with the most useful words and phrases, so that you are soon able to express your likes, dislikes, wants, and needs in Chinese. Class conversations center around student experiences and interests, and the teacher uses a variety of methods to make these conversations easy to understand. You will be introduced to reading Chinese characters through the use of simple stories, and by the end of the year, you will be able to write your own story by hand in Chinese characters! As we study different topics, you will explore different facets of daily life in China and Taiwan via online video clips and articles, and a variety of apps and websites will use games to help you review everything that you've learned.

Chinese 2

Year - 6 credits

Prerequisite: Successful completion of Chinese 1 or its equivalent

This course is designed to take your Chinese skills to the next level. As your vocabulary expands, you will be able to express yourself on a wider variety of topics, such as hobbies and skills, seasonal weather and activities, and getting to school and around campus. At the same time, you'll develop a broader understanding of contemporary life in China and Taiwan via videos and films. You'll learn the grammatical structures that will allow you to describe, narrate, compare, and explain in writing and speech, and you'll share what you learn in short presentations and written paragraphs. A variety of apps and websites will use games to help you review everything that you've learned.

Chinese 3

Year - 6 credits

Prerequisite: Successful completion of Chinese 2

In this intermediate course, you will explore the geography of the Chinese-speaking world, delving into famous tourist attractions, regional cuisines, the differences between urban and rural lifestyles, and the diversity of China's 56 ethnic groups. Videos, films, images, and songs bring these topics to life and help paint a nuanced picture of life in China and Taiwan. As we study these topics, you will learn to use Chinese to compare and contrast, draw connections, and express and support your opinions with increasing precision. You will complete small research projects on living and traveling in various locations in China and present your findings in a variety of creative formats.

Chinese 4: Tradition and Transformation (UL)

Year - 6 credits

Prerequisite: Successful completion of Chinese 3

In this upper intermediate course, you will explore both traditional Chinese folk tales and the contemporary realities of family structures, education, employment, and holiday celebrations in China today. We will analyze the folk tales for the perspectives and values they promote, and compare and contrast those with current day realities. As you develop your understanding of traditional and contemporary society and culture, you will increase your language proficiency, learning to describe, compare, narrate, and explain with greater precision. Your work will take the form of class discussions and debates, creative and analytical writing tasks, and mini research projects presented in multimedia formats.

Advanced Chinese Seminar: Through the Camera's Eye (AT)

Year - 6 credits

Prerequisite: Successful completion of Chinese 4: Tradition and Transformation

In this advanced course, feature films and documentaries provide a window into understanding contemporary society in mainland China, Taiwan, Hong Kong, and the Chinese diaspora. Films will be selected for their ability to depict a diversity of perspectives on topics of student interest, such as family and gender roles, historical periods, economic changes, and rural and urban lifestyles. Close study of specific scenes will help students hone their communication skills for use in real-life scenarios, while the films will provide personal narratives about life in China's rapidly changing social and cultural landscape. Students will grow their language skills as they work with classmates to analyze the characters' motivations, understand their values and perspectives, and explain how they grow and change. Student work will take the form of analytical and creative spoken and written responses to the films that we study.

Advanced Chinese Seminar: Harmony, Humility, and Hierarchy (AT)

(Next offered in 2027-28) Year - 6 credits

Prerequisite: Successful completion of Chinese 4: Tradition and Transformation

Have you ever wondered how to navigate social situations in Chinese culture? How to respond to a compliment, or politely refuse an invitation? This advanced course will equip you with essential skills to interact confidently with Chinese speakers in a variety of situations, as well as help you develop your cultural lens to understand the perspectives behind these behaviors. We will examine a variety of common social scenarios to find useful phrases, then analyze and reflect on the framework that underlies these interactions, providing you with a deeper understanding of Chinese culture. Films and television series will serve as illustrations of these social and cultural dynamics in action, and current youth and internet slang will be taught. Your work will take the form of situational interactions and cultural reflections and analyses as you develop the language proficiency and cultural competence that will open doors to building meaningful connections with Chinese speakers around the world.

Advanced Chinese Seminar: A Changing China (AT)

(Next offered in 2028-29) Year - 6 credits

Prerequisite: Successful completion of Chinese 4: Tradition and Transformation

In this advanced course, you will investigate various facets of Chinese culture and society, with a focus on the enormous changes that have taken place in China and Taiwan since the mid-twentieth century. Specific topics will be chosen based on student interest and current events to allow you to investigate a wide variety of issues related to topics such as social justice, pop culture, history, art, politics, literature, and economics. Pedagogical materials, authentic online resources, podcasts, and films illuminate cultural topics and serve as a basis for discussion and analysis. As you deepen your understanding of Chinese culture and society, you will continue to hone your listening and reading comprehension skills, expand your vocabulary, and strengthen your grasp of grammatical structures, allowing you to communicate in Chinese in greater depth and with growing precision. You will also undertake independent reading and research projects using Chinese language sources and create multimedia presentations to share your findings with your classmates.

French

French 1

Year - 6 credits

Prerequisite: none

French I is an introductory course designed to develop students' foundational skills in listening, speaking, reading, and writing in French. Through communicative, theme-based units, students learn to exchange basic information about themselves and their everyday lives, including topics such as family, school, food, hobbies, weather, and daily routines. Emphasis is placed on building practical vocabulary, mastering essential grammatical structures (such as regular and common irregular verbs, noun/adjective agreement, question formation, and basic sentence patterns), and developing accurate pronunciation. By the end of the course, students will be able to understand and produce simple sentences, engage in short interpersonal exchanges, and demonstrate beginning reading and writing skills appropriate to a novice-level learner. French I provides a strong foundation for continued study in French II and beyond.

French 2

Year - 6 credits

Prerequisite: Successful completion of French 1 or its equivalent

French II builds on the communication skills developed in French I, allowing students to express themselves with greater detail and accuracy. Students expand their vocabulary and grammar through topics such as daily routines, past events, travel, shopping, food and restaurants, health, and leisure activities. The course emphasizes clearer, more confident speaking and writing, as well as improved comprehension of longer and more varied listening and reading passages. By the end of the course, students can participate in brief conversations, describe and narrate simple events in the present and past, and understand a wider range of basic written and spoken French, preparing them for French III. Assessments include quizzes, recordings, conversations, short compositions, projects, and presentations.

French 3

Year - 6 credits

Prerequisite: Successful completion of French 2

This course provides more extensive development and practice in listening, speaking, reading, and writing, as well as increased awareness of francophone cultures. New vocabulary and grammatical structures are taught through thematic units that may include educational systems, the environment, technology, and family structures. Students increase their language proficiency by discussing films, video clips, podcasts and articles on current events. Classroom instruction and interactions are primarily in French. Assessments include quizzes, recordings, conversations, short compositions, projects, and presentations.

French 4: The Francophone World (UL)

Year - 6 credits

Prerequisite: Successful completion of French 3

This upper intermediate course strengthens advanced language skills while introducing students to selected regions of the French-speaking world. Students research and present on various francophone countries and complete an in-depth study of the Democratic Republic of the Congo, including attending a presentation in French by a Congolese filmmaker. The course includes a comprehensive review of previously learned verb tenses and key grammar concepts, supporting more precise and confident communication. Through discussions, essays, presentations, and analytical activities, students develop higher-level proficiency in listening, speaking, reading, and writing. Assessments include quizzes, essays, recorded discussions, and tests.

Advanced French Seminar: Contemporary Issues in the French-Speaking World (AT)

(Next offered in 2027-28) Year - 6 credits

Prerequisite: Successful completion of French 4: The Francophone World

This advanced French course will examine current events in Francophone countries. Through the use of newspaper articles, television newscasts, podcasts, modern literature, and contemporary films, we will explore cultural, social, political, and economic challenges confronting countries where French is one of the primary languages. Topics will include immigration, environmental issues, gender equality, economic development, and environmental concerns, with a focus on diverse perspectives of the Francophone world. Student work will take the form of discussions, presentations, and writings as they broaden their understanding of French-speaking cultures and elevate their language proficiency.

Advanced French Seminar: Studies in Francophone Cinema (AT)

(Next offered in 2026-27) Year - 6 credits

Prerequisite: Successful completion of French 4: The Francophone World

This advanced French course centered on French-language films will expand not only the students' language skills but also their cultural horizons. They are invited to immerse themselves in the stories, visuals, and thought-provoking themes brought to life by influential directors from throughout the

francophone world. The films will serve as windows into understanding various topics and time periods in francophone societies. The work will take the form of discussions, presentations, and writings that delve into the films viewed as they broaden their understanding of francophone cultures and elevate their language proficiency.

Latin

Latin 2

Year - 6 credits

Prerequisite: Successful completion of Latin 1

This course is designed to take your knowledge of Latin to the next level. As your command of the language grows stronger and more nuanced, the stories become more richly detailed as they lead us back to Roman Britain and then to the province of Judaea, ultimately ending up in Rome itself. Latin vocabulary (including English derivatives) remains an important focus of Latin 2. In addition to learning the intricacies of Latin participles – which differ in many ways from their English cousins – we learn how to express purpose, result, and futurity. Cultural and historical topics include the Roman legion and the construction of its army camps (several of which evolved over the years into cities still extant in modern Europe), the siege of Masada, and entertainment in the Roman world. Assessments include homework checks, quizzes, translations, tests, and projects.

Latin 4: Reading Latin Literature (UL)

Year - 6 credits

Prerequisite: Successful completion of Latin 3

The chief goal of this course is to provide you, as a student who has enjoyed learning Latin, with a rich and rigorous course in Latin poetry and prose. The texts, always including at least one prose and one poetic work, are selected in consultation with those students of Latin 3 who intend to pursue a fourth year of study in the language. Texts rotate year to year and may include Caesar's *Gallic Wars*, Terence's comic play *Adelphoe*, Cicero's First Catilinarian, passages from Vergil's *Aeneid*, selections from Petronius' *Satyricon*, the poems of Catullus and Horace, various selections from the epic poet Ovid and Vergil, and others. Grammar and inflectional forms are reviewed and exercised regularly. You should expect to read carefully and discuss in detail student-selected works of history and literature. Grades are based on tests, quizzes, essays, and projects.

Advanced Latin Seminar (AT)

Year - 6 credits

Prerequisite: Successful completion of Latin 4: Reading Latin Literature.

Students in the Advanced Seminar work in tandem with Latin 4 students but with substantial differentiation in the pace and rigor of readings and assessments. Advanced Seminar students analyze more complex and lengthy texts and conduct scholarly research connected to course content. Students may serve as teaching assistants preparing and presenting readings, translations, and enrichment material for their Latin IV classmates. The workload in this class both requires and encourages scholarly

independence and research skills, preparing students for further Latin studies in college.

Etymology Of Scientific Terms (UL) (MSON)

(Open to juniors and seniors) Semester – 3 credits - Offered in the Fall

Prerequisite: None

Note: The Malone Schools Online Network (MSON) provides motivated 11th and 12th grade students at participating Malone Schools with a variety of academically challenging courses that enhance each member school's curriculum. These interactive seminars bring students together from across the country with dedicated teachers in real time. MSON classes do not fulfill Winchester's graduation requirements, but they are graded and appear as additional earned credits on the WT transcript.

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

Spanish

Spanish 1

Year - 6 credits

This course will teach students to interact through comprehensible communication by reading, writing, listening, and speaking in Spanish. Cultural context is infused throughout the year through our daily emphasis on developing the ability to function in everyday situations. By means of everyday discussions and situations, students will learn to greet each other, ask questions, convey information about family, friends, and personal likes and dislikes, request directions, and navigate new environments.

Spanish 2

Year - 6 credits

Prerequisite: Successful completion of Spanish 1 or its equivalent

Spanish 2 works on honing the skills exercised in Spanish 1 and provides a continued focus on interacting and communicating in Spanish. Through this course, students expand their knowledge of Spanish grammatical structures and vocabulary, which allows them to freely communicate ideas using various tenses. Students will learn to read critically, and narrate events in multiple timeframes. Further, students will start producing longer written texts in the form of everyday communications i.e. letters, brochures, scripts, etc., and will express and explain more of their likes/dislikes in writing and through speaking.

Spanish 3

Year - 6 credits

Prerequisite: Successful completion of Spanish 2

Spanish 3 furthers the study of grammar, vocabulary, and cultures of Spanish-speaking countries. By reviewing and learning a variety of simple and compound tenses in the past and future timeframes, along with learning thematic vocabulary, students will become more proficient in the four modalities: listening, reading, speaking, and writing. Throughout the year, students will engage in different activities that will aid them in honing their interpretive, interpersonal, and presentational skills. Students will talk about themselves and their communities, state opinions, and give suggestions and advice. Students will interpret infographics and read short stories, news, and magazine articles. They will watch videos and listen to audio materials to sharpen their comprehension. Students will also present on Spanish-speaking countries' products, practices, and perspectives and compare them with their own.

Spanish 4: The Cultures of the Spanish-Speaking World (UL)

Year - 6 credits

Prerequisite: Successful completion of Spanish 3

This class will give students the opportunity to delve into the music, traditions, and contemporary expressions that define the unique identity of Spanish-speaking regions. This course aims to foster both linguistic competence and cultural literacy, providing students with a holistic appreciation for the rich cultures of the Spanish-speaking world. Students will develop language proficiency through opportunities to communicate in the three modes of communication: interpretive, interpersonal, and presentation. This will take the form of discussions, presentations, and written assignments. Students will gain cultural content knowledge through reading and viewing a wide variety of authentic materials from multiple countries and identities in the Spanish-speaking world. This course assumes a foundation in Spanish grammar and covers grammar only on an as-needed basis.

Advanced Spanish Seminar: Contemporary Issues in the Spanish-Speaking World (AT)

(Next offered in 2027-28) Year - 6 credits

Prerequisite: Successful completion of Spanish 4: The Cultures of the Spanish-Speaking World

This course on contemporary issues and current events in the Spanish-speaking world offers students an immersive exploration of the diverse cultures, societies, and challenges across Spanish-speaking regions. Through engaging discussions, authentic materials, and multimedia resources, students will enhance their language proficiency while critically analyzing topics such as social justice, environmental sustainability, political developments, and cultural trends. Emphasizing the development of advanced language skills, including reading, writing, listening, and speaking, the course encourages students to express informed opinions and engage in thoughtful dialogue on issues shaping the Spanish-speaking world today. By the end of the course, students will not only have strengthened their linguistic abilities but also gained a nuanced understanding of the complex and dynamic realities within the global Spanish-speaking community.

Advanced Spanish Seminar: The 20th Century in the Spanish-Speaking World (AT)

(Next offered in 2026-27) Year - 6 credits

Prerequisite: Successful completion of Spanish 4: The Cultures of the Spanish-Speaking World

This advanced Spanish course delves into the 20th century in the Spanish-speaking world, offering students a comprehensive exploration of the historical, cultural, and societal transformations that defined this pivotal era. Through an interdisciplinary approach, students will analyze key events, influential figures, and socio-political movements that shaped the course of history in Spanish-speaking regions. Engaging with primary sources, literature, films, and other authentic materials, students will deepen their language skills while gaining a profound understanding of the complexities and nuances inherent in the historical narrative of the Spanish-speaking world during the 20th century. By the end of the course, students will emerge with not only enhanced linguistic proficiency but also a critical awareness of the historical forces that have left an indelible mark on these vibrant and diverse cultures.

Computer Science

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Foundational Courses

Computer Science in Society

Semester – 3 credits

Open to all grades. Prerequisite: none.

In CS in Society, you'll learn about the logical building-blocks and structures that are used to design and write programs. Additionally, you'll gain a holistic view of computer science as a discipline, the digital revolution, and the computing technologies that shape our lives. From smartphones to smart appliances, even the most routine devices are powered by programming. As you navigate this tech landscape, questions naturally arise: How do devices connect through the vast Internet? How are 0s and 1s used to represent images, videos, and other digital content? How is logic used to give computers commands? How does social media curate content tailored to our interests? What is the environmental impact of cloud-based file storage? In this course, we delve into these questions and more, empowering you to become savvy consumers of technology. Gain insights into the mechanics behind these digital innovations, unlocking a deeper understanding of how computer science shapes our world. Discover not just how these tools function, but also how they're ethically governed. Due to this course's emphasis on how computing technologies work and their societal impact, less time is dedicated to learning how to write code in a specific programming language. Therefore, this course does not satisfy the prerequisites for an Upper-Level CS course, and enrolled students would be required to take another Foundational-Level course prior to furthering in the course sequence.

Computer Science for the Arts and Humanities

Semester – 3 credits

Open to all grades. Prerequisite: none.

This course explores the practical applications between computer science and artistic and humanitarian pursuits. In this semester-long course, you will learn how coding can be used as a tool for creation and discovery within art, history, and language. You will build computer programs focused on real-world applications like data visualization, art recreation, and storytelling. We will use Processing, a Java variant, that is specifically designed for visual applications. The skills you gain in this course will help to prepare you for Upper Level computer science courses, but will also be valuable and applicable to future studies in almost any discipline.

Computer Science for Mathematics and Science

Semester – 3 credits

Open to all grades. Prerequisite: none

Computer Science really is the science of problem-solving. Originally used to compute mathematical calculations, computer programming has come a long way - today's computer programs are used to model, predict, and understand the world around us. This semester-long course teaches you the fundamental problem-solving skills necessary for computer programming as it applies to mathematics

and science. By creating computer programs to evaluate formulas, analyze massive blocks of text, and draw geometric designs, you will learn to utilize these problem-solving skills to better understand mathematics and science. We will use Python, an industry-standard language that has wide applications in data science and other STEM fields. The skills you gain in this course will help to prepare you for Upper-Level computer science courses and will be widely applicable to further pursuits in other disciplines.

Physical Computing and Robotics

Semester – 3 credits

Open to all grades. Prerequisite: none

Physical Computing and Robotics introduces students to basic electrical and computer engineering (ECE). ECE is a blend of robotics, computer programming, and mechanical engineering, and you should anticipate getting a little bit of each in this project-based course. Any engineer is tasked with designing a final product with a set of constraints. In Physical Computing and Robotics, you will build and modify a ShieldBot (an Arduino - controlled bot with wheels), write code to give the bot instructions, and test (and retest) your bot's ability to complete a given task (navigating a maze, reacting to specific sensor readings, etc.). In the process of working with your bot to complete a given task, you will gain experience in controlling existing manufactured electronics, manipulating elements in the physical world with robotic equipment, and use robotics to problem-solve. The skills learned in this course will prepare students for Upper-Level computer science courses and be widely applicable to further pursuits in other disciplines.

Upper Level Courses

Interactive Storytelling and Video Game Design (UL)

Semester - 3 credits

Open to all grades. Prerequisite: Successful completion of CS for the Arts and Humanities, CS for Mathematics and Science, or Physical Computing & Robotics.

In the age of technology, video games are a powerful way to tell a story, just like books or movies, but the interactive nature puts you right in the middle of the action. Think about the sound effects, the feel of acceleration, or the jolt of energy when encountering an enemy. This semester-long interdisciplinary course will combine game design, storytelling mechanisms, and coding to create a video game of your own design. You will add your own art and sounds to a universal action-adventure game template, which will be combined with your classmate's games to create a larger exploratory map. We will use Scrum to work in large learning groups and assess project progress using the Agile Design Methodology. The skills learned in this course will prepare students for additional computer science courses and be widely applicable to further pursuits in other disciplines.

Programming Languages and Structures (UL)

Semester – 3 credits

Open to sophomores, juniors, and seniors. Prerequisite: Successful completion of CS for the Arts and Humanities, CS for Mathematics and Science, or Physical Computing & Robotics.

Effective computer programming is centered on computational thinking, and not simply memorizing code or language syntax. This semester-long course focuses on developing your ability to identify and implement solutions using the core concepts of computer science. You will study essential programming structures and algorithmic approaches using the Python coding language with a heavy emphasis on object-oriented design. You will complete both individual and cooperative projects using Python to further your understanding of these applications. This class serves as the essential Upper Level computer science elective and is required for the capstone course, Algorithm Design. If you are interested in pursuing technical studies in computer science or engineering at the college level, the skills and problem-solving strategies learned in this course will be essential.

Robotics & Engineering: Prototype to Performance (UL)

Semester – 3 credits

Open to sophomores, juniors, and seniors. Prerequisite: Successful completion of CS for the Arts and Humanities, CS for Mathematics and Science, or Physical Computing & Robotics.

Recommended: Physical Computing & Robotics

Dive into the world of robotics with rovers, robotic arms, and sensor-powered machines. In this fast-paced, challenge-driven course, students take on missions inspired by moon landings, disaster relief efforts, medical and assistive technology, and high-tech factories. Build, code, and test robots that navigate rough terrain, retrieve objects, automate tasks, and solve problems pulled straight from modern engineering. By the end of this course, you will know how to bring hardware and software together to create robots that do real work. Experience the thrill of turning big ideas into sensing, planning, moving machines!

Automation (UL)

Semester – 3 credits

Open to sophomores, juniors, and seniors. Prerequisite: Successful completion of CS for the Arts and Humanities, CS for Mathematics and Science, or Physical Computing and Robotics.

We live in an increasingly automated world. Lights automatically turn on when you enter your home, emails are drafted based on inbox details and intended recipients, and delivery robots shuttle goods across workplaces and campuses. In this course, you will learn how to use computer science to make machines, and software, work for you. You will explore how automation powers modern life by building software bots that automate everyday tasks, creating AI agents that make smart decisions, and programming robots that complete real-world challenges. Through hands-on projects, you'll design, code, and test your own automated systems, gaining the skills to turn ideas into intelligent tools that solve problems faster, smarter, and more creatively.

Cybersecurity (UL)

Semester – 3 credits (Next offered in 27-28)

Open to sophomores, juniors, and seniors. Prerequisite: Successful completion of CS for Mathematics and Science, CS for the Arts and Humanities, or Physical Computing and Robotics

In this practice-focused course, you will explore how data, devices, and online identities are protected in an increasingly connected world. You'll learn how hackers break into systems and how cybersecurity experts stop those hackers through activities such as analyzing network traffic, testing and implementing simple encryption methods, spotting phishing scams, and examining real-world cyberattacks. Along the way, you'll uncover how websites and applications keep information secure, why strong passwords matter, how multi-factor authentication can be employed in your programs, and how ethical hackers help defend organizations.

Entrepreneurship & Product Design (UL)

Year – 6 credits (Next offered in 27-28)

Open to sophomores, juniors, and seniors. Prerequisite: Successful completion of CS for Humanities, CS for Mathematics and Science, CS for Art and Music course, or Physical Computing & Robotics

In this entrepreneurial course, you will be involved in full-scale research projects to solve real-world problems using computer science. The course begins by teaching you how to build usable software applications and hardware applications, providing you with a toolset to create your full product. Later in this practicum-based course, you will work through each step of a project; research to design to implementation utilizing an agile software development methodology, a unique way of approaching a project to maximize efficiency in prototyping and one often used in industry. Through the City as Our Campus program, each student is paired with an expert community mentor who helps you refine your project ideas and provide valuable feedback throughout your product development. In addition, you will have the opportunity to learn from local entrepreneurs, marketing experts, and lawyers to more fully understand the business aspects of bringing a novel product to fruition. In addition to the project work, you will develop full sales pitches, logos, and create short commercials to promote your products through collaboration with our English Department, Art Department, and City as Our Campus partners. Upon completion, you will orally present products at a year-end STEM Symposium.

Advanced Topics Courses

Algorithm Design (AT)

Year – 6 credits

Open to sophomores, juniors, and seniors. Prerequisite: Successful completion of Programming Language Structures or successful completion of an entrance assessment.

In this capstone course, you'll level up your computational problem-solving skills and learn to break down complicated tasks the way real engineers do. You'll dive deep into algorithm design, smart data structures, and the software-engineering techniques that top developers rely on. In this course, you will face real programming challenges, the kind that demand clever thinking, creativity, and efficiency. You might design the fastest way to sort a massive library of books, map out the shortest delivery routes for a national trucking fleet, or build systems that maximize profits using approaches like dynamic

programming. For every challenge, you'll craft solutions that aren't just correct, but elegant, balancing both speed and memory to create truly optimized code. Throughout the course, you'll sharpen the skills you've built in your previous CS classes and push them even further. By the end, you'll be fully prepared for college-level computer science, math, and engineering, and you'll walk away with the kind of critical-thinking skills that give you an edge in any field.

Machine Learning & the Social Implications of Artificial Intelligence (AT)

Year– 6 credits

Open to juniors and seniors. Prerequisite: Successful completion of any semester or year-long CS offering excluding Computer Science in Society.

Machine learning is ubiquitous today, utilized in everything from curating recommendation lists on Netflix to diagnosing medical conditions to detecting credit card fraud. As a result of this technology's pervasiveness and the desire to fully prepare our students to be fully engaged citizens, the Computer Science and History departments will offer this co-taught, full-year course on Machine Learning. In this course, students will learn how to ask questions and solve problems utilizing big-data to understand the world from both historical and contemporary perspectives. Using critical thinking skills, students will explore and grapple with issues--such as determining authorship, understanding political affiliations, optimizing transportation systems, and analyzing the criminal justice system--that are understood best through an interdisciplinary lens. Through this integrated class, students will learn the computer science techniques necessary to engage societal problems and understand the historical forces that sired these issues in the first place. With this knowledge, they will be able to better predict the possible social and political consequences of technological change. Students who take this course can earn credit for either a computer science or history course, but not both, and must designate their choice at the time of enrollment.

Performing Arts and Ensembles

Janna Lettan, *Department Chair* | bainlettanj@winchesterthurston.org

Courses

Introduction to Acting

(Open to all grades) Semester - 3 credits - Offered in the Spring Semester

In this class, students will hone their acting skills and learn how to make an audience laugh and cry on purpose. Using scenes and monologues from both classical and contemporary playwrights, students will rehearse and perform with the aim of expanding their acting portfolio. This course is highly recommended for students eager to be cast in competitive roles in school productions.

Music Technology and the Recording Experience

(Open to all grades) Semester - 3 credits

Everyone has music inside of them! In this course, students will create their own music on modern sequencing platforms such as Garage Band, Finale, and Apple Pro Logic. Through our City as Our Campus Program, students will then take their creations to Mr. Small's Professional Recording Studio to add additional live recordings of musicians and singers and professional mix and master using Protools, the recording industry standard. This class is for new or experienced Singer-Songwriters or DJs who want to compose their own songs and have them professionally rendered in the studio. This is a "do it" course!

Band Lab

(Open to all grades) Semester - 3 credits

Curious about playing in a band but not sure where to begin? In this hands-on course, students learn the fundamentals of guitar, keyboard, and percussion while exploring how ensembles listen, collaborate, and create together. You'll build core music skills, experiment with arranging, and work toward a final group performance that reflects both your growth and your shared artistry. No previous experience required—just curiosity, teamwork, and a willingness to make some joyful noise.

Performing Ensembles

Note: Ensembles are an important part of a student's education but do not fulfill WT's graduation requirement in Arts. All Ensemble courses are pass/fail.

Orchestra

(Open to all grades) Year - 2 credits

Prerequisites: Open to students who play string, wind, brass, percussion, and keyboard instruments at the level of advanced-beginner or higher.

The WT Orchestra performs various repertoire from concert bands, wind ensembles, and symphony orchestras. Performances include a winter performance in December, a performance in March, and occasional outside performances, such as in the Carnegie Music hall foyer prior to Chamber Music Pittsburgh concerts. Some members may be invited to play for the Upper School musical. All dress rehearsals and performances are required and are an important part of the players' musical development. Though our main purpose is to prepare for concerts, students will also learn skills such as sight-reading, the art of ensemble playing, elements of "time," and appropriate phrasing for the style of music being played. The orchestra performs pieces from the Baroque, Classical, Romantic, and Contemporary periods, as well as the best in pop music and movie and television themes.

Guitar Ensemble

(Open to all grades) Year - 2 credits

Prerequisites: Ability to read music on guitar at a beginning level (basic position)

The members of the Guitar Ensemble play as a group and perform different styles of music, such as contemporary rock, classical melodies, and light jazz compositions. Performances include a winter performance in December, a spring performance in April or May, and occasional outside performances. All dress rehearsals and performances are required and are an important part of the players' musical development. Though our main purpose is to prepare for concerts, students will also learn skills such as note-reading, sight-reading, the art of ensemble playing, elements of "time," phrasing for the style of music being played, "guitar-centric" chords and rhythms, and scales for improvisation.

Jazz Band

(Open to all grades) Year - 2 credits

Prerequisites: Ability to play brass, woodwind, percussion, or keyboard instruments at the advanced beginner level or higher; ability to read music.

The members of the Jazz Band play as a group and perform various styles of music, such as traditional and contemporary jazz, big band swing, and pop and rock classics. Performances include a winter performance in December, a spring performance in May, and occasional outside performances. Ensemble members perform at daytime assemblies and some evening performances. All dress rehearsals and performances are required and are an important part of the players' musical development. Though our main purpose is to prepare for concerts, students will also learn skills such as sight-reading, the art of ensemble playing, elements of "time," how to "swing," appropriate phrasing for the style of music being played, and scales for improvisation.

Chorus

(Open to all grades) Year - 2 credits

This course is designed for students interested in performing as a member of a vocal ensemble. Students will learn music of various styles, languages, and time periods as they prepare for on and off-campus performances. Students will strengthen individual vocal technique and enhance music listening and reading skills. This course requires some evening and weekend commitments. All dress rehearsals and performances are required and are an important part of the vocalists' musical development.

Dance Ensemble

(Open to all grades) Year - 2 credits

Upper School Dance Ensemble encourages students to develop their technical, creative and performance skills. While improving and strengthening their knowledge of basic dance techniques, students will be exposed to a variety of dance forms and choreographers. This performance-level course is open to dancers of all levels (beginners through advanced).

Visual Arts

Stephanie Flati, Department Chair | flatis@winchesterthurston.org

Studio Art

Decorative Glass

(Open to all grades) Semester - 3 credits

This course introduces students to the use of glass as an artistic medium. Students will create a variety of colorful, imaginative projects using the techniques of decorative mosaic and stained glass. For decorative mosaics, students will explore the use of color, pattern, and texture to make visually appealing mosaic art forms. Each student uses materials such as glass, beads, pebbles, shells, china, and ceramic tiles to create a variety of projects, including mirror/picture frames, pots, coasters, wall plaques, or paving stones. For stained glass projects, students will use the copper foil technique of stained glass artistry used to produce the famous Tiffany windows. Each student will draw patterns, cut and foil the glass pieces, solder the pieces together, and apply patina finishes. This process results in a variety of original projects, such as unique sun-catcher window hangings, stained glass panels, or picture and mirror frames.

Digital Art and Photography

(Open to all grades) Semester - 3 credits

This course introduces students to the use of cameras and computers as tools to capture and create creative, artistic, and personal images. They will learn to take and store images using digital cameras and phones. Then, they will manipulate and enhance these images using Adobe Creative Cloud software, including Photoshop, Illustrator, and InDesign. In addition to generating original photographic work, students will design print materials and webpages, and alter existing images or photographs artistically. This course will also provide opportunities for students to use graphic design to produce projects such as logos, posters, brochures, and presentations.

Drawing and Creative Journaling

(Open to all grades) Semester - 3 credits

Discover the fun and mindful qualities of drawing. This course is suitable for both beginning artists and more advanced drawing students. It is an essential class for any student hoping to submit a portfolio for college admission or who is interested in continuing their art studies at a more advanced level. We will explore various projects intended to enhance our observational skills and drawing abilities. Projects covered in this course will include gesture and contour drawings, negative and positive space, shading and tonal studies, and perspective drawings. Students will use a variety of drawing media such as ink, charcoal, pencil, colored pencil, and pen. Additionally, many projects will involve using an art journal creatively, allowing students to develop their own expressive style while mastering the fundamentals of drawing. Artistic experiences such as outside workshops, museum excursions, and artists' visits are an essential part of this course.

Filmmaking

(Open to all grades) Semester - 3 credits

This course teaches students to plan, shoot, and edit a variety of creative projects. They will explore the aesthetic and technical aspects of writing scripts, drawing storyboards, capturing images with still and video cameras, and editing content properly and creatively. Students will have opportunities to concentrate on a subject matter of personal interest while producing documentary and narrative media projects. A major group project will culminate in shooting footage off-campus, and students may visit institutions such as Pittsburgh Filmmakers for inspiration. They may also use their filmmaking skills to create personal projects such as vlogs and content for YouTube channels.

Functional Pottery

(Open to all grades) Semester - 3 credits

This ceramics course introduces students to a variety of fundamental techniques for creating functional pottery. We will explore both hand-building and wheel-throwing techniques. Emphasis will be placed heavily on the function, form, and surface treatment of the pieces we create. Students will learn to construct tableware items such as bowls, teapots, cups, platters, and vases. Decorative techniques explored include underglazing and overglazing, incision, and sgraffito. Students will also view contemporary clay works in local galleries or museums, screen clay demonstration videos on YouTube, and interact with a local guest artist in the studio. The semester will conclude with an opportunity to taste test culinary delights while using our handmade, functional pieces.

Metalsmithing

(Open to all grades) Semester - 3 credits

Students in this course will explore a variety of introductory metalsmithing techniques. Students will use their skills to create original jewelry designs for bracelets, earrings, necklaces, key chains, and rings made using brass, copper, nickel, and silver metals. Students will experiment with the process of enameling with powdered glass and may also solder three-dimensional wire sculptures. If time permits, the students may explore the lost wax techniques for creating three-dimensional metal objects. Through this course, students will gain knowledge of how to successfully manipulate metal using a variety of specialized equipment and power tools. Visiting with guest artists, metals shops, and local jewelry stores will also inspire class assignments, independent research, and collaborative explorations.

Photography

(Open to all grades) Semester - 3 credits

This is both a practical and theoretical course that introduces students to the art of taking, developing, printing, and evaluating black-and-white photographs. Students will learn to use 35mm SLR film cameras (the traditional manual cameras with a full range of aperture settings and shutter speeds). They will learn the hands-on techniques of developing film and making prints from their negatives in the darkroom. Shooting and printing assignments teach students the basic principles of design including visualization, composition, and perspective. Subject matter will include texture/line/pattern, nature, architecture, and

portraiture. Students will also use digital photography to explore colorful imagery. The semester will culminate with the students producing final projects centered on themes or topics of personal interest.

Painting and Printmaking

(Open to all grades) Semester - 3 credits / Next offered in 2026-7

Discover the powerfully expressive power of color in art through the techniques of acrylic painting, watercolor, printmaking, colored ink, collage, and mixed media. Students will learn about color theories, color mixing, blending, and the individual properties and qualities of the techniques covered. They will expand their observational skills, master a variety of two-dimensional art media, and develop a personal, expressive style while creating frame-worthy works of art to hang on the walls. Provisions are made for more advanced students to explore more creative, personal innovations and more advanced artistic expressions in their works of art. Artistic experiences such as outside workshops, museum excursions, and visiting artists are an essential part of this course.

Public Art and Architecture

(Open to all grades) Semester - 3 credits

This course will explore the history of architecture, urbanism, and public art in Pittsburgh and its impact on our daily lives. This course offers a brief overview of the stylistic qualities and major art and architecture movements of the works we discuss. Buildings and works of art will be examined with a particular emphasis placed on understanding their visual characteristics and relevant structural and design principles. We engage in course content through various creative design projects such as redesigning a public space in Pittsburgh and creating public art for that space. We will frequently visit significant buildings, public spaces, and public art in the Pittsburgh area, and meet with individuals and artists responsible for creating and choosing public works of art.

Sculpture and Ceramics

(Open to all grades) Semester - 3 credits

This ceramics course introduces students to various hand-building techniques for constructing creative ceramic and sculptural clay forms. We will master the pinch, coil, and slab building methods and learn to glaze, sculpt, carve, and apply texture to our projects. The class will study and discuss the history of techniques used to create both ancient and contemporary ceramic masterpieces. Student projects will include explorations of abstract forms, figurative sculpture, functional pottery, and decorative tiles. Artistic experiences such as outside workshops, museum excursions, and artists' visits are an essential part of this course.

Woodworking

(Open to all grades) Semester - 3 credits

This course will introduce students to basic woodworking skills. Students will gain knowledge of how to manipulate wood using hand tools, power tools, and woodworking machinery. An emphasis will be placed

on woodcarving techniques. Students will create a variety of projects, including pictorial woodcuts, high reliefs, and fully three-dimensional sculptures. They will explore various types of wood and finishing techniques to enhance their work. Color, texture, and shape will figure into their work, as well as form and function. The use of the 3D modeling program *Google SketchUp* may be used during the design process, and the resulting projects will exhibit fine craftsmanship.

Advanced Study in Visual Art

Juniors and Seniors who have taken a minimum of two Visual Arts courses and demonstrate the skill and passion to do advanced work in studio art may design a one or two semester Independent Project. This is particularly useful for students preparing a creative portfolio for admission to art and design schools. *Please see the Additional Academic Programs section of the Curriculum Guide for more information.*

Art History

Global Modern and Contemporary Art and Architecture (UL)

(Open to sophomores, juniors, and seniors) Semester - 3 credits - Offered in the Fall Semester

This course provides students with a comprehensive yet critical understanding of European, American, and Non-Western Modern and Contemporary Art (from 1800-2025 CE). We will study the successive avant-garde movements beginning with Realism and Impressionism through the most recent movements in art and architecture. We will consider each movement in its specific conceptual framework and larger historical context. In addition to building knowledge and understanding of Modern and Contemporary Art, students will also develop analytical skills through textual studies of primary and secondary sources. Writing exercises, in-class presentations, debates, and creative responses to works of art will be the major types of assessment. This course will include experiences at local museums and galleries.

Ancient Greek and Roman Art and Architecture and its Continuing Legacy (UL)

(Open to sophomores, juniors, and seniors) Semester - 3 credits - Offered in the Spring Semester

This course provides students with a comprehensive yet critical understanding of Greek and Roman art and architecture and the monumental influence of the classical tradition on subsequent historical periods. From democracy and republicanism to literature, philosophy, art, and architecture, the contributions of these two cultures serve as the foundation for much of what has been described as "Western" culture. We will examine the art and architecture of the Medieval, Renaissance, Baroque, Classical, and Neoclassical periods up to the modern day with an emphasis on understanding the Greco-Roman legacy influencing these periods. This course will include experiences at the Carnegie Museum of Art and other sites.

Additional Academic Programs

Independent Project

(Open to seniors) Semester - 3 credits

Seniors whose interests go beyond WT's regular curricular offerings may design an independent project for academic credit with an appropriate faculty sponsor in any academic discipline. A student may also make arrangements to work with a qualified mentor/teacher outside the school provided a WT faculty member in a related field assumes sponsorship of the project and agrees to regular conversations with both the mentor and student. Independent projects may not duplicate courses offered at WT and do not meet graduation requirements. Students wishing to undertake an independent project must arrange for a project advisor and submit a written proposal to the Department Chair and the Upper School Director. The most successful proposals culminate in a public exhibition, are interdisciplinary or experiential in nature, and draw on the resources of our City As Our Campus program. Independent projects do not fulfill Winchester's graduation requirements, but they are graded and appear as additional earned credits on the WT transcript.

Malone Schools Online Network (MSON)

The Malone Schools Online Network (MSON) provides motivated 11th and 12th grade students at participating Malone Schools with a variety of academically challenging courses that enhance each member school's existing curriculum. These interactive seminars bring students together from across the country with dedicated teachers in real time. MSON joins the best of independent school education with the latest video conferencing technology to chart new territory in online learning.

MSON offers both semester and year-long offerings. Each course meets twice a week online (though assessments are often administered in person by the WT liaison). Because of our rotating schedule, WT students typically elect afternoon or early evening classes. MSON classes do not fulfill Winchester's graduation requirements, but they are graded and appear as additional earned credits on the WT transcript.

Rising Juniors and Seniors interested in taking an MSON course should contact Division Director Dana Kooistra in the US office.

MSON has not yet updated their 2026-27 Course Guide.

[Please see the 2025-26 version for representative options.](#)

Grade Level Seminar & Physical Health and Wellness

9th Grade: Health, Wellness & Physical Education Seminar

(Required for freshmen) Year - 2 credits

This year-long seminar series helps students navigate their first year in high school and provides a forum to talk through the challenges of living and learning together in community. Through readings, videos, activities, guest speakers, and discussions, 9th graders build organizational, time management, study, and research skills to support their academic success. They also develop critical social and emotional competencies through seminars on stress, coping, healthy relationships, sex education, nutrition, mindfulness, suicide prevention, and chemical and alcohol dependency.

9th grade seminar includes regular physical education classes to help students incorporate fitness into their daily routines and promote healthy and active habits for a lifetime. Students who play on a WT team or participate in our Dance Ensemble are exempt from PE classes. Further, students participating in a sport or robust physical activity outside of school may apply for an athletic exemption.

10th Grade: Health, Wellness & Physical Education Seminar

(Required for sophomores) Year - 2 credits

The 10th grade seminar helps students develop healthy adolescent identities, feel and show empathy for others, establish and maintain supportive friendships, and make responsible and caring choices for themselves and others. Visiting experts from the programs in our community educate students on matters of sexual health and relationships. Students also dive more deeply into conversations around diversity, equity, and inclusion, often connecting classroom content to their lived experiences. Additional topics support students' growing independence. Seminars for 10th graders include financial literacy, critical engagement with social media, substance use and abuse, and an introduction to the college counseling process.

10th grade seminar includes regular physical education classes to help students incorporate fitness into their daily routines and promote healthy and active habits for a lifetime. Students who play on a WT team nor participate in our Dance Ensemble are exempt from PE classes. Further, students participating in a sport or robust physical activity outside of school may apply for an athletic exemption.

11th Grade: Health, Wellness, College Counseling & Physical Education Seminar

(Required for juniors) Year - 2 credits

Through activities, presentations, and discussions, the 11th grade seminar invites students to deepen and extend their social-emotional skills, tools for responsible decision-making, and intercultural competency. After Thanksgiving, juniors also dive into the college counseling process, which our counselors present as an educational opportunity for goal setting, self-awareness, and self-actualization. In our College Counseling Seminars, students will learn about the changing landscape of college admissions and explore in-depth the tools and processes of applying to college. Over 11 sessions, students will create a college wishlist, begin the first draft of a college essay, identify personalized factors that influence decision-making, understand financial aid, and effectively navigate college tours, fairs, and visits.

11th grade seminar includes regular physical education classes to help students incorporate fitness into their daily routines and promote healthy and active habits for a lifetime. Students who play on a WT team or in our Dance Ensemble are exempt from PE classes. Further, students participating in a sport or robust physical activity outside of school may apply for an athletic exemption.

12th Grade: Health, Wellness & College Counseling Seminar

(Required for seniors) Year - 2 credits

Through activities, presentations, and discussions, the 12th grade seminar invites students to deepen and extend their social-emotional skills, tools for responsible decision-making, and intercultural competency. The 12th grade seminar also supports students through the remainder of the college counseling process and prepares students for life beyond WT, including information on how to do college well.