



GERMANTOWN FRIENDS SCHOOL

2024-25

UPPER SCHOOL

COURSE

CATALOG

2024–25 UPPER SCHOOL

# Academic Leadership

## DEPARTMENT CHAIRS

### ART

Megan Culp

### CLASSICS

Julie Marren

### COMPUTER SCIENCE + DIGITAL MEDIA

John Henderson

### DIRECTED INDEPENDENT STUDY

Aaron Preetam

### ENGLISH

Alex Levin  
Ceora Wearing-Moore

### HEALTH EDUCATION

Maryanne Rawlings

### HISTORY

Rob Goldberg

### MATHEMATICS

Anne Ross

### MODERN LANGUAGES

Luisa Sanders Knowles

### MUSIC

Brian Bersh

### PHYSICAL EDUCATION

Anya Erz

### SCIENCE

Eva Porter

### THEATRE

Jake Miller



## LEARNING EXPERIENCES

*January Term*

Kasey Henderson

*Junior Projects*

Ted Oxholm

*Global Online Academy*

Matt Zipin, On-site Director



### DIRECTOR OF UPPER SCHOOL

Matthew Young

### ASSISTANT DIRECTOR OF UPPER SCHOOL FOR STUDENT LIFE

Behnaz Varamini

### ADMINISTRATIVE ASSISTANT

TBD

### DIRECTOR OF ACADEMIC PROGRAM

Carol Rawlings Miller

### ASSISTANT TO THE DIRECTOR OF ACADEMIC PROGRAM

Paula Busser

### DIRECTOR OF ATHLETICS

Katie Bergstrom Mark

### SCHEDULER

Matt Zipin



### 9TH GRADE DEAN

Rachel Bradburd

### 10TH GRADE DEAN

John Ceccatti

### 11TH GRADE DEAN

Rob Hewitt (Interim)

### 12TH GRADE DEAN

Rob Goodman

## CONTENTS

Course Selection Process	2
Graduation Requirements	3
Quick Reference Terms	4
Program Highlights and Notes	5
Departmental Approval Required	6
Thematic Strands Across the Curriculum	7
Four-Year Course Planning Grid	8
Departmental Course Offerings Grid	10
Course Offerings by Department	17
Athletics	20
Directed Independent Study	29
Junior/Senior Seminars	44
Required Programs	71
January Term	
Junior Projects	
Global Online Academy	72



## Course Selection Process

### **NOTE TO STUDENTS AND PARENTS**

The course selection process for the 2024–25 school year begins here. Within these pages, you will find your course and program options as well as detailed information about requirements and prerequisites. Students may not take more than six major course credits and are advised on overall course load and balance. As you plan, we urge you to seek the counsel of advisors and teachers.

Please do be sure to read this catalog carefully - we always have a range of exciting offerings, some returning and some brand new. We hope you enjoy planning your journey at GFS!

### **CONSIDERING COLLEGE ADMISSIONS AS YOU PLAN**

GFS course requirements allow you the flexibility to not only pursue their intellectual passions but also to experiment. As you plan, keep in mind that most competitive colleges expect to see four years of study in English, History/Social Sciences, Math, Science, and Modern Language. Keep in mind that “minor” courses are also an important as well as rewarding part of your high school experience.

### **FOUR-YEAR COURSE PLANNING GRID**

The planning grid on page 10 will assist you with drafting various models for your course of study from grades nine through twelve. As you sketch out a multi-year plan, noting your required and elective courses, you will see the ways in which the curriculum might unfold for you. It is crucial to repeat this process annually to make sure you are meeting all requirements for graduation.

### **REQUIREMENTS AND A COURSE LOAD NOTE**

Ninth, tenth, and eleventh graders are required to take five major courses; twelfth graders may elect four or five majors. A student who wishes to take six major courses in any grade (an academic overload) must have the approval of the Upper School Division Director.

### **PREREQUISITES AND DEPARTMENTAL APPROVAL**

Please note that certain courses have prerequisites or, for a variety of reasons, require departmental approval. That information is listed on the departmental pages in this course catalog and on the grid (beginning on page 6).

### **COURSE SELECTION TIMELINE**

- Beginning in late January, students seek course selection advice from parents, teachers, and advisors. On occasions Department Heads and Deans are also consulted. Juniors can be well served by consulting with College Counseling as well.
- Online course registration will open on Monday, February 5th, 2024, and close on Friday, February 16th, 2024. Students register for courses through their Veracross Student Portal. Parents also approve course requests through the Veracross Parent Portal. Parents and students will receive a confirmation in June indicating scheduled courses.
- Add/Drop Period: At the beginning of the school year, students will have one 8-day rotation to add or drop a course. All adds and drops must be approved by the Grade Dean.



# Graduation Requirements

To graduate from GFS, students must complete satisfactory work in 19 major courses and meet all departmental major and minor course requirements. All students must participate in January Term, fulfill the Athletics requirement, and complete a Junior Project. See departmental course descriptions for more details. All exceptions to these requirements must be approved by the Academic Standards Committee.

## REQUIRED MAJOR COURSEWORK

**English (4 years)**

**History (3 years)**

- Comparative Cultures (9th Grade)
- African-American History (10th Grade)
- U.S. History (11th or 12th Grade)

**Language (through Level 3)** Completion to level three of one classical or modern language. Typically the first level of coursework is completed by the end of Middle School (Note: 7th and 8th grade 1a and 1b study count as Level 1).

**Mathematics (3 years)** Information about course sequence options appears in the Mathematics Department section.

**Science (3 years)** Of the courses selected, one science must be physical and one biological.

## OTHER GRADUATION REQUIREMENTS

**January Term:** Students complete January Terms in grades 9, 10, and 12.

**Junior Project:** An independent project that takes place during the month of January of junior year.

## REQUIRED MINOR COURSEWORK

### ARTS MINORS REQUIREMENTS

**Class of 2024 and all subsequent classes**

- Art (1 year Foundation)
- Music (1 year or the equivalent of 2 semesters)
- Theatre (1 semester Ninth Grade Theatre)

### HEALTH

- 10th grade: Health Education 10
- 12th grade: Life Issues (coordinated with Advisory)

### ATHLETICS AND PHYSICAL EDUCATION

Athletics and PE are distinct but complementary departments. Across all four years of Upper School, students participate in a movement-based activity in PE and/or Athletics, with requirements detailed below:

- Ninth grade: One semester PE 9 Fitness and Wellness; two seasons Athletics.
- Tenth grade: Three seasons: one season of Athletics; choice of Athletics or PE for other two seasons.
- Eleventh grade: Three seasons, choice of Athletics or PE each season.
- Twelfth grade: Two seasons, choice of Athletics or PE.



## Quick Reference Terms

### **Required Course**

A department-specific course required for graduation.

### **Elective Course**

A department-specific course not required for graduation.

### **Prerequisite**

A course one must take before taking another course.

### **Co-requisite**

A course one must take along with another course.

### **Major Course**

A “major” typically meets five times in an 8-day cycle and counts as one of the 19 major courses mandated for graduation. There are two kinds of major courses

- **Required Major:** A major course taken to fulfill a department-specific major course requirement.
- **Elective Major:** A major course that is not required but that can count as one of the 19 majors required.

### **Minor Course**

A “minor” meets between two and four times in an 8-day cycle.

### **Art, Music, Computer Science or Theatre Major**

A configuration of minor courses that can, with the permission of the relevant Department Head, form an art, music, computer science or theatre major course that counts as one of the major courses for graduation. See department pages for a detailed description.

### **Overload**

When a student takes six major courses rather than the standard five (done only with the permission of the Upper School Division Director).

### **Advisor**

Advisors serve as primary academic counselors, advocates, and facilitators for students within their advisory group as they seek to learn and grow within the Upper School curriculum.

### **Grade Dean**

Grade Deans lead the grade-level team of advisors and teachers, providing additional support, clerking grade-level meetings, overseeing grade-level programming, and supporting student/family concerns as needed in consultation with the Upper School Division Director.



## Program Highlights and Notes

### PROGRAM HIGHLIGHTS

#### Directed Independent Study

A “DIS” is an independent major or minor course requested by a student that involves a teacher-student study partnership.

#### Global Online Academy

A consortium of independent schools that offers online course opportunities open to GFS juniors, and seniors. Sophomores may register with the approval of the Upper School Division Director.

#### January Term

A month-long opportunity to explore new courses of study. Classes are innovative, hands-on course offerings composed of mixed-grade groups of 9th, 10th and 12th graders. Courses are taken on a Credit/No Credit basis.

#### Junior Project

The required independent project all juniors undertake in the month of January of their junior year.

#### Junior-Senior Seminars

Major elective courses offered each school year in innovative subjects that are often interdisciplinary in nature. These courses change year to year.

### REGISTRATION NOTES

#### Minor Classes

Please rank your minor course selections as instructed at the time of course signup.

#### Athletics and Physical Education

For all three seasons, please select a sport or rank your PE elective choices during course sign up.

#### Overload/A Sixth Major

Taking five major classes in a given school year fulfills our challenging standard requirement for major coursework. Taking more than five major courses is considered an “overload;” students considering a sixth course should keep in mind the additional work involved. Please note that the “overload” course cannot be a required course, and it is possible that an overload course cannot be scheduled. Any student who wishes to take six majors must receive approval from the Upper School Division Director. Students may not take more than six major course credits.

#### History Electives

Juniors and seniors electing semester-long courses must make selections for both semesters and rank their preferences.

#### Junior-Senior English Courses

Juniors and Seniors must rank their choices when selecting their yearlong English course.

Students may not enroll in the same class more than once.



## Departmental Approval Required

The following options are subject to departmental approval from the appropriate Department Head. After signing up for the course, if the student does not receive approval, they will be notified by the Department Head or Grade Dean and will be given the opportunity to amend their course selections.

### **ART**

Students creating an Art Major  
Students electing Senior Studio (portfolio also required)

### **CLASSICS**

Students dropping a classical language

### **COMPUTER SCIENCE**

Students creating a Computer Science major

### **MATHEMATICS**

Please see the Mathematics course descriptions for departmental approval requirements

Students moving into or out of an accelerated or advanced course

Students dropping math in their senior year

Students new to GFS must take a math assessment; course placement must have departmental approval

### **MODERN LANGUAGES**

Students taking Advanced classes or dropping a modern language

### **MUSIC**

Students creating a Music Major  
Admission to Choir and A Cappella is audition-based

### **ATHLETICS + PHYSICAL EDUCATION**

Students proposing an alternative to Athletics/PE requirements should apply using the online form, on Veracross in the Family Portal

### **SCIENCE**

Students electing advanced Science classes

### **THEATRE**

Students creating a Theatre Major

Students electing Theatre Lab

Students participating in a theatre production may elect to delay a season of athletics participation to the following year with department approval

### **DIRECTED INDEPENDENT STUDY (DIS)**

Students registering for a DIS Major must submit a formal proposal by early May that has the approval of the Director of Independent Studies and the Academic Standards Committee

### **GLOBAL ONLINE ACADEMY (GOA)**

Students electing to take a GOA course require approval from the GFS site director. Sophomores will need to register with the approval of the Upper School Division Director

### **EXCEPTIONS/ALTERNATIVES TO REQUIREMENTS**

Any request for alternatives to our standard program can be directed to the Upper School Division Director





## Thematic Strands Across the Curriculum

The Upper School curriculum features a number of curricular themes spanning multiple departments. These lists highlight connections between courses that may not sit within the same department.

### **SOCIAL JUSTICE AND INCLUSION**

African American History  
Global Youth-Led Activism  
History and Impact of Hip Hop  
History and Philosophy of Nonviolence  
Girls Who Code  
Literature of the Diaspora  
Prison and Criminal Justice System (GOA)  
Deconstructing Food  
Queer History & Culture  
Social Justice Lab  
War and Peace in Literature

### **SCIENCE, ENGINEERING & PROGRAMMING**

Abnormal Psychology (GOA)  
Accelerated Statistics  
Application in Statistics  
Architecture (GOA)  
Bioethics (GOA)  
Computer Science Programming Capstone  
Cybersecurity (GOA)  
Developmental Psychology (GOA)  
Differential Calculus  
Exploring AI  
Game Theory (GOA)  
Environmental Science  
Human Anatomy and Physiology

Integral Calculus and Series  
Linear Algebra (GOA)  
Medical Problem Solving (GOA)  
Mobile Application Development  
Multivariable Calculus (GOA)  
Number Theory (GOA)  
Organic Chemistry  
Principles of Engineering  
Psychology: Introduction to Psychology (GOA)  
Robotics  
Social Psychology (GOA)  
Topics in Advanced Mathematics I & II

### **DIGITAL MAKING & DESIGN**

Digital Art  
Digital Design I & II  
Digital Music and Recording  
Digital Photography (GOA)  
Film Making I, II & III  
Game Design I  
Machine Studio  
Web Design and Development

### **INTERDISCIPLINARY**

20th-Century Art & Social Movements in the US  
Bioethics (GOA)  
Deconstructing Food  
Exploring AI  
Positive Psychology (GOA)

Queer History & Culture  
History and the Future of Language  
Film Making I, II & III

### **WRITING & MEDIA**

Ethics and Advocacy in Journalism  
Poetry Workshop  
Short Story Workshop  
Scriptwriting Workshop for Stage & Screen  
Peer Writing Advisors  
Introduction to Journalism  
Magazine Journalism

### **ENTREPRENEURSHIP**

Arts Entrepreneurship (GOA)  
Applied Economics  
Investment (DIS)  
Business Problem Solving (GOA)  
Entrepreneurship in a Global Context (GOA)  
Principles of Economics

# FOUR-YEAR COURSE PLANNING GRID

	NINTH GRADE	TENTH GRADE
MAJORS	5 REQUIRED	5 REQUIRED
<b>English</b> 4 years	Introduction to Literary Studies	Literary History and Analysis
<b>History</b> 3 years	Comparative Cultures	African American History
<b>Language</b> Through Level 3		
<b>Mathematics</b> 3 years		
<b>Science</b> 3 years		
<b>Jr/Sr Seminar</b>	N/A	N/A
MINORS		
<b>Advisory</b>	Advisory 9	Advisory 10
<b>Art</b> 1 year		
<b>Computer Science + Digital Media</b>		
<b>Theatre</b>	Ninth Grade Theatre	
<b>Health</b> 1 semester	N/A	Health Education
<b>Music</b> 1 year		
<b>Other</b>		
ATHLETICS & PHYSICAL EDUCATION		
	<b>FULL YEAR</b> • One semester PE 9 Fitness and Wellness • Two seasons of Athletics	<b>FULL YEAR</b> • One season Athletics • Choice of Athletics or PE for other two seasons
	<b>F</b>	<b>F</b>
	<b>W</b>	<b>W</b>
	<b>S</b>	<b>S</b>



In thinking about course choices, you may want to sketch out a plan of study incorporating graduation requirements and electives. Five majors are required of all students in grades 9-11, and either four or five may be taken in 12th grade.

	ELEVENTH GRADE	TWELFTH GRADE
MAJORS	5 REQUIRED	4 OR 5 REQUIRED
<b>English</b> 4 years	Yearlong Elective	Yearlong Elective
<b>History</b> 3 years	US History: Advanced, must be taken in Eleventh or Twelfth grade	
<b>Language</b> Through Level 3		
<b>Mathematics</b> 3 years		
<b>Science</b> 3 years		
<b>Jr/Sr Seminar</b>		
MINORS		
<b>Advisory</b>	Navigation (Coordinated with the College Office)	Life Issues (Coordinated with Health)
<b>Art</b> 1 year		
<b>Computer Science + Digital Media</b>		
<b>Theatre</b>		
<b>Health</b> 1 semester	N/A	Life Issues (Coordinated with Advisory)
<b>Music</b> 1 year		
<b>GOA, DIS &amp; Other</b>		
ATHLETICS & PHYSICAL EDUCATION		
	<b>FULL YEAR</b> • Three seasons, choice of Athletics or PE	<b>TWO SEASONS</b> • Choice of Athletics or PE
	<b>F</b>	<b>F</b>
	<b>W</b>	<b>W</b>
	<b>S</b>	<b>S</b>

# DEPARTMENTAL COURSE OFFERINGS GRID

COURSE TITLE	GRADE				TIMES PER CYCLE	INFORMATION
	9	10	11	12		
<b>ART</b>						
Foundation	•	•	•	•	3	required minor
Color & Design		•	•	•	4	minor elective; prerequisite: Foundation
Drawing & Painting			•	•	4	minor elective; prerequisite: Foundation
Furniture Making		•	•	•	3	minor elective; prerequisite: Foundation
Sculpture		•	•	•	4	minor elective; prerequisite: Foundation
Digital Art		•	•	•	4	minor elective; prerequisite: Foundation
Photography I			•	•	3+	minor elective; prerequisite: Foundation
Photo II: The Journey Continues				•	3+	minor elective; prerequisite: Photo I
Senior Studio: Advanced				•	5	major elective; prerequisite: Foundation, departmental approval
Art Major		•	•	•		major elective; prerequisite: Foundation, departmental approval
<b>CLASSICAL LANGUAGES</b>						
Ancient Greek I	•	•	•	•	5	major elective
Ancient Greek II	•	•	•	•	5	major elective; prerequisite: Greek I
Ancient Greek III		•	•	•	5	major elective; prerequisite: Greek II
Ancient Greek IV: Advanced			•	•	5	major elective; prerequisite: Greek III
Ancient Greek V: Advanced				•	5	major elective; prerequisite: Greek IV, departmental approval
Latin I	•	•	•		5	major elective
Latin II	•	•	•	•	5	major elective; prerequisite: Latin I or Latin IB
Latin III Republic to Empire		•	•	•	5	major elective; prerequisite: Latin II
<b>NEW</b> Ancient Perspectives in the Natural Sciences IV/V: Advanced			•	•	5	major elective; prerequisite: Latin III
<b>NEW</b> Life Choices with Cicero: What Makes a Decision Wise? IV/V: Advanced			•	•	5	major elective; prerequisite: Latin III
History and Future of Language		•	•	•	3	minor elective
<b>COMPUTER SCIENCE + DIGITAL MEDIA</b>						
Robotics	•	•	•	•	3	minor elective (one semester)
CS I: Introductory Programming (Python)	•	•	•	•	2	minor elective
Introductory Programming: Girls Who Code	•	•	•	•	2	minor elective
CS II: Data Science & Object-Oriented Programming		•	•	•	3	minor elective; prerequisite: CS I, or departmental approval
CS III: Algorithms and Computer Organization			•	•	3	minor elective; prerequisite: CS II, or departmental approval
Computer Science Programming Capstone: Advanced			•	•	3	minor elective; prerequisite: CS III or departmental approval

+May use hook period / See course description for full information

COURSE TITLE	GRADE				TIMES PER CYCLE	INFORMATION
	9	10	11	12		
Digital Design I	•	•	•	•	3	minor elective
Digital Design II		•	•	•	3	minor elective; pre-requisite: Digital Design I or department approval
Web Design & Development I	•	•	•	•	3	minor elective
Web Design & Development II		•	•	•	3	minor elective; pre-requisite: Web Design & Development I or departmental approval
Mobile Application Development I	•	•	•	•	3	minor elective
Machine Studio			•	•	3	minor elective
Game Design I	•	•	•	•	3	minor elective
Electronics and Robotics Design		•	•	•	3	minor elective; prerequisite: CS I or Robotics or Mobile App Design, or with departmental approval
<b>NEW</b> Exploring AI: Engineering and Ethics	•	•	•	•	2	minor elective
<b>ENGLISH</b>						
Introduction to Literary Analysis	•				5	
Literary History and Analysis		•			5	
<b>JUNIOR SENIOR REQUIRED ENGLISH COURSES</b>						
American Literature — In Search of the American Dream: Advanced			•	•	5	requirement-fulfilling major elective
<b>NEW</b> English Literature from Chaucer to Pope: Advanced			•	•	5	requirement-fulfilling major elective
<b>NEW</b> English Literature from Wordsworth to Zadie Smith: Advanced			•	•	5	requirement-fulfilling major elective
Literary Studies in Genre: Advanced			•	•	5	requirement-fulfilling major elective
<b>NEW</b> Literature and the Environment: Advanced			•	•	5	requirement-fulfilling major elective
Literature of Diaspora — Far From Home: Advanced			•	•	5	requirement-fulfilling major elective
Modernist and Post-Modernist Literature: Advanced			•	•	5	requirement-fulfilling major elective
<b>NEW</b> The Great City: Advanced			•	•	5	requirement-fulfilling major elective
The Romantic and Gothic Literary Traditions: Advanced			•	•	2	requirement-fulfilling major elective
The Tragic and Comic Modes in Literature: Advanced			•	•	5	requirement-fulfilling major elective
<b>NEW</b> 20th Century Authors: Woolf, Baldwin, Morrison, García Marquez: Advanced			•	•	5	requirement-fulfilling major elective
War and Peace in Literature: Advanced			•	•	5	requirement-fulfilling major elective
Short Story Workshop		•	•	•	3	minor elective
Poetry Workshop		•	•	•	3	minor elective
Peer Writing Advisor Training and Practice		•	•	•	3	minor elective
Introduction to Journalism	•	•	•		2	minor elective
Magazine Journalism		•	•	•	3	minor elective

+May use hook period / See course description for full information

COURSE TITLE	GRADE				TIMES PER CYCLE	INFORMATION
	9	10	11	12		
<b>HEALTH EDUCATION</b>						
Health Education 10		•			3	required minor
Life Issues				•	1	required minor (coordinated with Advisory)
<b>NEW</b> Deconstructing Food	•	•	•	•	3	minor elective
<b>HISTORY</b>						
Comparative Cultures	•				5	required major
African American History		•			5	required major
United States History: Advanced			•	•	5	required major
<b>HISTORY ELECTIVES</b>			•	•	5	major elective
<b>One Year Elective:</b> <ul style="list-style-type: none"> <li>• Applied Economics: Advanced</li> </ul>						
<b>Fall Semester Electives:</b> <ul style="list-style-type: none"> <li>• <b>NEW</b> Ancient Civilizations of the Middle East and North Africa: Advanced</li> <li>• <b>NEW</b> Becoming American: Race and Ethnicity in the United States: Advanced</li> <li>• <b>NEW</b> History and Philosophy of Nonviolence: Advanced</li> <li>• United States Government &amp; Civics: Advanced</li> </ul>						
<b>Spring Semester Electives:</b> <ul style="list-style-type: none"> <li>• <b>NEW</b> 20th Century Art and Social Movements in the United States: Advanced</li> <li>• <b>NEW</b> Global Youth-Led Activism: Advanced</li> <li>• Modern U.S. Political Ideologies and Issues: Advanced</li> <li>• <b>NEW</b> Utopian Worlds: Advanced</li> </ul>						
<b>JUNIOR-SENIOR SEMINARS</b>						
<b>NEW</b> Ethics and Advocacy in Journalism			•	•	5	major elective
<b>NEW</b> Principles of Economics			•	•	5	major elective
<b>NEW</b> Queer History and Culture			•	•	5	major elective
Mythology and Monstrosity			•	•	5	major elective
<b>SOCIAL JUSTICE OFFERINGS</b>						
Social Justice Lab	•	•	•	•	2	minor elective
<b>MATHEMATICS</b>						
Please see Mathematics section for course sequencing options, prerequisites, and departmental approval requirements.						
<b>MODERN LANGUAGES</b>						
French I	•	•	•		5+	major elective
French II	•	•	•	•	5+	major elective; prerequisite: French I
French III		•	•	•	5	major elective; prerequisite: French II
French IV			•	•	5	major elective; prerequisite: French III

+May use hook period / See course description for full information

COURSE TITLE	GRADE				TIMES PER CYCLE	INFORMATION
	9	10	11	12		
French IV: Advanced			•	•	5	major elective; prerequisite: French III, departmental approval required
French V: Advanced			•	•	5	major elective; prerequisite: French IV, departmental approval required
Mandarin I	•	•	•		5	major elective
Mandarin II	•	•	•	•	5	major elective; prerequisite: Mandarin I
Mandarin III	•	•	•	•	5	major elective; prerequisite: Mandarin II
Mandarin IV and V: Advanced	•	•	•	•	5	major elective; prerequisite: Mandarin III or IV
Spanish I	•	•	•		5+	major elective
Spanish II	•	•	•	•	5+	major elective; prerequisite: Spanish I
Spanish III		•	•	•	5	major elective; prerequisite: Spanish II
Spanish IV		•	•	•	5	major elective; prerequisite: Spanish III
Spanish IV: Advanced		•	•	•	5	major elective; prerequisite: Spanish III, departmental approval required
Spanish V: Advanced			•	•	5	major elective; prerequisite: Spanish IV, departmental approval required
<b>MUSIC</b>						
<b>FALL</b>						
Music Connections: Renaissance, Baroque and Classical Periods	•	•	•	•	2	minor elective (one semester)
Musical Instrument Building: Winds and Strings	•	•	•	•	3	minor elective (one semester)
Critical Listening in Music	•	•	•	•	2	minor elective (one semester)
<b>SPRING</b>						
Ninth Grade Musical	•				2+	minor elective (one semester)
Critical Listening in Music	•	•	•	•	2	minor elective (one semester)
Musical Instrument Building: Drums and Electric Instruments	•	•	•	•	2	minor elective (one semester)
Music Connections: Romantic, 20th Century, and Modern Periods	•	•	•	•	2	minor elective (one semester)
<b>YEARLONG</b>						
Conducting	•	•	•	•	2	minor elective
History and Impact of Hip-Hop	•	•	•	•	2	minor elective
Songwriting	•	•	•	•	2	minor elective
Jazz Ensembles	•	•	•	•	3	minor elective; co-requisite: private lessons
Chamber Ensembles	•	•	•	•	2	minor elective; co-requisite: private lessons
Orchestra	•	•	•	•	3+	minor elective; co-requisite: private lessons
World Percussion Ensemble	•	•	•	•	3	minor elective
Chorus	•	•	•	•	2	minor elective

+May use hook period / See course description for full information

COURSE TITLE	GRADE				TIMES PER CYCLE	INFORMATION
	9	10	11	12		
Choir	•	•	•	•	3+	minor elective (Sunday rehearsals), departmental approval, co-requisite Chorus or A Cappella
A Cappella		•	•	•	2+	minor elective
Musical Theatre		•	•	•	3	minor elective (can be taken for Music or Theatre credit)
Sight Singing & Ear Training	•	•	•	•	2	minor elective
Music Theory I	•	•	•	•	4	minor elective
Music Theory II: Advanced		•	•	•	4	minor elective; prerequisite: Music Theory I or departmental approval
Music Composition I: Advanced		•	•	•	4	minor elective
Music Composition II: Advanced			•	•	5	major elective; prerequisite: Music Composition I or departmental approval
<b>NEW</b> Music Lab: Advanced			•	•	5	major elective; prerequisite: two (or more) yearlong courses in Music, departmental approval.
Digital Music Recording & Production I	•	•	•	•	2	minor elective
<b>NEW</b> Digital Music Recording and Production II: Advanced		•	•	•	2	minor elective; prerequisite: Digital Music Recording and Production I
Introduction to Piano	•	•	•	•	2	minor elective



## PHYSICAL EDUCATION

Please see PE section for more information about requirements and electives.

PE 9 Fitness and Wellness	•				3	required minor (one semester)
---------------------------	---	--	--	--	---	-------------------------------

### YEARLONG

GFS Fitness Club - After School		•	•	•	2/wk	minor elective
Personal Fitness		•	•	•	3	minor elective
Vinyasa Yoga		•	•	•	1-2	minor elective; Thursdays, 3:30-4:30 p.m.

### FALL

Badminton/Net Games		•	•	•	2	minor elective
<b>NEW</b> Wissahickon Adventures		•	•	•	2	minor elective
<b>NEW</b> Jazz & Hip Hop		•	•	•	2	minor elective; can be taken for Theatre or PE credit

### WINTER

Archery		•	•	•	2+	minor elective
Volleyball/Table Tennis		•	•	•	2	minor elective
World Dance		•	•	•	2+	minor elective; can be taken for Theatre or PE credit

### SPRING

Wissahickon Hiking		•	•	•	2	minor elective
Archery		•	•	•	2	minor elective
Modern Dance		•	•	•	2	minor elective; can be taken for Theatre or PE credit

+May use hook period / See course description for full information



COURSE TITLE	GRADE				TIMES PER CYCLE	INFORMATION
	9	10	11	12		
<b>SCIENCE</b>						
Physics	•	•			5+	major elective
Chemistry			•	•	5+	major elective
Biology			•	•	5+	required major; prerequisite: Chemistry or departmental approval
Principles of Engineering: Advanced			•	•	5+	major elective; prerequisite Chemistry, Physics and departmental approval
Advanced Chemistry			•	•	5+	major elective; prerequisite: Chemistry, departmental approval
Advanced Biology				•	5+	major elective; prerequisite: satisfactory completion of Chemistry and Biology, departmental approval
Advanced Physics				•	5+	major elective; prerequisite: completion or concurrent enrollment in Calculus or Integral Calculus, departmental approval
Environmental Science		•	•	•	5+	major elective; prerequisite: Chemistry
<b>NEW</b> Organic Chemistry: Advanced			•	•	5+	major elective; prerequisite: Chemistry
<b>NEW</b> Human Anatomy and Physiology: Advanced			•	•	5	major elective; prerequisite: Chemistry
<b>NEW</b> Science Research		•	•	•	3	minor elective
<b>THEATRE</b>						
<b>THEATRE COURSES</b>						
Ninth Grade Theatre	•				3	required minor (one semester)
Ninth Grade Musical	•				2+	minor elective (one semester), can be taken for Music or Theater credit
<b>NEW</b> Text & Performance		•	•	•	3	minor elective
Acting for the Screen			•	•	2	minor elective (one semester)
Musical Theatre		•	•	•	3	minor elective (can be taken for Theatre or Music credit)
Scriptwriting Workshop for Stage & Screen			•	•	3	minor elective
Theatre Lab: Advanced				•	5	major elective; prerequisite: two (or more) yearlong courses in Theatre and involvement in at least one co-curricular Mainstage Production, departmental approval
Theatre Major*			•	•	5	major elective, departmental approval
<b>DANCE &amp; MOVEMENT COURSES</b>						
<b>NEW</b> Jazz & Hip Hop		•	•	•	2	minor elective; can be taken for Theatre or PE credit (fall trimester)
World Dance		•	•	•	2	minor elective; can be taken for Theatre or PE credit (winter trimester)
Modern Dance		•	•	•	2	minor elective; can be taken for Theatre or PE credit (spring trimester)

\*May use hook period / See course description for full information

COURSE TITLE	GRADE				TIMES PER CYCLE	INFORMATION
	9	10	11	12		
<b>TECHNICAL THEATRE COURSES</b>						
<b>NEW</b> Scenic Carpentry and Prop Making	•	•	•	•	2	minor elective
<b>NEW</b> Lighting and Sound for the Stage	•	•	•	•	2	minor elective
<b>NEW</b> Theatre Management			•	•	2	minor elective
Scenic & Costume Design		•	•	•	3	minor elective
<b>FILMMAKING COURSES</b>						
Filmmaking I: An Introduction		•	•	•	3	minor elective (yearlong)
<b>NEW</b> Filmmaking II: Cinematic Storytelling & Technique			•	•		minor elective; prerequisite: Filmmaking I
Filmmaking III: The Picture is the Thing: Advanced				•	3	minor elective (yearlong); prerequisite: Filmmaking II
<b>DIRECTED INDEPENDENT STUDY</b>						
Please see Directed Independent Study description for details.						
DIS Major			•	•	appx 5	major elective, departmental approval
DIS Minor	•	•	•	•	2-3	minor elective, departmental approval
DIS Minor in World Language (American Sign Language, Arabic, German, Italian, Japanese, Russian)	•	•	•	•	2	minor elective
DIS Investment	•	•	•	•	1+	minor elective, meets weekly (Wednesday at 8am)
<b>GLOBAL ONLINE ACADEMY (GOA)</b>						
Please see GOA section for course descriptions and registration details.						
GOA Courses		•	•	•		major elective, departmental approval

+May use hook period / See course description for full information

# ART

The Upper School Art Program provides depth and breadth - students are introduced to appropriate skills and concepts that gradually build in complexity. Through the exploration of various materials and media, students investigate formal and conceptual issues with increasing independence. We are concerned not only with the making of art but also with the development of critical thinking, visual literacy, and art history awareness. Using a problem-solving format, criteria are first presented and examined, and then students develop individual solutions to answer assigned problems creatively. Each assignment culminates in a group critique in which students use appropriate visual arts language to inform their critical thinking. Students learn to recognize effective visual communication and to appreciate the uniqueness and diversity of effective responses.

- The course Foundation is a required minor and a prerequisite for all other art electives.
- Students must select a first and second choice for art electives with the exception of Foundation.
- Each course may be taken only once.
- Art courses may be chosen individually as minors or together in certain configurations to form an Art Major.

## ➤ ART MAJOR

An Art Major is comprised of two art minors taken simultaneously. These two courses make up an Art Major. At course sign-up, students in grades 10-12 wishing to create an Art Major should select their two minors and also select ART790 Art Major.

## ➤ GRADUATION REQUIREMENT

Students must complete one full year of Art.

### **ART310** Foundation

required minor | grades: 9, 10, 11, 12

This course is designed to introduce and investigate visual concepts. These concepts of 2D and 3D composition include line, plane, negative/positive space, perspective, color, value, figure/ground, and visual expression. Each unit of study is tailored to build technical skill and theoretical understanding, as well as to develop creative thinking and problem-solving skills regardless of prior experience. Through critiques, students learn to use a visual vocabulary to analyze the impact of visual images.

Successful completion of this course is a prerequisite for all subsequent Art courses.

### **ART830** Color & Design

minor elective | grades: 10, 11, 12 | prerequisite: Foundation

In this course, students concentrate on how color and design can be used to describe and communicate ideas through visual means. We investigate color as it can be used emotionally and psychologically for practical and poetic ends. Students will study composition and design, using elements of realistic and abstract form. Assignments emphasize creative

problem solving and varying conceptual exercises. Multiple techniques and media will be used, including collage, drawing, painting, and digital media. Skill development will underlay all of our studies.

Enrollment is limited to 12 students per section.

## **ART840** Drawing & Painting

minor elective | grades: 10, 11, 12 | prerequisite: Foundation

The year will begin with drawing. We will define drawing in many ways, from the observed and structural to the expressive and conceptual. A variety of media will be introduced throughout the course. Painting will follow as a natural outgrowth, with a focus on color, value, and materials. There will be continual emphasis on the traditional subjects of figure, landscape, and still life, as well as on the first steps the young artist takes in finding their own subjects and style. Enrollment is limited to 12 students per section.

## **ART880** Furniture Making

minor elective | grades: 10, 11, 12 | prerequisite: Foundation

This class will focus on creative furniture making. Students will learn traditional woodworking techniques while practicing discipline, patience, and problem-solving skills. With a strong emphasis on safety, students will develop a practical understanding of hand tools and learn to operate a table saw, band saw, miter saw, routing table, and power tools. Students will first learn about joinery focusing on the mortise, and tenon followed by designing and creating a scale drawing. Students will undertake a major furniture project determined by their interests and skills.

Enrollment is limited to 10 students.

## **ART810** Sculpture

minor elective | grades: 10, 11, 12 | prerequisite: Foundation

This studio course is an introduction to building three-dimensional forms. Emphasis is placed on creatively solving problems and communicating ideas through the use of a variety of materials including chipboard, plaster, wood, metal, and found objects. We will learn methods of casting, sculpting, shaping, joining materials to make sculptural forms. Students will also learn how to safely handle power tools. As we move through the projects, we will analyze contemporary and historical examples of art or design that incorporate similar methods. Each project will allow the students to develop their own way of handling the material and the development of their expressive voice. Because enrollment is limited to twelve students per section, students electing this course should specify a 2nd /3rd art course choice when they sign up. Enrollment is limited to 12 students per section.

## **ART860** Digital Art

minor elective | grades: 10, 11, 12 | prerequisite: Foundation

This digital lab course introduces the computer as an artistic tool for drawing, painting, collage, and animation. We will take advantage of aspects that are unique to digital drawing, such as layering, scaling, the incorporation of photography, and working with states of revision. This course is about expanding the narrative possibilities of image-making through contemporary processes of edition and image construction using Photoshop and Illustrator. Students will learn advanced methods of editing still and moving images, video, and animation. Students will also learn to edit the animations and incorporate sound effects and music. Because space is limited, students electing this course should specify a 2nd/3rd art course choice when they sign up.

Enrollment is limited to 12 students per section.

*\*Note – this is an art course with a focus on digital skill building for the purpose of creative expression, this course is different from digital design which is a computer science course that focuses on the commercial applications Photoshop & Illustrator.*

## **ART850** Photography I

minor elective | grades: 11, 12 | prerequisite: Foundation

This is an introductory course that explores the technical and aesthetic possibilities of the photograph. Students will first master the skills of black-and-white darkroom photography; an introduction to digital images and alternative photographic processes will follow. Throughout the course, attention will be paid to the content and composition of photographs, as students solve problems in portraiture, documentary, studio photography, and social commentary. A limited number of school cameras are available for students on an as-needed basis. Because space is limited, students electing this course should specify a 2nd/3rd art course choice when they sign up.

Enrollment is limited to 12 students per section.

## **ART920** Photo II: The Journey Continues

minor elective | Grade 12 | prerequisite: Photography I

The Journey Continues provides students the opportunity to grow as artists. Building on their foundational knowledge in the darkroom and the digital lab, students will explore new creative approaches to the medium and learn advanced technical skills as they experiment with light and ways of seeing. As students build their photographic portfolios, they will look critically not only at their own work but also at the work of renowned photographers. The Journey Continues classroom provides students with their own computers and workspace, offering them the time, space, and occasion to organize their portfolios for the college admissions process. At the end of the year, each student will create a final presentation in a form of their own choosing.

Enrollment is limited to 12 students per section.

## **ART610** Senior Studio: Advanced

major elective | grade: 12 | prerequisite: Foundation plus one of the following: Drawing & Painting; Color & Design; Digital Art; Photography or 3-Dimensional Art. Drawing & Painting, and Art History are strongly recommended as preparation; departmental approval required.

This advanced studio course stresses the development of technical and aesthetic skills and the development of original, personal vision. Both classical and contemporary approaches to visual arts will receive attention with particular emphasis on the development of original personal vision and voice. Other areas of study include color theory, abstraction, observational, conceptual, and narrative work. Guidance and support is provided for the preparation of a strong portfolio for college admissions. Regular homework and some reading and critical writing are required.

Enrollment is limited to 12 students per section; a portfolio plus one directed assignment are required for enrollment.

# ATHLETICS

The athletics program at GFS stresses participation and encourages all student athletes to develop their capabilities to the fullest extent possible. We value excellence in each sport and aim to field successful teams that are competitive within the Friends Schools League as well as with other comparable schools. We want our student-athletes to be committed to themselves, their team, the GFS school community, and the Friends Schools League. In order to do this, it is imperative for students to learn what it means to cooperate with others, set individual and team goals, manage their time with other areas of their lives, deal positively with setbacks, and to learn the physical and technical skills demanded by their sport. It is our hope that as students progress through our athletic program, they can develop holistically, not only as athletes but build upon their role within the GFS community and beyond.

## » GRADUATION REQUIREMENT NOTE

Students must participate in two seasons of Athletics in 9th grade and one season of Athletics in 10th grade.

SEASON	GIRLS		BOYS	
<b>FALL</b>	ATH802	Cross Country	ATH808	Cross Country
	ATH804	Soccer	ATH809	Soccer
	ATH806	Crew*	ATH806	Crew*
	ATH805	Tennis		
	ATH803	Field Hockey		
<b>WINTER</b>	ATH812	Basketball	ATH816	Basketball
	ATH813	Squash	ATH817	Squash
	ATH814	Indoor Track & Field	ATH818	Indoor Track & Field
	ATH811	Wrestling	ATH819	Wrestling
<b>SPRING</b>	ATH821	Golf	ATH821	Golf
	ATH824	Track & Field	ATH828	Track & Field
	ATH807	Crew*	ATH807	Crew*
	ATH822	Lacrosse	ATH826	Baseball
	ATH823	Softball	ATH827	Tennis

Several programs offer sport-specific, off-season training. Please contact the Head Coach or Athletics Director with questions.

\*Note on Crew: Rowing is a co-ed sport with additional fees associated with participation. GFS is committed to making all athletic offerings available to the student body. Information about financial aid is available through the Business Office.

## **ATHLETES AND GENDER**

GFS is committed to supporting gender-nonconforming and transgender athletes. For more on inclusion at GFS, visit the Diversity, Equity & Inclusion page within the About Us section of the GFS website. Please contact our Athletics Director with questions or concerns.

## **ALTERNATIVES TO ATHLETIC REQUIREMENTS**

We value the sense of community, camaraderie, physical well-being, and skill development that come through participating in athletics at GFS. It is our expectation that all students will actively participate in our program and fulfill the athletic requirements. Students who have undertaken a clear course of study and demonstrated a solid commitment to an out-of-school sport may request an alternative for one athletic season

at GFS. Since this out-of-school sport would replace an existing part of the school curriculum, both family and school must give careful thought to such a decision. This does not apply to an activity that is new to a student. Parents make requests by submitting the Alternatives Request Form during the course sign-up period. In addition, students must confirm this request during online course sign-up. Students will be asked for timely updates about their alternative athletic commitment and the school will be in touch with the designated coach outside of school. Decisions will be made by the Requirements Committee (Upper School Division Director, Director of Athletics, PE Department Head, and, as appropriate, the Grade Dean). Every attempt will be made to communicate these decisions in a timely manner. Students participating in a theatre production may elect to delay a season of athletics participation to the following year with department approval.

# CLASSICAL LANGUAGE

The Classics department offers Latin and Greek in grades 7-12. Our Classics teachers focus on training students to develop proficiency in the languages and become close, analytical readers of the literature. We also explore the ancient world through the lenses of class and socio-economic status, citizenship and enslavement, gender and sexual orientation, and race and ethnicity. Our program covers quite a breadth of material. Students read, analyze, interpret, and connect to a wide range of poetry and prose texts, and learn about ancient philosophy, rhetoric, culture, and history. Events like Classics Day involve our students in lively, collaborative learning, and our Classics trip every other January allows our students a chance to see their texts in context. Many students go on to study Classics in college and beyond.

## » GRADUATION REQUIREMENT NOTE

Students must complete a Level III modern or classical language to graduate

### **CLA710** Ancient Greek I

major elective | grades: 9, 10, 11, 12

This course provides an introduction to ancient Greek, beginning with learning the alphabet. From this point, students study vocabulary, syntax, and grammar with the goal of completing about half of the foundational grammar. Students compose short sentences and stories and also read short, adapted selections of Ancient Greek and explore the cultural context of the language in myth, history, and art. Along with the other Greek classes, students put on a performance for Classics Day.

### **CLA720** Ancient Greek II

major elective | grades: 9, 10, 11, 12 | prerequisite: Ancient Greek I

In this course, students complete their study of basic ancient Greek grammar. By the end of the year, students transition to translating original ancient Greek in preparation for reading Greek literature in the following year, whether heroic epic, myth, history or drama. Students also continue to study the cultural context of the language, with a particular eye to myth. Along with the other Greek classes, students put on a performance for Classics Day.

### **CLA730** Ancient Greek III

major elective | grades: 10, 11, 12 | prerequisite: Ancient Greek II

Starting in the third year, students begin to translate and explore actual ancient literature. Topics and genres will vary year to year and may include Greek history (e.g., Herodotus or Xenophon), epic (Homer), legal oratory (Lysias), or tragedy (Euripides). We will explore the social and historical context of the works as well as their literary aspects and later influences. Students will undertake related projects individually or in small groups. Along with the other Greek classes, students put on a performance for Classics Day.

### **CLA740** Ancient Greek IV: Advanced

major elective | grades: 11, 12 | prerequisite: Ancient Greek III

Topics and genres will vary year by year and may include Greek history (e.g., Herodotus or Xenophon), or epic (Homer), legal oratory (Lysias), or tragedy (Euripides). We will explore the social and historical context of the works as well as their literary aspects and later influences. Students will undertake related projects individually or in small groups. Along with the other Greek classes, students put on a performance for Classics Day.



## **CLA750** Ancient Greek V: Advanced

major elective | grade: 12 | prerequisite: Ancient Greek IV, departmental approval required

Topics and genres will vary year by year and may include Greek history (e.g., Herodotus or Xenophon), epic (Homer), legal oratory (Lysias), or tragedy (Euripides). We will explore the social and historical context of the works as well as their literary aspects and later influences. Students will undertake related projects individually or in small groups. Along with the other Greek classes, students put on a performance for Classics Day.

## **CLA310** Latin I

major elective | grades: 9, 10, 11

Latin I is an introduction to the basic forms, vocabulary, and grammar of Latin via reading and composition. Latin I is taught through English, with a strong emphasis on mastering grammar and forms in sentences. Students begin exploring the vocabulary and examining cognates that bring life to words in English, French, Spanish, and other languages. Alongside this, students study various aspects of the history, culture, and everyday life in Ancient Rome.

## **CLA320** Latin II

major elective | grades: 9, 10, 11, 12 | prerequisite: Latin I or Latin IB

This second-year course completes the study of Latin grammar, continues the building of essential vocabulary and composition skills, and provides increasing emphasis on reading longer Latin passages about history, mythology, and life in the ancient world. Students develop the skills necessary to read Latin as the Romans wrote it, and to consider the historical and cultural implications of their language and literature.

## **CLA430** Latin III: Republic to Empire

major elective | grade: 10, 11, 12 | prerequisite: Latin II

Students in Latin III: Republic to Empire will immerse themselves in a cornucopia of Latin literature, sampling both prose and poetry. The readings will span from the earlier writers of the Republic (such as the legal oratory of Cicero, the military memoir of Caesar, or the spicy love poetry of Catullus) to the writers of the Empire (such as Ovid's subversive take on mythology and human relationships, Pliny's letters to the Emperor Trajan, and an excerpt one of the earliest novels). At each stage, students will examine the nature of language, the deep meaning of words, and the nuance of the poetic. Alongside learning new grammatical constructions, literary devices, and rhetorical techniques, students will explore the history and social context of this tumultuous period, and consider how our readings live today in the world of art, music, politics, and current events.

## **CLA800** History and Future of Language

minor elective | grades: 10, 11, 12

In this course, students will examine the evolution of spoken and written language, the story of the English language, the current state of languages around the world, and future linguistic possibilities on the global stage. Students will study the science, sounds and psychology of language, the relationships between languages around the world, how languages change over time, and language current events, while considering concepts of universality, globalization, and identity.

## **NEW CLA805** Ancient Perspectives in the Natural Sciences IV/V: Advanced

major elective | grades: 11, 12 | prerequisite: Latin III

Much of the modern world would be unrecognizable to the ancient Romans, but nature remains a constant and critical element of human life. What observations did the ancient people make about the world around them, and how did they reach their conclusions? This course will examine how today's scientific thinkers (including you!) can benefit from reflecting on past approaches to studying the natural world. Works such as Lucretius' *On the Nature of Things* and *Pliny's Natural Histories* will give us much to consider as we explore where science, religion, and philosophy intersect.

**NEW** **CLA806** **Life Choices with Cicero:  
What Makes a Decision Wise? IV/V:  
Advanced**

major elective | grades: 11, 12 | prerequisite: Latin III

What makes a decision wise? What holds the utmost significance in life? What is a moral compass? Students will explore these questions by delving into excerpts from Cicero's essays and letters, which serve as a cornerstone for discussing morality, duty, philosophy, religion, and friendship. Cicero has left behind a rich reservoir of wisdom in his writings that, as much through critique as agreement, can shape our understanding of these fundamental aspects of human existence. Students will have the opportunity to sharpen their Latin reading skills while simultaneously engaging in thoughtful conversations about priorities that guide us through the complexities of our world.

# COMPUTER SCIENCE + DIGITAL MEDIA

The Computer Science and Digital Media Department provides coursework rich in opportunities for building fundamental skills and exploring programming, robotics, electronics, and digital design. Our programming language of choice is the widely used Python, a favorite for introductory courses in high schools and colleges due to its gentle learning curve. Additional levels of programming offer our student programmers a substantial forum for learning the skills and techniques necessary for sophisticated large-scale projects. Digital Media coursework at GFS, combining technology and design, provides students with the opportunity to develop design skills and explore the creative potential of technology, using the suite of offerings associated with the Adobe Creative Cloud. The department revises its courses every year to account for student interest and the dynamics of this rapidly changing field. All Computer Science + Digital Media classes are pass/fail.

## » COMPUTER SCIENCE MAJOR

A Computer Science Major is comprised of two eligible minors taken simultaneously. At course sign-up, students wishing to create a Computer Science Major should select CS990 Computer Science Major.

### **CS111** Robotics

minor elective | grades: 9, 10, 11, 12 | one semester

This fun one-semester, no-homework minor elective uses robots to introduce students to the intersection of computer programming and mechanical/electronic devices. Students will assemble robots and then learn to program them to perform tasks, ranging from simple (moving forward, turning on a light, etc.) to complex (finding and retrieving an object, playing soccer, etc.). Most units culminate in an exciting challenge: teams of students try to get their robot to accomplish a task (e.g., robot bowling, relay races, tug of war) more effectively than the other teams. No previous experience in robotics or programming is necessary. Students signing up for Robotics may request their preferred semester, first or second. Enrollment is limited to 12 students per section.

### **CS130** Computer Science I: Introductory Programming with Python

minor elective | grades: 9, 10, 11, 12

This full-year minor elective seeks to introduce students to computer programming. We will focus on learning Python, a programming language used at many colleges and high schools as their introductory language. The learning curve for Python is gentle, so students learn the basics quickly and produce simple programs easily. Students will progress to more advanced projects, such as interactive games, card games, and casino simulations. No previous experience is necessary.

## **CS131** Introductory Programming: Girls Who Code

minor elective | grades: 9, 10, 11, 12

This Girls Who Code section of Introductory Programming (see previous course description) will also include meetings with women in the field to discuss their work in technology. No previous experience is necessary.

*A Note on Introductory Programming: Girls Who Code – To encourage girls to study technology, we offer this “girls only” section of Introductory Programming. This section reflects our desire to address the gender gap in technology and engineering. Girls are welcome to take either Introductory Programming offering.*

## **CS140** Computer Science II: Data Science & Object-Oriented Programming

minor elective | grades: 10, 11, 12 | prerequisite: CS I, departmental approval required

This full-year elective course builds on the skills developed in CS I. The course continues to use Python to examine more advanced topics in programming and introduces students to R, a data science program used for statistical analysis. The class will explore data collection, visualization, and analysis using R and topics such as graphics, user interface, abstraction, recursion, hash tables, and object-oriented programming using Python. This class also serves as a brief introduction to the concept of machine learning and algorithms. Students will spend a mixture of their time learning concepts and working on their own programs, either in collaboration or independently.

## **CS150** Computer Science III: Algorithms & Computer Organization

minor elective | grades: 11, 12 | prerequisite: CS II or with departmental approval

This course is split into two units. The first unit consists of exploring algorithms and data structures with Java, an object-oriented programming language. This will introduce students to the language that is featured on the AP exam (GFS does not require or discourage students from taking AP exams). The second unit introduces students to computer organization, or how a computer works. They will

learn about digital logic and explore how transistors interact by modeling them with Arduino boards. Students will be briefly introduced to low-level languages such as C and Assembly.

## **CS155** Computer Science Programming Capstone: Advanced

minor elective | grades 11, 12 | prerequisite: CS III, departmental approval required

The Capstone course in the Computer Science/Digital Media department is the culmination of the academic courses we offer in programming. It builds on the concepts and skills covered in the CSII and III programming classes. This course will focus on larger projects and, in many cases, students will work in teams. Students will identify a complex problem or project that requires them to apply, and extend, their programming skills and knowledge and to produce an appropriate programmatic outcome. Based on student interest, students in the course will drive the content of the class.

## **CS171** Digital Design I

minor elective | grades: 9, 10, 11, 12

This introductory survey course is open to students eager to explore and develop their creative and technical design skills. While following industry-level digital design methodologies and practices, students gain experience with Adobe Creative Cloud tools including Illustrator, Photoshop, and InDesign. Students apply their knowledge and skills to create a variety of hands-on projects in vector illustration, digital compositing and online graphics, and print media design. Supporting topics include creative direction, typography, design principles and techniques, and human-centered design. Throughout the course, class readings and discussions introduce a historical overview as well as emerging trends, and students share their original work and critically reflect on their classmates' work as well as real-world examples. Students apply their skills in several design projects, as well as a final project to create an original design on a topic of the student's choice. Projects may include work on student publications such as *Earthquake*, *Polyphony*, and *Anno*.

## **CS172** Digital Design II

minor elective | grades: 9, 10, 11, 12 | prerequisite: Digital Design I or departmental approval

Digital Design II reinforces the themes, processes, and tools introduced in Digital Design I. Students continue to develop their repertoire of skills as they work on projects in digital illustration, branding and logo design, packaging design, book and magazine design, interface design, and other forms of visual communication. Students further develop their skills in working with a client, defining design constraints, brainstorming and pitching ideas, thumbnail sketching, moodboarding, and following the design iteration and review process. Projects are completed using Adobe Creative Cloud software, and the workshop format allows ample time for students to immerse themselves into topics and practice techniques. The course culminates in a final project of the student's choosing, which both draws on existing skills and enables students to explore areas of interest in various digital tools and techniques. Throughout the course, students share their original work and critically reflect on their classmates' work as well as real-world examples. Readings, guest speakers, and design projects expose students to opportunities available in creative technology fields.

## **NEW CS220** Exploring AI: Engineering and Ethics

minor elective | grades: 9, 10, 11, 12

Exploring AI explores the rise and rapid evolution of Artificial Intelligence, with special attention to ethical considerations, both positive and negative. Students will investigate the development, implementation, effects, and implications of AI systems and Social Media platforms. Our methods for this work will include case studies, discussions, and critical analysis. Additionally, we will examine other technological advancements and explore responsible navigation of these powerful tools. We will also, by design, make room to be responsive to how Artificial Intelligence, as it makes news and impacts society, is evolving in real time.

## **CS160** Web Design & Development I

minor elective | grades: 9, 10, 11, 12

This course covers the basics of designing web-sites, as well as web development using the HTML and CSS authoring languages. Students learn about the creative design of web-sites, including the strengths, constraints, and limitations of this medium of communication. Students code their own web pages from scratch, using the latest web standards and tools, such as HTML5, CSS3, coding software, wireframing, and browser tools and plug-ins for web developers. Students complete several assignments and projects to master the course objectives, including a final project to create an original design for a microsite on a topic of the student's choice. To support their work, students complete readings from the course texts and selected articles; they share their original work and critically reflect on real-world examples.

## **CS170** Web Design & Development II

minor elective | grades: 10, 11, 12 | prerequisite: Web Design & Development I or departmental approval

This course builds upon the principles and skills acquired during the Web Design & Development course. Students learn more advanced CSS3 coding techniques to create web pages employing the latest trends and standards in web design, including CSS animations and Javascript plugins for increased interactivity. Students learn how to better control the layout and responsiveness of their web pages using advanced CSS layout and grids, and responsive web design. Projects are completed using code editing software and developer tools, and the workshop format allows ample time for students to immerse themselves into topics and practice techniques. The course culminates in a final project of the student's choosing, to design and implement a functional site for a real client using popular web publishing software such as EditorX, Wordpress, or another content management software. Throughout the course, students share their original work and critically reflect on their classmates' work as well as real-world examples. Readings, guest speakers, and hands-on projects expose students to opportunities available in creative technology fields.

## **CS180** Mobile Application Development I

minor elective | grades: 9, 10, 11, 12

Mobile Application Development (M.A.D.) I is an entry-level course in the Computer Science and Digital Media Department. This elective course presents students with key concepts and terminology involved in mobile technologies. Students of all coding experience levels are welcome, as this class is responsively designed around student interest and familiarity with technology. Topics covered in this course include user experience design, interface design, business analysis, technical documentation, and project management. This project-based course will operate like a start-up and allow students to work in teams to create a mobile application that solves a problem for a specific group.

## **CS200** Machine Studio

minor elective | grades: 11, 12

This course will introduce students to the processes of developing, prototyping, and testing simple machines that include motors, gears, levers, and pendulums. Students will learn 3D modeling, 3D printing, and laser cutting, as well as traditional fabrication techniques. The class will follow a lecture and workshop format as students prototype inventions, create works of art, and critically revise design objects to update their function. This course is a collaboration between the Computer Science and Art departments. Enrollment is limited to 12 students.

## **CS300** Game Design I

minor elective | grades: 9, 10, 11, 12

This course will introduce students to the Game Development Process. Students will explore the process of planning, producing, and testing video games. Students will begin the year by creating demo versions of popular games, such as Asteroids and Mario. Following the completion of the demos, students will follow the game development process to create a game of their own. Students will gain exposure to the field of game design, by meeting a professional game designer. Design explorations will be undertaken using Game Maker Studio 2 and Unity. Using this software, students will create 2D and 3D games while gaining a greater understanding of C#.

## **CS190** Electronics and Robotics Design

minor elective | grades: 10, 11, 12 | prerequisite: CS I or Robotics, or with departmental approval

This course immerses students in the hands-on applications of programming by building functioning electronic devices controlled via Arduino boards, which are mini-computers that can be embedded in physical devices. The course is a thorough exploration of circuits, electronic components, and programming fundamentals. Students begin with understanding building intuition of the flow of electricity and quickly progress to hands-on experiences with breadboards, circuit diagrams, and Arduino boards. Students learn to understand code, experiment with external components, including LEDs, switches, resistors, and sensors. Guided projects encourage teamwork, problem-solving, and practical application of concepts. Advanced lessons cover topics like serial communication, arrays, and analog sensors, preparing students for an independent project where they leverage their skills to create innovative electronic devices.

# DIRECTED INDEPENDENT STUDY

GFS encourages students to take initiative in their own education. Last year, more than 150 students pursued their particular interests beyond the GFS course catalog by developing a Directed Independent Study (DIS) in consultation with a faculty advisor.

## ➤ A DIS MIGHT BE COMPOSED OF ONE OF THE FOLLOWING:

- Individual or group study with a GFS teacher on a subject of mutual interest
- Language classes taught by a part-time instructor
- An online course not already included in the GFS catalog
- A significant weekly project (such as tutoring in a neighborhood school)

### **DIS800** DIS Major

major elective | grades: 11, 12

Students in the upper grades may elect a program of Directed Independent Study as part of their academic schedule. A DIS major is equivalent to a full-credit course and graded in the same way. DIS majors may not replace a preexisting course offering without the permission of the department in question. In the past year, students have created DIS majors in Arabic, Japanese, Philosophy, Creative Writing, and Animation.

### Proposing a DIS Major

Interested students first consult with the Director of Independent Study. Students must submit a formal proposal to the Director of Independent Study prior to Spring Break, for approval by the Academic Standards Committee. Students choosing independent study are required to keep a journal, to write a major paper each quarter, and to make periodic informal presentations of their work. In the spring, they are required to make a formal presentation of their work to their advisor and two other faculty members. Students should expect to meet once per 8-day cycle with an advisor (a member of the faculty or another adult) and with the Director of Independent Study.

### DIS Minor

minor elective | grades: 9, 10, 11, 12

Students may elect a program of Directed Independent Study as part of their academic schedule. A DIS minor should demand the same commitment as the equivalent of a minor elective course. DIS minors may not replace a preexisting course offering. Students may create a course of study that focuses on an academic interest or a community outreach project within GFS or in the Germantown community. DIS minors have included philosophy, biology research, oil painting, creative writing, computer programming, and tutoring at GFS or local elementary schools. Students must consult with the Director of Independent Study to discuss the details of their DIS. Those who develop a DIS minor after course sign-up must register for a DIS minor before October 1. For more details, email the Director of Independent Study.

### Opportunities in World Languages

A variety of languages are offered for minor or major credit as part of the Directed Independent Study program that supplement the Modern Language and Classics offerings. Students may elect to take a language DIS in addition to, but not in place of, their foreign language requirement. A language

DIS may be taught by an outside instructor or by a GFS teacher. Students wishing to create a DIS Major in a global language should refer to the previous section, Proposing a DIS Major. When signing up, students should indicate their level of study in the notes section of the electronic sign-up form.

### **DIS540** American Sign Language

minor elective | grades: 9, 10, 11, 12

This DIS in American Sign Language and Deaf Culture is a credit/no-credit course. Three levels are offered.

### **DIS500** Arabic

minor elective | grades: 9, 10, 11, 12

This DIS in Arabic language and culture is a credit/no-credit course. Three levels are offered.

### **DIS900** German

minor elective | grades: 9, 10, 11, 12

This DIS in German language and culture is a credit/no-credit course. Three levels are offered. Advanced offerings are possible, case by case. Availability is strictly limited by the teacher's schedule.

### **DIS810** Italian

minor elective | grades: 9, 10, 11, 12

This DIS in Italian language and culture is a credit/no-credit course. Three levels are offered.

### **DIS520** Japanese

minor elective | grades: 9, 10, 11, 12

This DIS in Japanese language and culture is a credit/no-credit course. Three levels are offered.

### **DIS970** Russian

minor elective | grades: 9, 10, 11, 12

This DIS in Russian language and culture is a credit/no-credit course. Availability is strictly limited by the teacher's schedule.

## Other Opportunities

### **DIS INVESTMENT** Investment

minor elective | grades: 9, 10, 11, 12

This DIS meets every Wednesday at 8am.

Students in the Investment DIS will learn about the stock market, interest rates, and investment strategies for stocks, bonds, exchange-traded funds and mutual funds. They will also have an opportunity to invest funds set aside in a philanthropic trust account. This DIS meets every Wednesday at 8am, and requires approximately one hour of independent work per week. Students interested in taking the investment DIS will be required to submit a brief explanation of why they wish to take the course to the Director of Directed Independent Study.



# ENGLISH

Over the course of four years, the English department cultivates readers and writers who are joyous, reflective, honest, and artful. Close critical reading of novels, poems, plays, and essays invites students to develop a lifelong appreciation for literature. In classroom discussions, they find a place to explore ideas and share their thinking, and in a range of writing assignments, students grapple with an ever-expanding repertoire of authors. Students contemplate a range of issues introduced within texts and consider the larger social implications of their reading. We also ask students to consider historical context. Writing is at the center of everything we do, from personal and analytical essays, short stories, and poems to chapbooks, manifestos, scenes, podcasts, and newspapers. Along the way, students gain increased syntactic flexibility and precision through the study of grammar, vocabulary, and rhetoric. Freshmen take Introduction to Literary Analysis, Sophomores take Literary History and Analysis, and Juniors and Seniors choose year-long English electives.

## ➤ GRADUATION REQUIREMENT NOTE

Students must complete four years of major coursework.

**Freshman and Sophomores** will both have full-year classes that follow curricula designed to foster their growth and sophistication as readers and writers.

**Juniors and Seniors** will now choose from an array of full-year major seminars that will fulfill their English requirement.

## ENG320 Introduction to Literary Analysis

required major | grade: 9

Through meaningful conversation and written discourse, students in ninth-grade English explore texts and emerge with deeper understandings of themselves and the world around them. Students continue their development as close readers, essayists, poets, and storytellers. Drawing upon a diverse body of texts, students are challenged to apply literary terminology and the conventions of analytical writing to their own work. The department emphasizes the art of creating cogent, engaging arguments in essays. Students read shared texts (novels, poems, personal essays, and plays, including one by

Shakespeare) and write frequent passage analyses and argumentative essays. Critical writing work culminates in a longer analytical paper in the fourth quarter, employing MLA citation style. Writing skills are developed through vocabulary and grammar lessons taught during an extended class period. In addition to textual analyses, students write stories, poems, and dramatic scenes and experiment with literary forms. Recent texts include *Annie John* by Jamaica Kincaid, *When the Emperor Was Divine* by Julia Otsuka, *Oedipus Rex* and *Antigone* by Sophocles, and *Twelfth Night* by William Shakespeare.

## **ENG420** Literary History and Analysis: Drama, Poetry, and the Novel

required major | grade: 10

In the second year of Upper School English, students build on the foundational skills they learned in 9th grade to engage with a range of literary texts that nurture their sophistication and confidence as readers and writers. Through novels, short fiction, plays, and poems, students continue developing their strengths as close readers, with an added emphasis on exploring the way historical and cultural contexts inform interpretation. We grow our awareness of form, genre, and literary history. By the end of the class, students have encountered the tragedy of *Macbeth* and recognize the way Shakespeare's tragic tones are invoked in *A Raisin in the Sun*. Reading *Frankenstein* primes students to see the way *Never Let Me Go* positions itself within the science fiction genre. We end the year with a novel study. Our work in tenth-grade English culminates in a long essay designed to prepare students for longer research papers in eleventh and twelfth grade.

## **JUNIOR-SENIOR ENGLISH ELECTIVES**

In order to fulfill their four-year requirement in English, Juniors and Seniors must complete one of the courses listed below in both their Junior and Senior years. All courses are yearlong. Students desiring intensive English study may sign up for more than one English course in Junior and/or Senior year.

## **ENG520** American Literature - In Search of the American Dream: Advanced

requirement-fulfilling major elective | grade: 11 or 12

What are the myths that animate the American imagination? How are we still negotiating the fallout from the dream of the so-called "New World"? The fervent belief in expansion, individual freedoms, self-determination, and a path to prosperity and growth has captivated generations of Americans. However, American writers and artists of varied perspectives and identities have turned a critical eye to the repercussions of these stories we tell ourselves. American literature explores the

tensions underlying these utopian ideals. Old ideas of Manifest Destiny and westward expansion linger with us in our own time as we strike out in search of technological and ecological frontiers. Possible authors: Anthony Veasna So, Ralph Ellison, Toni Morrison, Walt Whitman, Nathaniel Hawthorne, F. Scott Fitzgerald, Louise Erdrich, William Faulkner, Maya Angelou, Richard Wright, Langston Hughes, Maxine Hong-Kingston, Charles Yu, Jesmyn Ward, Joy Harjo, H.T. Tsiang, and more.

## **ENG522** Literature of Diaspora - Far From Home: Advanced

requirement-fulfilling major elective | grade: 11 or 12

If you are forced to leave your home, is it possible to ever truly return? If you do return, is home ever really the same as you left it? What does it mean to return home if you have changed and the home you've left behind has changed as well? The history of the world is the history of people who have had to leave their homes behind and remake themselves in new places. Given the multiplying reasons for global migration, literature provides an urgently-needed tool for understanding and navigating social forces of belonging as they dissolve and reform around us. Faced with this complexity, we can turn to authors of the past and present to help us untangle our modern condition of identities in flux. The world as we know it has been shaped by the legacies of colonialism, slavery, and globalization, and literature is one of the few resources we have that can encompass the scope and scale of human history. Possible topics include: American and British immigrant writers, literature of diaspora, authors in exile. Possible authors: James Baldwin, Jhumpa Lahiri, Teju Cole, Ocean Vuong, Zadie Smith, Jamaica Kincaid, Min Jin Lee, Helen Oyeyemi, and James Joyce.

## **ENG523** Modernist and Post-Modernist Literature: Advanced

requirement-fulfilling major elective | grade: 11 or 12

At the beginning of the 20th century, artists began to push the previously accepted limits of their respective forms. "Modernism" refers to a concrete period of artistic production that took place at the beginning of the 20th century. Oftentimes related to changes in society and technological revolutions, Modernism also refers to a series of innovative and sometimes contradictory aesthetic practices that reflect and interrogate previously "stable" categories

such as “the self” “the nation,” “civilization,” “God,” and language. We will study the modernist injunction to “Make it new!” through the innovative use of metaphor, altered perspectives, and ruptured language. The modernist project involved deconstructing stable ideas with the (maybe naive, maybe beautiful) goal of creating a new world. By contrast, Postmodernists abandoned this project of reimagining the relationship of art to politics by embracing the deconstruction of categories without any aim of rebuilding them. According to the Postmodernists, once we have departed from previously stable relationships, there can be no turning back, no renewal. Our texts - poems, novels, plays, and works that defy classification - allow us to understand how both the modernist and postmodernist movements relate to specific historical and aesthetic conditions. Possible authors: Langston Hughes, T.S. Eliot, H.D., Gertrude Stein, Jean Toomer, William Faulker, Sherwood Anderson, Robert Musil, Thomas Pynchon, Don DeLillo, and Ishmael Reed.

### **ENG524** The Tragic and Comic Modes in Literature: Advanced

requirement-fulfilling major elective | grade: 11 or 12

Someone once said, “Some people think they’re living in a comedy, and others think they are living in a tragedy.” We will explore the meaning of these fundamental categories. Our course begins with a definition of terms—“Tragedy” and “Comedy”—according to the foundational *Poetics* by Aristotle. Aristotle’s nuanced understanding of these terms lives in authors’ imaginations today, more than two millennia later. Having established our definitions, we will read texts from ancient to contemporary that, both traditionally and untraditionally, take part in the worlds of the tragic and comic modes. We will explore how authors apply these archetypes to various historical contexts and identities to make them new again. From plays like Goethe’s *Doctor Faustus* and Stoppard’s *Arcadia* to novels like Chinua Achebe’s *Things Fall Apart* and Zora Neale Hurston’s *Their Eyes Were Watching God*, the tragic mode helps its readers evaluate the flaws that haunt the human experience. We will also read comic writers like Austen and Shakespeare and will pay special attention to tragicomedy, a hybrid form that combines elements of high tragedy and absurd comedy to memorable effect.

### **ENG525** Literary Studies in Genre: Advanced

requirement-fulfilling major elective | grade: 11 or 12

Authors engage popular forms to enter into a tradition or an ongoing conversation. When one writes a sci-fi novel, one does so to take up questions that preoccupy that particular genre. Don’t believe it when people tell you genre fiction isn’t prestigious or worth your time—writers need to be extremely well-read and masters of their craft in order to produce something exciting and compelling within such exacting constraints, self-consciously engaging tropes and conventions to tell their stories. This class will be divided into units that explore various literary genres. When we read hardboiled detective fiction, we must ask: how can we be sure about what we know about the world and each other? When we read science fiction about the future, what are we learning about the present and our hopes for it? How do zombie stories represent the struggle of the individual against the majority? Studying genre fiction allows us to consider important literary ideas like archetypes, recurring and powerful narrative tropes, and deeply held cultural beliefs about race, class, gender, and sexuality. Possible authors: Margaret Atwood, Agatha Christie, Ursula K. Leguin, and Nnedi Okarafor.

### **ENG527** The Romantic and Gothic Literary Traditions: Advanced

requirement-fulfilling major elective | grade: 11 or 12

Romantic poetry represents one of the most wonderful movements in literary art. Keats, Coleridge, Byron, and Shelley are among the names of poets whose verse continues to ring and resonate across time. Composing texts before and after the French and American Revolutions, their lines offer formal and philosophical treasures to those who take the time to study them closely. An outgrowth of literary romanticism, the symbolic language of Gothic literature haunts us to this day. Its tropes are familiar and uniquely appealing: the decrepit old mansion, the dreary, rain-swept landscape, the faded tapestry draped on the wall, the creaky staircase, and the suit of armor rattling in the corner. Romantic and Gothic writers were highly attuned to the music of language, the breadth of the human imagination, and the appeal of unrequited longing for unity in form and content. In the poetry, drama, and novels we will read, writers subvert and upend the conventional and

invite us to embrace the uncanny, the weird, the supernatural, and the sublime. Possible authors: Emily Bronte, Charlotte Bronte, Toni Morrison, Henry James, Nathaniel Hawthorne, Edgar Allan Poe, T. L. Beddoes, Angela Carter, Carmen Maria Machado, Isabel Allende.

## **NEW ENG533** The Great City in Literature: Advanced

requirement-fulfilling major elective | grade: 11 or 12

Cities draw writers into their clutches—and with good reason! After all, there is so much for a writer to see and experience within densely-populated neighborhoods: scandal, crime, punishment, and love, both thwarted and fulfilled. Our cities can be gateways to reinvention of the self; they can be merciless traps that foreclose on our potential. Our class will read texts set in and inspired by the social fabric of cities. As we travel about the United States and abroad, we will meet our share of ambitious idealists and corrupt cynics, citizens young and old, wealthy and impoverished. Possible authors, texts, and sites: *NW*, Zadie Smith, London; *Open City*, Teju Cole, New York; *Père Goriot*, Honoré de Balzac, Paris; *Passing*, Nella Larsen, Chicago and New York City; *The Jolly Corner*, Henry James, New York City; *The Picture of Dorian Gray*, Wilde, London; *Tales*, Edgar Allan Poe, Philadelphia; *Such a Fun Age*, Kiley Reid, Philadelphia; *Tomorrow and Tomorrow and Tomorrow*, Gabrielle Zevin, Boston.

## **ENG529** War and Peace in Literature: Advanced

requirement-fulfilling major elective | grade: 11 or 12

Since ancient times, poetry, fiction, and drama have been used as a means of bearing witness to, philosophically contemplating, and at times protesting against war as a cultural and historical practice. This course will investigate the experience of war from ancient Greece to contemporary times. More importantly, in keeping with the Quaker principles that guide our school and community, we will pay particular attention to works of art and literature that express pacifism and the desire to eliminate war as a means of dealing with political disagreement. In the first half of the year, we will study an array of documents and texts that precede the twentieth century. In the second semester, we will investigate the experience of war and discourses of antiwar resistance in the 20th century and the early decades of the 21st

century. Possible authors: Homer, William Shakespeare, Virginia Woolf, Bao Ninh, J.M. Coetzee, Walt Whitman, Emily Dickinson, Herman Melville, Siegfried Sassoon, Wilfred Owen, Seamus Heaney, Viet Thanh Nguyen, Dana Spiotta, Kurt Vonnegut, Joseph Heller, Ford Maddox Ford, AdjeiBrenyah, and more.

## **NEW ENG534** 20th Century Authors: Woolf, Baldwin, Morrison, García Marquez: Advanced

requirement-fulfilling major elective | grade: 11 or 12

The 20th Century, filled as it was with conflict, revolution, and international migration, provided fodder for writers. Artists and writers saw themselves as not merely transcribers of these metamorphoses, but as active participants in them. Writers began to understand their work as a way of intervening in historical processes, protesting and refracting the changes they represent in their texts. They understood literature as a field and proving ground to interrogate their changing world. In this class, we will explore work by four prominent literary figures of the 20th century: Virginia Woolf, James Baldwin, Toni Morrison, and Gabriel García Márquez. Each writer protests and subverts what they saw as limiting and dangerous conditions. Reading their novels, stories, and essays, we will study how these writers respond to the moral complexities of their century. In what ways are their artistic projects similar and different? We will focus on a range of topics: friendship and family, gender, sexuality, the relationship between race, religion, and nation, and also that between anguish and hope. Possible texts: *The Waves* and short stories by Virginia Woolf, *If Beale Street Could Talk* and *The Fire Next Time* by James Baldwin, *Song of Solomon* and *The Source of Self Regard* by Toni Morrison, and *One Hundred Years of Solitude* and *Collected Stories* by Gabriel García Márquez.

## **NEW ENG532** Literature and the Environment: Advanced

requirement-fulfilling major elective | grade: 11 or 12

At the center of the climate crisis lies a failure of imagination. New possibilities and alternative futures must be dreamed and imagined before they can be implemented. We all know that scientists and engineers will be integral to building a more adaptive society, but do we neglect what literature and other humanistic approaches have to offer us in

the face of these modern problems? After all, our cultural texts give us all kinds of messages from a young age about how to be in the world and how to relate to other living things. This class will use literature to ask: What are the consequences and stakes of depictions of nature and the environment? How does language enclose us into thinking in binaries such as natural vs. unnatural or human vs. animal? How does fiction, in particular, allow us access to nonhuman perspectives like the global, geological, or cosmic? How do our built environments support, alter, or disrupt our relationships with each other and the world around us? The course will feature a variety of genres and modes, from scientific treatise to utopian writing, pastoral elegy, lyric, and the novel. Possible authors include: William Wordsworth, Thomas Hardy, Zora Neale Hurston, Raymond Williams, Mary Oliver, Toni Morrison, Thomas Pynchon, Jeff VanderMeer, Margaret Atwood, Ursula LeGuin, Octavia Butler, Herman Melville, Virginia Woolf, Barbara Kingsolver, H.G. Wells, Arundhati Roy, Robin Wall Kimmerer, Richard Powers, and John Steinbeck.

### **NEW ENG530** English Literature from Chaucer to Pope: Advanced

requirement-fulfilling major elective | grade: 11 or 12

This course provides a framework for grasping the dazzling variety and explosive innovation of English literature from the fourteenth to the eighteenth century. The course traces the formal experimentation in poetry and prose, in narrative, lyric, and drama, through which that writing eventually became pre-eminent in Britain. It will also attend to the social and cultural circumstances—in the court, in church, and in the evolving public and private spheres—that shaped the many genres that emerged in these rich 400 years and developed a definition of “literature” itself. Authors read include Chaucer, Spenser, Shakespeare, Lanyer, Donne, Herbert, Milton, Marvell, Dryden, Swift, and Pope. In addition to mastering the fundamentals of English literary history as well as techniques of critical reading and writing, we will introduce secondary reading by BIPOC critics who negotiate or reframe our approach to primary sources, thereby illuminating these times and places as well as our own, and conspiring to bring to us the intense experience distinctive to great literary art.

### **NEW ENG531** English Literature from Wordsworth to Zadie Smith: Advanced

requirement-fulfilling major elective | grade: 11 or 12

In the late eighteenth century, the word romantic was associated with the wild, eccentric, and bizarre, designating a kind of literature that, in its revolutionary defense of freedom and the creative imagination, withdrew decisively from “classical” norms of reason and hierarchy. This course begins here and moves chronologically through the Victorian Age up to the present, a period whose social and political upheavals both radically redefine and conservatively reinscribe “British” as a category of analysis. Themes to be considered will include war and the end of empire, new patterns of migration, emerging formations of gender, sexuality, and race, and consumerism and globalism in the era of Brexit. Authors may include: Wordsworth, Keats, Austen, Tennyson, Dickens, Wilde, Woolf, Rushdie, and Zadie Smith. Students can expect substantial attention to formal conventions as well as stylistic innovation, to aesthetic value as well as social meaning. We will also pay close attention to the historical transformations and afterlives of romance, epic, drama, fable, lyric, and the ways these forms were embedded in the social worlds of this epoch.

## **MINOR ELECTIVES**

### **ENG710** Short Story Workshop

minor elective | grades: 10, 11, 12

Students will be introduced to advanced elements of storytelling and have the opportunity to explore and apply the principles of fiction writing. Various readings will expose them to the many possibilities open to the fiction writer. Students will workshop their pieces, learning the art of giving constructive feedback to their peers - and receiving it. Students must be comfortable sharing their work and open to hearing feedback and integrating the input of others into their revisions. This workshop will provide students the opportunity to produce a portfolio of polished writing that they can use as a supplement to their college applications as well as submit to literary competitions such as the Scholastic Writing Competition.

## ENG700 Poetry Workshop

minor elective | grades: 10, 11, 12

In Poetry Workshop, we work together to develop a writing practice for ourselves and each other, placing composition and the development of literary voice at the center of our work as we explore the aesthetic, political, and transformational possibilities of language. Students produce new work for each class session. We highlight and celebrate experimentation with poetic form. As we read contemporary poetry and the poetry of previous centuries aloud, we will observe successful elements of composition. Students will master a vocabulary for discussing and analyzing poetry. As we learn about ourselves and each other as readers and writers of poetry, we will construct a portfolio of a year's worth of work, organize several readings/events, and seek out opportunities for growth and exposure to poetry in the Philadelphia area. We will also hold ourselves accountable to GFS as a poetic community, highlighting poetry and fostering poetic connections between disciplines and divisions.

## ENG990 Peer Writing Advisor Training and Practice

minor elective | grades: 10, 11, 12

Peer Writing Advisors are students trained to work with other students one-on-one on writing assignments. They believe that writing is communicating. Throughout this yearlong minor, topics will include: how to “read” a school culture to offer a relevant service, the politics of teaching grammar, and how to lead a writing workshop to a group. Peer tutoring is a constantly shifting field with a rich history of research and technique. We will read scholarly articles on “peer tutoring,” role-play various scenarios, and ask the essential questions of writing instruction: What kind of feedback is worth giving? What is the difference between critique and criticism, editing and correcting? Assessments include committee work, self-assessments, presentations, and publicly available blog entries and writing assignments.

## ENG431 Introduction to Journalism

minor elective | grades: 9, 10, 11

In this introductory course, students will learn the fundamentals of journalism, from how to write a compelling lead and catchy headline to how to conduct an interview, develop a story angle, and pitch an article. We will cover a variety of journalistic forms, including the basic news story, features, profiles, Q&As, and Op-Eds, and will introduce the AP Stylebook. Weekly assignments may include reading, research, reporting, writing projects, and peer editing. The goals for the course are for each student to publish at least one piece in the Upper School's news magazine, Earthquake (in print or online), and to emerge with a new set of writing and editing skills.

## ENG440 Magazine Journalism

minor elective | grades: 10, 11, 12

This yearlong course focuses on the ins and outs of magazine journalism. During the first semester, we will study magazine structure (front of book, feature well, back of book); magazine writing (features, profiles, departments, personal essays, reviews, service stories, packages, etc.); strategies and techniques (e.g. what makes a good story, finding your “hook” and writing a compelling lead, how to conduct a successful interview); and magazine design (e.g., the process of creative direction, visual hierarchy, choosing a cover image, the use of typography). Reading will include the textbook *Magazine Writing* by Christopher D. Benson and Charles F. Whitaker, magazine articles and essays, and various blogs; we will listen to some magazine-style podcasts as well. In the second semester, the class will collectively create (write, edit, and design) a magazine on a topic of the group's choosing, which will be printed at the end of the year and distributed in the Upper School. We will follow AP Style (the journalist's handbook).

# HEALTH EDUCATION

The health of our bodies, minds, and spirits informs all that lies before us in life. The goal of the Health Education Department is to lead students in understanding that our individual health does not stand alone, but is integrated into every aspect of our lives and is greatly impacted by our identity and our community. Our aim is to educate students on the merits of clear communication and the clarification of their values. We also show them how to access credible health information. Health Education courses are comprehensive and developmentally appropriate and cover a range of health topics, including sexuality, mental health, mindfulness, safety, alcohol and drug use and other life topics. Health education is interdisciplinary by its very nature - we continually collaborate with the DEI, student support services, science and physical education departments.

## » GRADUATION REQUIREMENT NOTE

A full year of the minor course Health Education 10 is required in grade 10. A full year of the minor course Life Issues is required in grade 12 and is offered during the Advisory block.

### **HEA401** Health Education 10

required minor | grade: 10 | yearlong course

Health Education is a course focused on decision-making and information gathering on the topics of mental and emotional health, drugs, and sexuality. We begin with a mindfulness-based stress reduction program, where together we explore and practice different forms of meditative practices to cultivate our ability to pay attention to the present moment with the hope of allowing us to make more thoughtful decisions. We also discuss stress and our stress reactions, how we experience and process the world through our body, thoughts, and emotions, and ways to cultivate gratitude in our everyday lives. Another main focus of the mental health unit is how to recognize when someone needs help and how to seek help for yourself or others. Sleep, addiction, depression, anxiety, and disordered eating are also addressed. We then examine substance abuse both at a societal level and also the individual consequences of choosing to use, including addiction. We explore drug-related issues through various lenses, including

current research, statistics, media, societal norms, and direct and indirect pressure. Sexuality is presented in a holistic manner, and the topics include sexual identity, gender and society, reproductive health, and building and maintaining healthy relationships. All topics in the course are explored through information gathering, analysis of media, personal reflection, and discussion.

### **HEA600** Life Issues

required minor | grade: 12 | yearlong course

The objective of the Life Issues course is to provide students with the information and tools they need to navigate their senior year and the transition into the next phase of their life, including college. The course is coordinated with Advisory meetings once a cycle throughout the year. The course focuses on a list of topics that the students help generate, including mental health, stress management, healthy romantic relationships, consent, safer sex practices, substance use, living with a roommate, personal finance and a Q&A on life in college. We recognize

that many parents and caregivers are also reflecting on how to prepare students for their lives after GFS and are happy to offer resources to support these conversations.

**NEW HEA530 Deconstructing Food**

minor elective | grades: 9, 10, 11, 12

In this course, we will be looking at food and what it means in our society. As a class, we will build a foundation for the practical application of the scientific understanding of nutrition. Once we understand the science, the class will investigate food and nutrition history, ethics and sustainability issues in food industries, and emerging food production trends and technologies. Throughout the class, we will examine how food and nutrition are linked to body diversity, health, and discrimination. Students should end the year with a solid understanding of the science around nutrition as well as the ability to look at food and food culture with a critical eye. During class we will use passages from *What We Don't Talk About When We Talk About Fat*, *The Body Is Not An Apology*, and other text.



# HISTORY

In our history classrooms, students and faculty explore and challenge ideas together, building on the foundational Quaker belief in continuing revelation. Examining differences and empathizing with multiple perspectives are central to this process. We endeavor to help students make meaning out of a variety of sources through thoughtful questioning, close reading, analysis, and research. Students and faculty practice communicating ideas with clear, direct expression supported by evidence. Creating historical consciousness — the consciousness that people in the past had different values, assumptions, and worldviews from people in the present - is foundational to our work together. Our hope is to gain a deeper sense of our own identities, develop moral understanding, and foster engaged citizenship that will contribute positively to the world.

## » GRADUATION REQUIREMENT NOTE

Students must complete 3 years of major coursework in History. Required courses are Comparative Cultures 9, African American History 10, and United States History: Advanced 11 or 12, which is a Pennsylvania State requirement.

### **HIS310** Comparative Cultures

required major | grade: 9

This course has been designed to help students develop a strong understanding of the historical, cultural, social, and geographical forces that have created the world around them, starting roughly in the year 1400 CE. How did today's systems and institutions (political, economic, social) come to be? Where do we find justice and injustice in modern history and the contemporary world? How can we work to avoid the calamities of the past and present as we move toward a world that supports the flourishing of life? As we examine the making of the modern world, the course focuses heavily on helping students build essential academic skills: efficient and organized reading and research habits, effective argument outlining and writing, collaboration, and agency and responsibility in learning.

### **HIS500** African American History

required major | grade: 10

This course takes a comprehensive approach to studying the African American experience in the United States, including contemporary issues, through explorations of identity formation, African and African Diasporic histories, and the contributions of Black people to the growth and development of the nation and the city of Philadelphia. Central to the course will be understanding the ways that race and racism, both institutional and individual, influence our larger history as well as our interpersonal relationships and experiences. Historical readings and original documents will emphasize African-American voices and agency, with attention to not only race but also gender, class, sexuality, and other social identities. Complicating the traditional narrative of the nation's past, we aim for students to understand the centrality of African American history to American history, understand the complex ways we come to

know and live race in our society, and, in the words of the National Museum of African American History and Culture, “dream a world anew.” Students will continue to build and hone departmental skills, including reading the scholarship of leading historians; interpreting primary sources; analyzing historical concepts; conducting research; and communicating ideas in writing and presentations.

### **HIS610** United States History: Advanced

required major | grades: 11, 12

United States History is a survey course that examines the development of the United States as a cultural, political, and economic entity from its 17th-century European and African antecedents to the recent past. Heavy emphasis is placed on primary sources through numerous documents and images. Students are also given recent books by historians, which change from year to year, together with selected scholarly articles. Students are required to express their understanding through a combination of intensive classwork, papers, tests, debates, presentations, and simulations.

## **HISTORY ELECTIVES**

major elective | grades: 11, 12

Students electing to pursue these electives may select either a yearlong course or two semester-long courses. For the latter option, students must select both a fall and a spring course to create a yearlong history major that allows them to delve into two different areas of interest for one semester each.

## **YEARLONG ELECTIVES (BOTH SEMESTERS)**

### **HIS431** Applied Economics: Advanced

This course utilizes the principles of design thinking to identify a real-world problem and produce a solution. That solution will serve as the underpinning of a company that students will run in a virtual economy with over five hundred schools from around the country and thousands more internationally. Students will compete in a simulated global economy, using the Virtual Enterprise International global business simulation; this offers students a competitive edge through project-based, collaborative learning and the development of 21st-century skills in entrepreneurship, global business, problem-solving, communication, personal finance, and technology to explore macroeconomic concepts. In addition to running a virtual business, students will compete individually and in teams in monthly national challenges focused on the following areas: elevator pitch, branding, newsletter, website, regional and national business plans. Students interested in adding to their portfolio in the following areas should consider this course: leadership, graphic design, web design, branding, marketing, social media, accounting, finance, human resources, negotiating contracts, and competition.

## FALL SEMESTER-LONG ELECTIVES

### **NEW HIS483** Ancient Civilizations of the Middle East and North Africa: Advanced

Ancient Civilizations of the Middle East and North Africa explores the culture, political history, and environmental dynamics of ancient Mesopotamia, Egypt, and Sudan, covering a period of approximately 3500-700 BCE. An analysis of how humans navigated living together in the ancient world, including social class, gender, government, religion, and conflict, will be central. We will consider the complex historiography of the region—including the question of why historians have long studied Egypt and ignored its southern neighbors—as well as the challenges of unearthing, preserving, and writing this history. Students will have the opportunity to explore topics of their own choosing. Texts will be drawn from history as well as archeology, with a focus on cultural artifacts from the period under study.

### **NEW HIS487** Becoming American: Race and Ethnicity in the United States: Advanced

Becoming American investigates how American identity and culture have evolved and been redefined through the lenses of ethnicity, immigration, and diaspora. We will begin with a unit that studies how the meaning of ethnicity has changed over time and discuss race and ethnicity as categories of difference and inclusion. We will then spend several units exploring the experiences of various ethnic and racial groups as they have laid claim to Americanness. Among the histories we will explore are those of Asian Americans, Latino Americans, and Jewish Americans. We will also examine immigration, including that of Africans, as well as diaspora to understand political and sociocultural alliances amongst Americans and would-be Americans. Possible readings include: Cathy Park Hong, *Minor Injuries*; Sonia Sotomayor,

*My Beloved World*; Lorraine Hansberry, *The Sign in Sidney Brustein's Window*; David Roediger, *Working toward Whiteness: How America's Immigrants Became White*.

### **HIS431** United States Government & Civics: Advanced

In our modern twenty-four-hour news cycle, we are continuously inundated with news about our government: The Supreme Court is considering a case that could dramatically change gun laws or abortion access, the president is unilaterally changing immigration law or environmental policy, Congress is gridlocked and cannot seem to pass anything. But what does it all mean? This advanced government class will teach you the most important facts about how our government runs and will encourage you to think deeply about how it should run. Topics might include how the federal courts should interpret the Constitution, why the president is so powerful, the extent to which democracy is beneficial to society, and possible reforms to improve government functioning.

### **NEW HIS484** History and Philosophy of Nonviolence: Advanced

Can humans put an end to war and the suffering that comes with it? Are there viable alternatives to violence as a means to solve the world's problems? Is it realistic, and not romantic or naive, to give peace a chance – as John Lennon and Yoko Ono famously sang? This course on the modern history of nonviolence and pacifist thought introduces students to the political activists, religious leaders, and ordinary citizens who said yes to such questions, creating ideas and campaigns that changed the world. Emphasis will be on the writings of people such as William Penn, Henry David Thoreau, Leo Tolstoy, Dorothy Day, Mohandas Gandhi, Coretta Scott King, the Dalai Lama, and Thich Nhat Hanh. Other topics include Historic Peace Churches including the Quakers and Mennonites; the history of conscientious objection and the military draft; peace movements; the U.N. and other peacekeeping bodies; anti-war art, music, and literature.

## SPRING SEMESTER-LONG ELECTIVES

### HIS462 Modern U.S. Political Ideologies and Issues: Advanced

We live in a culture that encourages us to demonize those who hold different political views than we do. In fact, an increasing number of Americans view members of the opposing political party not as just wrong but as disgusting and evil. This class seeks to overcome that divide by discovering how kind, thoughtful people can come to drastically different conclusions about what is best for the country. After spending half of the semester seeking to uncover the core values of conservatives and liberals, the course will turn to analyses of modern issues that divide the American electorate, such as immigration, health care, and inequality. The final project will require groups of students to research a modern issue of their choosing, find compelling arguments from the political left and right about how to solve that issue, and lead the class through a careful analysis of the arguments.

### NEW HIS485 Global Youth-Led Activism: Advanced

This course will focus on youth-led movements for change in the twentieth century, covering a few in-depth case studies and touching upon more recent and ongoing activism. For each case study, we will consider the role that time and place played in the causes, strategies, successes, and failings of each movement. We will also examine the legacy of the events in the present day. Topics will include the Soweto Youth Uprising and Anti-Apartheid movement in South Africa, the Tiananmen Square protests and democracy reform in China, the East L.A. Walkouts and Chicano Rights Movement, and the Arab Spring protests in North Africa and the Middle East, among others. Present-day activists and activism such as the work of Malala Yousafzai, Greta Thunberg, and recent civil unrest in Iran will also be considered.

### NEW HIS486 Utopian Worlds: Advanced

In 1516, the British humanist Thomas More published a satirical book about a fictional island where everyone lives in harmony and peace. He called that place *Utopia*. Ever since then, we've assigned the adjective "utopian" to those idealistic people who insist that, with the right conditions, they can achieve the perfect society. This course introduces students to a long and storied history of these quests to create utopia. How did they succeed and how did they fail? How did they respond to those who pooh-poohed their dreams as impractical and foolish? What was their impact on the larger society? Possible topics include: the agrarian Digger movement in England; Coleridge's Pennsylvania pantisocracy; the Shakers; Oneida and Brook Farm communities; the socialist, anarchist, and ecological writings of people like Charles Fourier, Charlotte Perkins Gilman, and Buckminster Fuller; the Paris Commune; the Soviet Union's planned cities; Back-to-the-Land and urban communes of the 1960s; Occupy Wall Street.

### NEW HIS488 20th Century Art and Social Movements in the United States: Advanced

In this class students will explore how activists used the arts to further the 20th century's most important social movements, including the New Deal, the labor movement, the Civil Rights movement, feminism and equal rights, LGBTQ rights and AIDS activism. Topics will include the theater of the Popular Front and performance art, feminist art and the Black Arts movement, and ACT UP. We will also seek to understand why artists aligned with those movements and how art has been a practice of advocacy, representation, and dissent. Possible readings: Linda Nochlin, "Why Have There Been No Great Women Artists?" Sarah Schulman, *Let the Record Show: A Political History of ACT UP*; Dominic Johnson, *The Art of Living: An Oral History of Performance Art*; LeRoi Jones (Amiri Baraka), *Home*; James Baldwin, *The Fire Next Time*.



## NOTES



# JUNIOR/SENIOR SEMINARS

## **NEW SEM440** Ethics and Advocacy in Journalism

major elective | grades: 11, 12

“Any good journalist is an activist for truth, in favor of transparency, on the behalf of accountability,” said Washington Post reporter Wesley Lowery. In this course, students will spend the first semester developing the media literacy and critical thinking skills necessary to understand and navigate the intricacies of news reporting during an election year, with a primary focus on ethics. They will explore the principles of ethical journalism, including accuracy, fairness, objectivity, and transparency, and will engage in discussions and exercises that examine real-world ethical dilemmas faced by journalists covering elections today. During the second semester, students will explore the history and evolution of advocacy journalism, understanding its role in shaping public opinion, promoting social change, and upholding democratic values. We will partner with local organizations we identify as a class, and students will become change-makers as they advocate for meaningful causes through the power of storytelling and “solutions journalism.” The course will feature readings, discussions, ethics case studies, writing assignments, and guest speakers, such as professional journalists and community organizers, who will provide real-world insights into election news and how to contribute positively to the democratic process through informed activism.

## **NEW SEM441** Principles of Economics

major elective | grades: 11, 12

This introduction to economics will focus on foundational ideas from both microeconomics and macroeconomics. Our range of exploration will provide students with the opportunity to learn the fundamental conceptual vocabulary of economics and, through case studies and simulations, to explore those core concepts that have, over time, profoundly influenced thinking about economics. Topics to be explored: ethics as it relates to business, classical economics, supply and demand, scarcity, choice, and opportunity cost, market structures, income distribution, monetary policy and how it connects to unemployment and inflation, economic growth and bubbles, the peace testimony as it relates to economics and international economic relations.

## **NEW SEM442** Queer History and Culture

major elective | grades: 11, 12

In Queer History and Culture: students will examine the scope of queer culture from early societies to the present day with an eye toward the future. Students will begin by delving into queer theory, its origins, where it stands at present, and where it is headed; this will ground our year in a shared vocabulary and understanding. We will survey gender and sexuality in ancient and pre-modern cultures worldwide, followed by a more in-depth exploration of the Two-Spirit peoples of North America. We will then explore the queer history of the United States primarily through the study of cultural and artistic movements. Highlights of this study will be a queer poetry unit and a survey of queer artists, writers, and performers of the 20th & 21st centuries. A significant focus of the spring semester will be a thorough examination of the Queer Liberation Movement, the Stonewall Uprising, the AIDS Epidemic, and the birth of ACT UP (AIDS Coalition To Unleash Power) Guest teachers will join us to speak on areas of expertise as they relate to queer culture. Students will write a research

paper as well as multiple creative assignments, including the creation of zines. We will explore the past but we will also look forward. Despite how often we will learn about persecution and erasure, this course will be an affirming celebration of queer joy and talent.

### **SEM430** Mythology and Monstrosity

major elective | grades: 11, 12

Why are myths over 3,000 years old still so alive today? Myths explore what it means to be humans, both as individuals and in a collective society. Monsters lurk not only outside but lie even more dangerous within if we lose our sense of humanity. How true are myths and what is their relationship to facts? As Madeleine L'Engle once said, "Truth is what is true, and it's not necessarily factual." This course will delve into such questions, centering on ancient Greece and Rome, but will also examine other

cultures' traditions (e.g. Egyptian, Chinese, Norse, etc.). We will explore ancient myths and their influence down through the ages to modern times. We will examine them not just through the lens of narrative, but also anthropology, art, history, psychology, and drama (theater and film), and include ancient works such as Homer's epics, the plays of Sophocles, Euripides, and stories of Ovid among others as well as modern pieces, such as Bruegel and Bearden's visual artworks, poems by Auden and William Carlos Williams, a novel by Shamsie, and film by Cocteau.

## **SOCIAL JUSTICE OFFERING**

### **SEM950** Social Justice Lab

minor elective | grades: 9, 10, 11, 12

*"Injustice anywhere is a threat to justice everywhere." –Dr. Martin Luther King*

Are you interested in discussing social justice issues? If so, join us for investigational conversation around the issues affecting our society and impacting our community. Learn to imagine, design, and develop plausible solutions to the most pressing problems facing U.S. society and the world in the 21st-century. Using the methodology of Intergroup Dialogue, this course offers students a supportive environment to engage in "real talk" about issues of race, class, gender, sexual orientation, social identity, and power. Students in this class lean into the work of building a learning community comprised of people of different backgrounds and social identities.

Through the process, students learn to have difficult conversations and work across differences as they become social justice leaders. Students will research, design and facilitate a class on a topic of interest.

# MATHEMATICS

The math program strives to equip each student with the skills to think logically and analytically and to articulate strategies for solving problems, particularly those related to math and science. We seek to develop a student's understanding of algebra and other mathematical concepts throughout the curriculum. Topics in each subject are explored visually, symbolically, and verbally. Scientific and graphing calculators and various software applications reused as instruments for exploration and deeper understanding. Our aim is to encourage students to become confident in their math abilities and to recognize math as a powerful subject and tool. The standard mathematics progression is rigorous, leading to advanced courses in calculus and statistics. In addition, accelerated courses are offered at each grade level, starting in eighth grade. These courses move at a faster pace and explore topics in greater depth and breadth.

## » GRADUATION REQUIREMENT NOTE

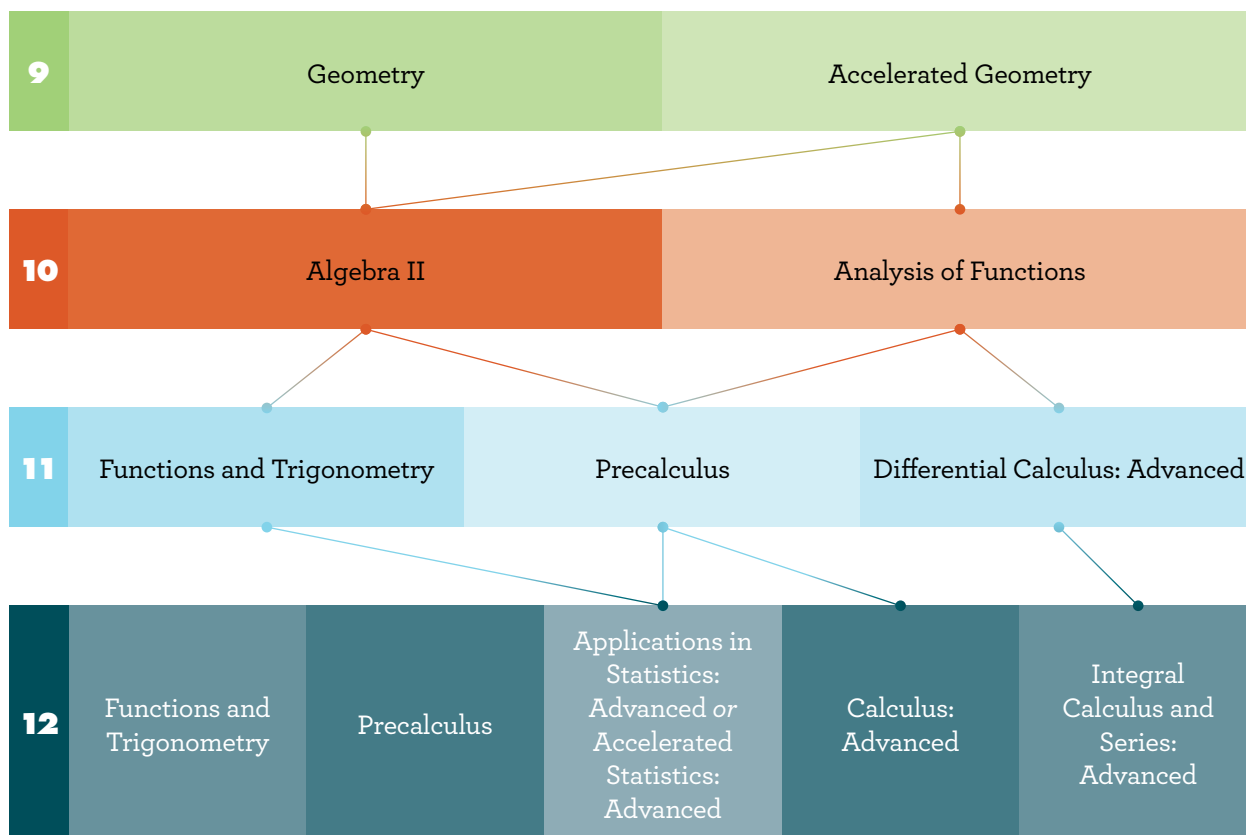
Students must complete three years of major coursework to graduate. Because students progress through the math program differently, there is a range of courses that can be elected to fulfill these three years of required coursework. Please attend closely to information about prerequisites and departmental approval.

- Placement in accelerated courses is based on student performance, teacher recommendation, and the approval of the math department.
- Students in an accelerated course who wish to continue on to the next accelerated math class must have the approval of the math department.
- Students who wish to move from a standard course to an accelerated course must have the approval of the math department and earn an A in the current standard course.
- A student who moves out of an accelerated course, or who drops math before the requirement is met, must have the approval of the math department.
- The courses Accelerated Geometry and Analysis of Functions can lead to the equivalent of two years of college-level Differential and Integral Calculus. When enrolling in Differential Calculus, students must commit to taking the full two-year sequence: typically Differential Calculus in eleventh grade and Integral Calculus and Series in twelfth grade.



## ➤ MATHEMATICS COURSE OFFERINGS 2024-25

Lines indicate typical course progression, but students may deviate from this in some instances. Calculus or Integral Calculus students may concurrently add a Statistics course in twelfth grade with departmental approval.



### MTH420 Geometry

can fulfill the required major for grades 9 or 10 | prerequisite: Algebra I or Accelerated Algebra I

This course in Euclidean geometry includes the study of geometric figures, shapes, angles, parallel lines, similarity and congruence, circles, area and volume, coordinate geometry, and introductions to analytic geometry, and trigonometry. The deductive thought process is emphasized throughout this course, and algebraic skills are reviewed and reinforced. Through the process of writing two-column proofs, students construct logical arguments and develop valid conclusions. Students will explore and visualize concepts using dynamic geometric software. The goal of this course is for students to think geometrically and to see geometry in the world around them.

### MTH430 Accelerated Geometry

can fulfill the required major for grade 9 | prerequisite: Accelerated Algebra I; departmental approval required

This course takes a strong analytical approach to the study of Euclidean geometry. Progression through this course is broader and more rigorous than MTH420 Geometry. Some topics of study include geometric figures, shapes, angles, parallel lines, similarity and congruence, circles, area and volume, coordinate geometry, and trigonometry. Proofs are emphasized throughout the year to develop strong deductive reasoning. Students will explore and visualize concepts using dynamic geometric software. Algebra will be used frequently in the development and solving of problems. Through the process of making conjectures and testing hypotheses, students will develop a deeper appreciation of thinking geometrically, as they defend their thought processes.

## **MTH520** Algebra II

can fulfill the required major for grades 10 or 11 | prerequisite: Geometry

Building from the topics covered in Algebra I, this course guides students through an exploration of linear and nonlinear functions. Students gain fluency in translating between representations of patterns as equations, tables, and graphs. Students also examine function behavior, particularly by exploring transformations and function inverses. Throughout the course, real-world applications and problem-solving activities will provide students with the opportunity to demonstrate a deeper understanding of the material. Students will also use the TI-Nspire, online graphing calculators, and web resources as they explore these topics.

## **MTH530** Analysis of Functions

can fulfill the required major for grade 10 | prerequisite: Accelerated Geometry; departmental approval required

This accelerated-level course moves at a brisk pace while covering a robust selection of topics from Algebra II and Precalculus. The course focuses on algebraic manipulation of expressions, equations, and inequalities. Students will make deep connections between functions and their graphs and explore graphs of non-functions not encountered in previous courses. Rich problem-solving and proof-writing opportunities are integrated into each unit, providing students with a solid base to enter the two-year Differential and Integral Calculus sequence. Students are encouraged to engage with each other to develop understanding through classroom discourse and to persevere through complex, abstract topics.

## **MTH610** Functions and Trigonometry

can fulfill the required major for grades 11 or 12 | prerequisite: Algebra II or Algebra II Topics Functions and Trigonometry can be an alternative to Precalculus.

This course expands on topics from Algebra II and focuses on enhancing students' algebra and problem-solving skills. Topics include exponential and logarithmic functions, polynomial and rational functions, and trigonometric functions, sequences, and series. This course is for students who have completed Algebra II and wish to strengthen and broaden their mathematical background.

## **MTH620** Precalculus

can fulfill the required major for grades 11 or 12 | prerequisite: Algebra II; departmental approval required

Precalculus builds on material from Algebra II and provides a necessary foundation for further mathematical studies. Polynomial, rational, exponential, and logarithmic functions are explored graphically and algebraically. Additionally, Precalculus includes a study of trigonometry from analytical and graphical perspectives, bringing together concepts learned in Geometry and Algebra II. Students planning on taking Calculus must take Precalculus.

## **MTH630** Differential Calculus: Advanced

can fulfill the required major for grade 11 | prerequisite: Analysis of Functions; departmental approval required

Differential Calculus delves deeply into the topics of limits, derivatives, and derivative applications. This is the first year of our accelerated two-year study of calculus. It covers material that is typically found in the first course of college calculus. In addition to the foundational skills of calculus, the course covers selected advanced precalculus topics. Students in Differential Calculus can expect to explore and discover differentiation rules and their underlying reasoning through labs, proofs, and technology. This course aims to build strong mathematical thinkers and communicators and an emphasis is placed on proper notation and the formation of a strong mathematical argument. Students who take this course are expected to complete the calculus sequence by taking Integral Calculus the following year.

## **MTH720** Calculus: Advanced

major elective | grade: 12 | prerequisite: Precalculus; departmental approval required

Calculus begins with a review of essential material from previous courses, which leads to the central calculus concept of a limit, the underlying foundation of the derivative, and the integral. In addition to exploring these big ideas, the course delves into the procedures involved in differentiating and integrating a variety of functions and then explores applications of these calculus techniques. This course covers the skills and concepts of a first-year college-level course.

## **MTH730** Integral Calculus and Series: Advanced

major elective | grade: 12 | prerequisite: Differential Calculus;  
departmental approval required

Integral Calculus is a thorough investigation of the integral and its role in the study of calculus. This is the second year of our accelerated two-year study of calculus. It covers material that is typically found in the second course of college calculus. The integral is built upon the ideas of limits, summation, and the infinite; that is where the course starts. The main content consists of techniques of integration, applications of the integral, and infinite series. The work is rich, algebraically intense, and detailed. Students are guided to craft solid and clear mathematical arguments, and they will see many previously learned techniques surface throughout this work.

## **MTH710** Applications in Statistics: Advanced

major elective | grade: 12 | prerequisite: Algebra II or Analysis of Functions

If mathematics is the language that describes the natural world, statistics is the language of society. This yearlong, project-based course emphasizes statistical literacy through exposure to the foundational concepts of statistics while also exploring the relevance and role of modern-day statistics. Topics included are displaying data numerically and visually in one and two quantitative variables, designing experiments and surveys, understanding basic probability, and introductory statistical inference. The main goal of the course will be to use these tools and techniques to represent and interpret data in meaningful ways while also developing the tools to critically evaluate verbal and written claims made from data by individuals and organizations in our society. In addition, students will be required to read at least one nonfiction work reflecting current scholarship in statistics.

## **MTH810** Accelerated Statistics: Advanced

major elective | grade: 12 | prerequisite: Analysis of Functions or Precalculus; departmental approval required

This accelerated course begins with the same foundational topics and goals of Applications in Statistics. However, students in this class move through these concepts at a quicker pace, exploring more challenging problems and examples with a stronger emphasis on the formal mathematical derivations of procedures as they are developed. Students will cover the full range of inference procedures from a first-semester college statistics course, including one and two means and proportions, slope, and chi-square. It will then move on to more advanced topics, including curve straightening, statistical programming, multiple regression, and nonparametric tests.

## **MTH832** Topics in Advanced Mathematics I

minor elective | grades: 11, 12 | corequisite: Precalculus or Differential Calculus; departmental approval required

Study in advanced mathematics is available to students who want to explore advanced topics outside of our typical course progression. Based on the number of qualified students, as well as their interests and background, course offerings and course formats may vary. The minor offered by GFS in 23-24 is Graph Theory and Political Geometry. Interested students should consult with the department head.

## **MTH834** Topics in Advanced Mathematics II

major elective | grade: 12 | prerequisite: Integral Calculus;  
departmental approval required

Study in advanced mathematics is available to students who have completed our typical course offerings. Based on the number of qualified students, as well as their interests and background, course offerings and course formats may vary. Previous offerings have included Multivariable Calculus and Linear Algebra. Students have studied advanced topics in mathematics courses offered by GFS faculty or outside institutions. Interested students should consult with the department head about available course offerings.

# MODERN LANGUAGES

The goal of the Modern Language Department is to equip students with the skills to achieve fluency in a new language. Graduates of the program will approach the world with a sustained curiosity, greater empathy, and openness to new people, places, and cultures. Students will develop listening, speaking, reading, and writing skills in the target language as well as cultural competencies. The department offers many diverse opportunities for student travel in line with our departmental goals.

## » GRADUATION REQUIREMENT NOTE

Students must complete a Level III modern or classical language to graduate. A second language, not fulfilling the graduation requirement, must be completed through Level II before it may be dropped.

## » ADDITIONAL NOTE

Grade levels listed for courses are typical. Students wishing to take a course out-of-grade should see the department head.

### **MOD310** French I

major elective | grades: 9, 10, 11

This course sets the foundation for the acquisition of a modern language. Students will develop the linguistic skills necessary to learn a language in an immersion setting through the use of targeted vocabulary and expressions. The emphasis is on building communication skills through dynamic and interactive activities focused on the four skills (listening, speaking, reading, and writing) while developing cultural competencies through the discovery of the Francophone world.

### **MOD320** French II

major elective | grades: 9, 10, 11, 12 | prerequisite: completion of the two-year course in Middle School (French Ia and Ib) or French I

This course provides a continuation of the goals of beginning French at a more advanced level. The use of authentic materials such as film, articles, short stories, and music, in addition to leveled readers, will enhance cultural awareness of the Francophone world while developing reading, writing, and oral comprehension skills. Students are expected to speak exclusively in the target language and will

begin to develop increased spontaneous speaking skills focusing on real-life scenarios.

### **MOD410** French III

major elective | grades: 10, 11, 12 | prerequisite: French II

Students complete a thorough grounding of grammatical concepts and pertinent vocabulary through the continued study of the textbook *Bien Dit!*, news articles, and authentic texts such as poetry and fables. Spontaneous conversation and oral presentations are used to improve proficiency and to gain confidence in oral expression. Aural comprehension is enhanced by exposure to podcasts, music, and French voices from around the world. Language skills are also reinforced through analytical and creative writing. Throughout the course of the year, Francophone culture is investigated through videos, Internet articles, and current events.

### **NEW MOD512** French IV

major elective | grades: 11, 12 | prerequisite: French III

This course is designed to strengthen and consolidate the grammatical skills that are fundamental to higher-level reading and greater oral proficiency. Through targeted grammar instruction, varied short

readings, discussions, and dramatizations, as well as creative and analytical reading and writing, students will have rich opportunities to grow as students of French. The curriculum is based on high-interest topics, including the study of identity, current events, and the Francophone world. Oral proficiency is particularly emphasized through debates on various topics, according to the interest of the students and through various real-life situations that the students must act out spontaneously. Texts will be carefully curated to provide a mix of authentic resources, such as newspaper articles, as well as leveled readers designed to strengthen second language acquisition.

### **MOD510** French IV: Advanced

major elective | grades: 11, 12 | prerequisite: French III | Departmental Approval Required

This advanced level class provides a systematic review of finer communication skills, written and oral, as well as providing an introduction to literary analysis. A grammar textbook will provide an intense review of the language, while the International Baccalaureate coursebook will guide students through a variety of contemporary topics. Selected authors will represent the Francophone world with a concentration in the 19th, 20th, and 21st centuries through various genres, such as poetry, short story, novel, film and internet articles. Students will demonstrate their proficiency through various assessments: quizzes, tests, oral presentations, essays, and group projects.

### **MOD610** French V: Advanced

major elective | grades: 11, 12 | prerequisite: French IV | Departmental Approval Required

This advanced-level French course is designed to further strengthen the students' expressive language skills, cultural competencies, and creative and analytical abilities in the target language. Finer points of grammar and stylistics are reviewed and enriched through the study of Francophone literature, art, cinema, news, and magazine articles. Literary pieces may include readings of Camus, Sartre, Duras, Schmitt, and contemporary short story authors. Formal writing assignments, oral presentations, and extemporaneous interactive discussions are required.

### **MOD810** Mandarin I

major elective | grades: 9, 10, 11

Students are introduced to the speaking and writing of Mandarin within a thematic context. Vocabulary is introduced in authentic encounters, including greetings, family, sports, music, school life, through authentic videos, websites, music, and readings. Additionally, with the support of the textbook and workbook, students will be given a solid foundation in reading, writing, listening, and speaking. Assessments of student learning will be based on oral and written mastery, with an emphasis on interpersonal and presentational skills.

### **MOD820** Mandarin II

major elective | grades: 9, 10, 11, 12 | prerequisite: completion of the two-year course in Middle School (Mandarin Ia and Ib) or Mandarin I

Students will work towards the mastery of speaking and writing Mandarin within a broader context. Basic grammatical structures and thematic vocabulary are acquired through the use of Go Far with Chinese, a newly released textbook series. Continued exposure to Chinese music and rhymes provides students with the opportunity to improve their pronunciation and increase their aural comprehension. Students engage in spontaneous conversations and develop more extensive reading and writing skills by working with authentic and diverse materials. Assessments of student learning will be based on oral and written mastery, with an emphasis on spontaneous production.

### **MOD825** Mandarin III

major elective | grades: 9, 10, 11, 12 | prerequisite: Mandarin II

Students will work towards mastery of speaking and writing Mandarin. Within authentic contexts, students will work on further developing their vocabulary as well as their ability to converse fluently. Readings of increasing complexity from contemporary newspapers will help students to develop their language skills and cultural awareness. In this course, students will continue to strengthen their reading, writing, speaking, and aural comprehension of Mandarin. In this beginner-intermediate level course, students will do oral presentations on contemporary and cultural topics. Assessments will be based on oral and written mastery, with an emphasis on spontaneous production.

## **MOD830** Mandarin IV and V:

### **Advanced**

major elective | grades 9, 10, 11, 12 | prerequisite: Mandarin III or IV

Students will systematically work towards mastery of the speaking and writing of Mandarin. In Mandarin IV/V students will work to solidify their sense of grammar and expand the complexity and scope of their conversational fluency. Authentic readings in an array of genres will help students develop their skills and cultural awareness and understanding. Students will be asked to complete presentations and give oral reports. Assessments will be based on oral and written mastery, with an emphasis on spontaneous production.

## **MOD710** Spanish I

major elective | grades: 9, 10, 11

This course sets the foundation for the acquisition of a modern language. Students will develop the linguistic skills necessary to learn a language in an immersion setting through the use of targeted vocabulary and expressions. The emphasis is on building communication skills through dynamic and interactive activities focused on the four skills (listening, speaking, reading, and writing), while developing cultural competencies.

## **MOD720** Spanish II

major elective | grades: 9, 10, 11, 12 | prerequisite: completion of the two-year course in Middle School (Ia and Ib) or the yearlong Spanish I course

This course provides a continuation of the goals of beginning Spanish at a more advanced level. The use of authentic materials such as film, articles, short stories, and music, in addition to leveled readers, will enhance cultural awareness while developing reading, writing, and oral comprehension skills. Students are expected to speak exclusively in the target language and will begin to develop increased spontaneous speaking skills focusing on real-life scenarios.

## **MOD730** Spanish III

major elective | grades: 10, 11, 12 | prerequisite: Spanish II

Students complete a thorough grounding of basic grammatical concepts and increasingly sophisticated vocabulary as presented thematically in short stories and other authentic materials. Spontaneous conversation and oral presentations are used to improve proficiency and to gain confidence in oral expression. Aural comprehension is enhanced through exposure to podcasts, music, and Spanish voices from around the world. Language skills are also reinforced through analytical and creative writing. Throughout the course of the year, Spanish and Latin American culture is explored through videos, internet articles, and current events.

## **NEW MOD742** Spanish IV

major elective | grades: 10, 11, 12 | prerequisite: Spanish III

This course is designed to strengthen and consolidate the grammatical skills that are fundamental to higher-level reading and greater oral proficiency. Through targeted grammar instruction, varied short readings, discussions, and dramatizations, as well as creative and analytical reading and writing, students will have rich opportunities to grow as students of Spanish. The curriculum is based on high-interest topics, including the study of identity, current events, and the Spanish-speaking world. Oral proficiency is particularly emphasized through debates on various topics, according to the interest of the students and through various real-life situations that the students must act out spontaneously. Texts will be carefully curated to provide a mix of authentic resources, such as newspaper articles, as well as leveled readers designed to strengthen second language acquisition.

## **MOD740** Spanish IV Advanced

major elective | grades: 10, 11, 12 | prerequisite: Spanish III,  
departmental approval required

This course is designed to improve students' mastery of grammar, reading comprehension, and oral fluency through targeted grammar instruction, short readings, discussion, dramatizations, as well as creative and analytical reading and writing. The curriculum may include units on identity, immigration, and folklore. Additional readings may include short stories, Spanish theater, a Latin American novel, poetry, essays, and periodical literature. Authors may include Jorge Luis Borges, Julio Cortázar, Federico García Lorca, Julia Alvarez, and Carlos Fuentes. Students will demonstrate their proficiency through various assessments: tests, quizzes, oral presentations, essays, and collaborative group projects.

## **MOD750** Spanish V: Advanced

major elective | grades: 11, 12 | prerequisite: Spanish IV |  
Departmental Approval Required

This advanced-level course will focus on increasing both students' language skills and their analytical abilities through the study of a novel, short stories, poetry, art, film, and online resources. Students will further explore the people, places, culture, and history of Latin America and its relationship to Spain. Authors may include Gabriel García Márquez, Isabel Allende, Sor Juana Inés de la Cruz, and Antonio Skármeta. Students will explore the Spanish Conquest of Latin America, women's voice in Latin American literature, dictatorships in the Southern Cone, and Latinidad in the United States today while improving writing and speaking skills through guided discussions and directed grammatical study.

# MUSIC

Rooted in the conviction that students learn most about music when making and experiencing it, the Music Department offers numerous performance and skill-based classes. Large and small ensemble coursework typically culminates in public performances, and academic music classes include the study of historical topics, technical skills, and theoretical and practical understanding.

## ➤ GRADUATION REQUIREMENT NOTE

Two semesters taken in grades 9–12.

## ➤ MUSIC MAJOR

A Music Major is comprised of two or more minor classes taken simultaneously. The number of course meeting times must be the equivalent of five or more classes in both the fall and spring semesters. At course sign-up, students in grades 9–12 wishing to create a Music Major should select their two or more minors and also select MUS690. Departmental approval required.

## FALL OFFERINGS

### **MUS412** Music Connections: Renaissance, Baroque and Classical Periods

minor elective | grades: 9, 10, 11, 12 | one semester

This course explores how styles of music changed relative to what was happening in the world during the Renaissance, Baroque, and Classical eras. Students will review how the defining characteristics of music from each era relate to the period's literature, visual art, fashion, and dance. In addition, students will study the influence that relationships between nations and developments in art, communication, and technology have on how and why composers create music. This project-based class requires no previous musical training. Students can take this course independent of, or in addition to, MUS414.

### **MUS322** Musical Instrument Building: Winds and Strings

minor elective | grades: 9, 10, 11, 12 | one semester

This hands-on class will focus on how musical instruments are made. Students will experiment with sound production by designing and creating musical instruments from household and recycled materials. We will learn about the science of how instruments work in each of the major instrument families, not only in Western music but also in music from other cultures around the world. We may also compose short pieces for our homemade instruments. Projects may include constructing some of the following instruments: tin whistle, PVC slide trombone, PVC clarinet, bamboo pan flute, cigar box guitar, and travel ukulele. This project-based class requires no previous musical training. This class can be taken together with, or in addition to, MUS324.



## **MUS310** Critical Listening in Music

minor elective | grades: 9, 10, 11, 12 | one semester

This class will challenge students to listen more deeply, carefully, and thoughtfully through the lens of recorded and live music. Students will also examine the relationship between listening and mindfulness while exploring a variety of creative/artistic music genres (classical, ambient/electronic, jazz, and world music to name a few). We will learn about dissonance in music and art, the difference between thematic and experiential content, and how basic music theory concepts can inform our perception of music. Students can expect a considerable amount of listening and discussion, and creative writing assignments meant to reflect on, and put to words, our listening skills.

## **SPRING OFFERINGS**

### **TH840** Ninth Grade Musical

minor elective | grade: 9 | one semester

In this course, students will rehearse and produce a full-book musical. They will engage in the process of taking a show from script and score to stage and performance. Students will have the choice of auditioning for a lead role or participating as an ensemble member. Once the show has been cast, the course will move to the rehearsal process, including the study of scene work and choral, solo, and dance pieces. Performances occur in early May and will require evening rehearsals. No previous singing or acting experience is necessary. This course may be taken for Music or Theatre credit.

## **MUS310** Critical Listening in Music

minor elective | grades: 9, 10, 11, 12 | one semester

This class will challenge students to listen more deeply, carefully, and thoughtfully through the lens of recorded and live music. Students will also examine the relationship between listening and mindfulness while exploring a variety of creative/artistic music genres (classical, ambient/electronic, jazz, and world music to name a few). We will learn about dissonance in music and art, the difference between thematic and experiential content, and how basic music theory concepts can inform our perception of music. Students can expect a considerable amount of listening and discussion,

and creative writing assignments meant to reflect on, and put to words, our listening skills.

## **MUS324** Musical Instrument Building: Drums and Electric Instruments

minor elective | grades: 9, 10, 11, 12 | one semester

This hands-on class will focus on how musical instruments are made. Students will experiment with sound production by designing and creating musical instruments from household and recycled materials. We will learn about the science of how instruments work in each of the major instrument families, not only in Western music but also in music from other cultures around the world. We may also compose short pieces for our homemade instruments. Projects may include constructing some of the following instruments: electric kalimba, tambourine, rainstick, cajon, and Atari Punk synthesizer. This project-based class requires no previous musical training. This class can be taken together with, or in addition to, MUS322.

## **MUS414** Music Connections: Romantic, 20th Century, and Modern Periods

minor elective | grades: 9, 10, 11, 12 | one semester

This course explores how styles of music changed relative to what was happening in the world during the Romantic, 20th Century, and Modern eras. Students will review how the defining characteristics of music from each era relate to the period's literature, visual art, fashion, and dance. In addition, students will study the influence that relationships between nations and developments in art, communication, and technology have on how and why composers create music. This project-based class requires no previous musical training. Students can take this course independent of, or in addition to, MUS412.

## YEARLONG COURSES

### **MUS780** Introduction to Piano

minor elective | grades: 9, 10, 11, 12

This introductory course is designed to teach students the fundamentals of the piano. Students will learn chord progressions and melodies from popular songs as well as how to read musical notation on the grand staff (treble and bass clef simultaneously) and in the fake book style (chords and melody on one line). By the end of this course, students will be proficient on the piano and be able to use their knowledge to play two hand classical piano music and the chords and melodies to their favorite songs.

### **MUS360** Conducting

minor elective | grades: 9, 10, 11, 12

Students will learn to demonstrate musical ideas clearly and efficiently through fundamental conducting gestures. Topics of study will include posture, baton technique, expressive and independent use of both hands, beat patterns, cueing, and control of tempo, dynamics, and phrase shaping. We will also review musical terminology, instrument transposition, and score reading. By the end of this class, students will be able to conduct a large ensemble (e.g., orchestra, choir, etc.).

### **MUS345** History and Impact of Hip-Hop

minor elective | grades: 9, 10, 11, 12

In this course, students will explore hip-hop culture's musical and social contributions. Students will review the musical characteristics of early and contemporary styles, study historical influences on the genre, and consider hip-hop's connections to jazz, gospel, and reggae. In addition, the social impact of hip-hop will be explored, with discussions centered around social justice, cultural appropriation, and other topics highlighted in rap and hip-hop lyrics. Students may also be able to compose, create, and record essential elements found in the genre.

### **MUS350** Sight Singing & Ear Training

minor elective | grades: 9, 10, 11, 12

This course develops the skills necessary to read and sing melodies at sight and notate aural

material. Classwork includes the study of solfège, rhythm and meter, key signatures, scales, pitch and interval identification, dictation and error detection, conducting patterns, and the application of sight-reading to musical scores. Basic piano skills may be incorporated into our study as a tool for understanding pitch relationships. This course develops fundamental aural and sight-singing skills, building confidence that will prepare students for more advanced musical performance.

### **MUS710** Music Theory I

minor elective | grades: 9, 10, 11, 12

Students in this course study fundamental skills in music to become increasingly expressive and literate musicians. Course content includes major and minor scales, intervals, key signatures, basic harmonic progressions, and rhythmic figures in simple and compound meters. Aural skills are developed through sight singing with solfège syllables, rhythmic dictation, interval identification, and melodic dictation. Four-part writing and analysis will be studied toward the end of the second semester. Prior study in music theory is not required to take this course.

### **MUS720** Music Theory II: Advanced

minor elective | grades: 10, 11, 12 | prerequisite: Music Theory I, departmental approval required

This course continues work in four-part writing and analysis through proper voice-leading technique and advanced harmonic progressions. Strong emphasis is placed on the development of aural skills through rhythmic and melodic dictation, as well as intervallic and harmonic identification. Students explore various compositional techniques, culminating in a final project that they submit for the spring Composer's Assembly.

### **MUS610** Music Composition I: Advanced

minor elective | grades: 10, 11, 12

This course focuses primarily on 19th-, 20th- and 21st-century Western music, developing students' understanding of advanced chromatic techniques through both analysis and composition. The material covered includes variation technique, orchestration, form, and model composition. Throughout the year, students will learn a number of techniques

to grapple with different repertoires. Our study of a wide diversity of musical styles will serve as an incentive for student compositions in those styles, and throughout the year students will compile a portfolio of their original compositions. The course culminates with a final project in a style of the student's own choosing that they submit for the spring Composer's Assembly.

## **MUS620** Music Composition II: Advanced

major elective | grades: 11, 12 | prerequisite: Music Composition I, departmental approval required

This course is a continuation of Music Composition I: Advanced and focuses on 20th- and 21st-century Western music, developing students' understanding of advanced musical techniques through analysis and original composition. The material covered will depend largely on student interest and personal compositional goals, but some possible topics might include choral music, canonic and fugal writing, orchestration, scoring for film, video games, and theatre. Throughout the year, students will learn a number of analytical and compositional models to understand different repertoires. Our study of a wide diversity of musical styles will serve as an incentive for student compositions in those styles, and students will compile a portfolio of their original compositional work so that they can track their progress. The course will culminate with a final project that they submit for the spring Composer's Assembly.

## **MUS910** Digital Music Recording and Production I

minor elective | grades: 9, 10, 11, 12

This course is designed to inspire students to create new music and push the boundaries of what music is, has been, and can be in their lives. We will first survey the history of sound synthesis, the art of noise, and the role electronic technology has played in sonic culture. We will review the progression from analog to digital recording, and learn about synthesizers, MIDI, beat-making, and software-based computer music. After providing a thorough background on electronic music, we will work primarily with Ableton Live. The class will cover the basic functionality of both hardware and software mixing consoles, and discuss the dichotomy

between "button-pushers" and "real musicians" and how artists bring soul and true musicality to computer music.

## **NEW MUS912** Digital Music Recording and Production II: Advanced

minor elective | grades: 9, 10, 11, 12 | prerequisite: Digital Music Recording and Production I

This course is designed for students to create and produce original music. Students will work on creative projects demonstrating a range of techniques that expand on foundations established in the Digital Music Recording and Production I course. Advanced artistic applications in Ableton Live and other digital audio workstations will be explored, in addition to signal processing, live electronics, and recording, mixing and mastering techniques. This course is designed to encourage exploration in a collaborative studio setting infused with discussion and peer feedback. The course culminates with a final project that they submit for the spring Composer's Assembly.

## **NEW MUS300** Songwriting

minor elective | grades: 9, 10, 11, 12

This class will explore the craft of songwriting by listening and analyzing popular music, examining chord progressions, and studying melodic and chordal relationships. We will look at the role that poetry plays in lyrics, phrasing, and rhyme schemes, and dissect song structure and social and political themes. We will create connections between branding and social media, personal websites, release strategies, and live performance. No instrumental or choral experience is needed, although students will have the opportunity to record their songs. We will build on the art of singing while playing, and potentially pursue keyboarding and guitar skills as accompaniment. This course culminates with a final project in a style of the student's own choosing that they submit for the spring Composer's Assembly.

## **NEW MUS420** Music Lab: Advanced

major elective | grades: 11, 12 | prerequisite: two (or more) yearlong courses in Music, departmental approval.

This advanced studio class is designed for students who have completed the existing sequence of study for their musical interests and seek to

further explore and develop their artistic voice and style as musicians. There is an emphasis on creating through the practical application of skills acquired throughout their GFS music study. Students will develop a portfolio of work with the guidance and support of a Music Department faculty member. This course is intended for students who have demonstrated a commitment to their craft as musical creators and are looking to hone their skills and broaden their perspective in a collaborative, laboratory-style environment.

### **MUS880** Jazz Ensembles

minor elective | grades: 9, 10, 11, 12 | co-requisite: private instrumental lessons

The jazz ensembles are open to all instrumentalists who wish to explore music from the jazz tradition and related styles. Students will explore facets of performing as an ensemble, with special attention given to jazz history, theory, transcriptions, improvisation, and the study of seminal musicians and recordings. Ensembles are arranged with regard to instrumentation, student ability, and scheduling. Students in the ensembles are required to take private lessons to gain facility and adequate technique. These skills will significantly enhance the individual's proficiency and the ensemble's collective progress. Performance opportunities include GFS assemblies, concerts, and community events. A maximum of three piano players will be accepted per section. If interest exceeds three per section, an audition will determine enrollment.

### **MUS790** Chamber Ensembles

minor elective | grades: 9, 10, 11, 12 | co-requisite: private instrumental lessons and enrollment in a large ensemble (Orchestra, Choir, Chorus, or Jazz Ensembles), or Departmental Approval.

The Chamber Ensembles are open to all instrumentalists who wish to explore music in a small ensemble setting (e.g., duets, trios, quartets). Students explore facets of performing as an ensemble, with special attention given to the unique communication and performance responsibilities required in an intimate chamber setting. Repertoire is drawn from a wide range of genres, including classical, contemporary, pop, rock, medieval, and instrument-specific styles. Ensembles are arranged with reference to instrumentation and students' abilities. Chamber ensembles may include traditional instrumentation

(e.g. two violins, viola & cello) or more non-traditional formations (e.g. ukulele or guitar ensemble), depending on the students' interests. Students may also propose their own groups with the assistance of music department staff. Performances include community events, GFS functions, and a chamber music concert. Interested musicians should speak with a music department staff member for placement.

### **MUS800** Orchestra

minor elective | grades: 9, 10, 11, 12 | co-requisite: private instrumental lessons

The Orchestra is open to all instrumentalists (except guitar) who wish to perform within a large ensemble context. A maximum of two pianists will be accepted by audition. Pianists are often taught percussion techniques as well. The ensemble performs repertoire from a wide variety of genres, including classical, contemporary, Broadway, and pop music; these works are featured in many assemblies and evening concerts. In addition to learning challenging repertoire, students focus on orchestral playing techniques that include accurate intonation, dynamic range, sectional blend, and musical phrasing. Students are required to take private lessons on their instrument to develop their technical facility. Although most rehearsals occur during the academic day, occasional after-school and weekend commitments are required.

### **MUS940** World Percussion Ensemble

minor elective | grades: 9, 10, 11, 12

Study in percussion techniques from Africa, the Middle East, Cuba, and Brazil is available to any interested student. This course accommodates students of all levels, from beginner to advanced. Students will learn about the process of building a percussion ensemble based on the traditional instrumental and vocal cues used within the various cultures studied. Techniques and repertoire are taught by rote and through transcriptions, traditional notation, graph notation, and audio and visual examples. Instruments are provided and include Bata drums, Agbadza drums, doumbeks, djembes, and Gyili (African balafons). Students will develop an understanding of and appreciation for the collaborative nature of a percussion ensemble, and gain insight into their own creative forces via this genre. Although most rehearsals occur during the

academic day, occasional after-school and weekend commitments are required.

### **MUS730** Chorus

minor elective | grades: 9, 10, 11, 12

Chorus is a large choral ensemble and is open to any student who wishes to participate in a singing group. Students in this ensemble work to establish and develop vocal technique, aural skills, and sight-reading abilities. Singers focus on both choral and choral-orchestral works in this ensemble, culminating with concert exhibitions. Chorus is a non-auditioned ensemble that is open to all students in the Upper School. Although most rehearsals occur during the academic day, occasional after-school and weekend commitments are required.

### **MUS750** Choir

minor elective | grades: 9, 10, 11, 12 | co-requisite: Chorus or A Cappella, departmental approval required

Choir is an auditioned choral ensemble. Auditions begin in February of the preceding academic year and are open to all students entering the Upper School. Students perform a diverse range of repertoire and develop their vocal technique, sight-singing skills, and sense of ensemble. Singers are expected to attend regular rehearsals and performances outside of the academic day, including biweekly Sunday rehearsals. Singers are also required to attend Choir Camp, which is held during the last weekend of August. Additional fees for Choir Camp, attire, and materials are required for this class; financial aid is available.

### **MUS210** A Cappella

minor elective | grades: 10, 11, 12

GFS A Cappella is a 20-voice auditioned close-harmony vocal ensemble. The group explores a wide range of musical genres such as rock, pop, hip-hop, R&B, jazz, and more. Members learn to tune and blend in small numbers, while singing in vocalizations unique to the a cappella art form. Students are taught how to use handheld mics, beatbox, solo, and give high energy performances. Those who are interested can be coached in arranging music for the group. Significant focus is put on team building and mutual trust. Members are encouraged to step into leadership and to help shape repertoire. Outside of the 2/8 rehearsal cycle, commitments include one

weekly club-time rehearsal, monthly weekend rehearsals, multiple performances and invitationals including the annual GFS A Cappella Fest, and a spring competition. The year culminates with four to five days of professional recording the first week after graduation.

### **THT830** Musical Theatre

minor elective | grades: 10, 11, 12

This course develops the 'triple threat': someone who can act, dance, and sing. We will study past and present Broadway musicals through the complementary but distinct lenses of libretto, score, and choreography. Students can expect to learn through participation as we study the vocal, acting, and movement techniques common in this genre of theatre. Coursework will also include dramaturgical studies of particular periods in history as they relate to the creative team and director's vision, performance, and writing style. The course will culminate with an in-class showcase of student work and can be taken for either Music or Theatre credit.

# PHYSICAL EDUCATION

Physical Education in the Upper School is focused on fostering a culture of wellness through regular, meaningful physical activity for all members of our community. Our emphasis is on leading students to develop movement skills and to discover individual interests through their participation in class. Upon completion of a semester-long Fitness & Wellness course in the freshman year, students take on increased responsibility for choosing a PE activity plan that best meets their needs and interests.

## » REQUIREMENTS

- 9th grade: One semester PE Ninth Grade Fitness and Wellness; two seasons Athletics
- 10th grade: Three seasons: one season of Athletics; choice of PE or Athletics for other two seasons
- 11th grade: Three seasons, choice of PE or Athletics
- 12th grade: Two seasons, choice of PE or Athletics

## GRADE 9

### **PE300** PE Ninth Grade Fitness and Wellness

required minor | grade: 9 | one semester

This interdisciplinary class provides a foundation for lifetime fitness and wellness and includes a thorough introduction to the use of our Fitness Center. The understanding and management of one's own fitness and health are at the core of the curriculum. Topics include nutrition, proper strength-training techniques, and the components of fitness.

## GRADES 10, 11, 12

The Physical Education Department provides a rich menu of options in terms of for developing personal fitness and exploring fitness options. Students may choose to participate in physical education classes while they are playing a GFS sport but are not required to do so. Physical Education courses are offered by sport season: fall, winter, and spring.

Course offerings are organized as follows:

- GFS Fitness Club: Personal fitness activities that meet during or after school (see course descriptions for full information). Fitness Club has two workouts weekly.
- PE Electives: These courses generally occur during the school day and may vary by season. Courses meet for two or three single periods per 8-day cycle, or two extended periods per 8-day cycle to facilitate travel off-campus.

## YEARLONG ELECTIVES

### **PE610** GFS Fitness Club - After School

minor elective | grades: 10, 11, 12

Join the GFS Fitness Club and customize your personal fitness plan. This program consists of movement activities and classes that generally occur after school. Students commit to a minimum of 2 workout periods per week, choosing the days and times that are most convenient.

### **PE670** Personal Fitness

minor elective | grades: 10, 11, 12

Need to finish your school day by 3:20 p.m.? This Personal Fitness course consists of workout sessions that will occur during the school day. It will meet 3 times per 8-day cycle to allow two workouts per week. No after-school workouts are required. All skill levels are welcome as you develop an individualized plan that works for you.

### **PE601** Vinyasa Yoga

minor elective | grades: 10, 11, 12

This all-level vinyasa (flow) yoga class offers poses designed to stretch and strengthen your body using your own breath as your guide so that you can find the balance that is most appropriate for you! A strong emphasis is placed on proper alignment, which helps you to stay centered and present while avoiding injury. Poses, especially more challenging ones, are taught slowly and thoughtfully. This class offers a nice opportunity to release physical and mental stress while cultivating inner peace and relaxation - no experience necessary! Class meets after school twice a week. Students must be available each Tuesday and Thursday from 3:30-4:30 p.m. to take this class.

## FALL ELECTIVES

### **PE700** Badminton/Net Games

minor elective | grades: 10, 11, 12

Back by popular demand! Take your game to a new level. Hone your skills and play, play, play. We will begin with badminton and may include other net games, e.g. volleyball or pickleball based on student interest. All skill levels are welcome.

### **NEW PE717** Wissahickon Adventures

minor elective | grades: 10, 11, 12

Are you ready for an unforgettable journey of self-discovery and outdoor exploration in the breathtaking Wissahickon Valley? Join us for a unique outdoor education experience that combines rock climbing, individual and team challenges, hiking, history, biology, and geology. By the end of this immersive course, you'll have a newfound understanding of yourself and a deeper connection to the natural wonders of the Wissahickon Valley.

### **NEW THT720** Jazz & Hip-Hop

minor elective | grades: 10, 11, 12

This fall course is an all levels studio-style dance class in the jazz and hip-hop traditions. With an emphasis on rhythm, style, and technique, students will explore choreography, musicality, and movement composition. Students can expect the class to be dynamic, high energy, and celebratory. This is not a performance-based class and no prior experience is necessary. This course can be taken for Theatre or PE credit.

## WINTER ELECTIVES

### PE710 Archery

minor elective | grades: 10, 11, 12

Experience the Zen of this target shooting sport. All skill levels are welcome. The course is designed for students to use both compound and recurve bows. Our purpose is for students to learn the basics and beyond, emphasizing the care and use of equipment, range safety, stance and shooting techniques, using a sight, scoring and competition, and learning how to teach novice archers. We will be following the USA Archery curriculum. Level 1 Instructor Curriculum. Students completing the course will earn a USA Archery Level 1 teaching certificate.

### PE720 Volleyball/Table Tennis

minor elective | grades: 10, 11, 12

Are you an outside hitter, defensive blocker, or libero? Not sure? Delve into volleyball on the tactical level while you further hone your skills. In this class, we will up your game in two of the most popular recreational activities: volleyball and table tennis. Get ready to play, play, play!

### TH820 World Dance

minor elective | grades: 10, 11, 12

This winter course is an opportunity to explore a number of cultural dance forms from Latin America and the African Diaspora. Accompanied by live musicians and led by guest artist teachers, students will feel the rhythms, learn the cultural significance, and experience the movement of several different global dance traditions. Students can expect this class to be vigorous but playful and a chance to move their body in a fun, low-stakes environment. This is not a performance-based class and no prior experience is needed. This course can be taken for Theatre or PE credit.

## SPRING ELECTIVES

### PE780 Wissahickon Hiking

minor elective | grades: 10, 11, 12

Take to the hills, rocks, and valleys. Observe the re-awakening of the forest. Venture onto a variety of trails, and savor the seasons of Philadelphia. Bouldering and rock climbing are possibilities, depending on student interest. All skill levels are welcome.

### PE770 Archery

minor elective | grades: 10, 11, 12

Experience the Zen of this target shooting sport. All skill levels are welcome. The course is designed for students to use both compound and recurve bows. Our purpose is for students to learn the basics and beyond, emphasizing the care and use of equipment, range safety, stance and shooting techniques, using a sight, scoring and competition, and learning how to teach novice archers. We will be following the USA Archery curriculum. Level 1 Instructor Curriculum. Students completing the course will earn a USA Archery Level 1 teaching certificate.

### TH810 Modern Dance

minor elective | grades: 10, 11, 12

This course is an all-level modern dance class that includes explorations in technique, improvisation, and choreography. Students will engage methods and language common to a variety of modern dance styles and concepts. Most material will be learned through physical participation as students deepen their awareness of the body and explore the connection between the physical, cognitive, and emotional aspects of themselves. Should they choose, students will have the opportunity to perform as part of the annual Poley Festival of student-created work. Course material will be leveled based on the experience of those registered, therefore, previous dance experience is welcome, but not necessary. This course can be taken for PE or Theatre credit.



## **REQUEST FOR ALTERNATIVE PHYSICAL EDUCATION CREDIT**

From ninth grade through twelfth grade, Germantown Friends School requires participation in athletics to foster community, camaraderie, and physical and mental well-being. Students who have an already established commitment to an outside-of-school athletic activity for off-season training or for a sport that GFS does not offer can apply for alternate credit through the alternate credit application. The request must be for an activity with a comparable time commitment and the family should provide details about the training or performance schedule including contact information for the coach or instructor. Students who are approved for alternate credit must complete assignments through Google Classroom to document their progress and train a minimum of six hours a week. Applying does not guarantee acceptance. Remember that alternate credit requests are due the prior academic year. Requests at the beginning or during the current season cannot be granted.

# SCIENCE

The study of science provides students with powerful ways to understand the natural world. We seek to inspire students' curiosity, develop critical thinking and analytical skills, and provide a foundation for further exploration. Our curriculum emphasizes laboratory work, data analysis, problem-solving and clear communication. All science courses are lab-based and meet for the equivalent of five periods each cycle. Students must satisfactorily complete one course in physical science and one course in biological science. Typically, students take Physics in 9th grade, Chemistry in 10th grade, and Biology in 11th grade. Advanced Physics, Advanced Chemistry, Advanced Biology, Principles of Engineering, and Environmental Science are available to students who complete introductory coursework. The Science Department also offers one minor elective, Human Anatomy, and Physiology, to 10th, 11th, and 12th graders.

## » GRADUATION REQUIREMENT NOTE

All students must take three years of major coursework in science. Recommended sequence: Physics (9th Grade), Chemistry (10th Grade), Biology (11th Grade).

### **SCI310** Physics

major elective | grades: 9, 10

This introductory physics course primarily focuses on concepts and laws of classical physics, especially mechanics, including the topics of motion in one and two dimensions, Newton's Laws of Motion, work, energy, power, circular and rotational motion, and the relevant laws of conservation. Material is also drawn selectively from wave motion, sound, light, and color. The emphasis in this course is on conceptual comprehension of this material, but there will be quantitative work that complements the information being studied. Frequent laboratory experiments and reading material will reinforce problem-solving skills. Participation in the Physics Olympics is required.

### **SCI720** Chemistry

major elective | grades 10, 11

This introductory course covers basic chemical vocabulary, nomenclature, stoichiometry, thermochemistry, gas laws, atomic theory, molecular geometry, equilibrium, and acid-base chemistry, and provides a solid foundation for more advanced work in chemistry and biochemistry. Weekly labs are included. We strongly recommend that students take chemistry before taking biology.

## **SCI710** Biology

required major | grades: 11, 12 | prerequisite: Chemistry or departmental approval

This is an introductory biology course. Students study a range of topics in evolutionary biology, cell biology, systems biology, and molecular biology. Specific units include evolution and biodiversity, ecology, cellular structure and function, cell cycle, biochemistry, DNA and genetics, protein synthesis, cell respiration, photosynthesis, and systems biology. Labs and several projects give students hands-on experience with biological materials and concepts. It is strongly recommended that students take chemistry before they take biology.

## **SCI810** Principles of Engineering: Advanced

major elective | grades: 11, 12 | prerequisite: Chemistry and Physics and departmental approval

The solutions to society's greatest problems lie between disciplines. On top of that, the techniques necessary for approaching our most vexing questions are changing and will continue to evolve in unpredictable ways. In Principles of Engineering, students will work independently and collaboratively to use the engineering design process and equity-informed variables to design solutions to a variety of challenges. In that process, each student will master a number of skills including fabrication, graphical analysis, data collection, time management, presentation, and critique. They will apply these skills to complete projects focused on different areas of Engineering, including Mechanical, Electrical, Civil, Chemical, and Biomedical.

## **SCI730** Advanced Chemistry

major elective | grades: 11, 12 | prerequisite: Chemistry and departmental approval required

This course covers much of the same material encountered in first-year college chemistry programs. Labs will occur on a nearly weekly basis and include experiments using pH, temperature, pressure, and other Vernier probes that employ computer-based data acquisition and analysis methodology. Topics covered include the structure of matter; solution stoichiometry; the kinetic theory of gasses and gas laws; thermodynamics; quantum theory and periodicity; chemical bonding; the chemistry of solids, liquids, and solutions; kinetics and equilibria; acids, bases, and aqueous equilibria; spontaneity, entropy, and free energy; oxidation-reduction reactions and electrochemistry; nuclear chemistry; and a brief overview of organic chemistry. Students will develop a deep understanding of the foundational concepts of chemistry, fluency in dealing with complex chemical problems, and the ability to form mental models of the molecular world.

## **SCI750** Advanced Biology

major elective | grade: 12 | prerequisite: Chemistry, Biology and departmental approval required

This course focuses on a variety of topics including, but not limited to, the origin of life, cancer biology, population genetics, gene regulation, genetic engineering, evolutionary theory, and phylogenetics. Laboratory activities are a part of each unit. During the spring semester, students will learn how to apply molecular data to analyze evolutionary patterns, and they will work collaboratively to build a data set that can be used to answer a specific evolutionary question.

## SCI770 Advanced Physics

major elective | grade: 12 | prerequisite: concurrent enrollment in or completion of Calculus or Integral Calculus; departmental approval required

This is a fast-paced course that will focus on a variety of topics, including mechanics, energy, electrostatics, circuits, and magnetism. We will integrate current events, both scientific and social, into our daily explorations. Advanced Physics builds on material from the introductory physics course, but the introductory course is not a prerequisite. This course is math-intensive and we will use calculus and trigonometry as tools to develop a rigorous understanding of the world around us. Computers will be used for simulation, data analysis, and the completion of labs. Experimental design will be an important aspect of the laboratory experience.

## NEW SCI735 Organic Chemistry: Advanced

major elective | grades: 11, 12 | prerequisite: Chemistry

This course introduces students to the fundamental principles that govern the structure, properties, and reactions of organic compounds. As an essential branch of chemistry, Organic Chemistry explores the realm of carbon-containing compounds, delving into the intricacies of molecular structures, functional groups, and reaction mechanisms. Throughout the course, students will engage in hands-on laboratory experiments to apply theoretical concepts and gain valuable insights into the synthesis and analysis of organic molecules. From understanding the foundations of bonding and stereochemistry to exploring the diversity of organic compounds found in nature, this class aims to cultivate a deep appreciation for the molecular intricacies that shape the everyday world.

## SCI740 Environmental Science

major elective | grades: 10, 11, 12

Students will look at a wide range of topics covering five major themes: ecology, human population, energy and climate, resource use and reform, and applied sustainability. Concepts in each theme will be explored by considering global and local environmental issues with special consideration of current events as they arise. The coursework will make use of laboratory and field experiments, which use local resources such as the GFS Cary Arboretum and the Schuylkill River, as well as a simulation of the UN Framework Convention on Climate Change. This course is designed for students who would like to pursue a science course that is not a second-year course in chemistry, biology, or physics.

## NEW SCI805 Human Anatomy & Physiology: Advanced

major elective | grades: 11, 12 | prerequisite: Chemistry

Human Anatomy & Physiology is an immersive exploration of the structure and function of the human body. Students will learn about the intricacies of the integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic/immune, respiratory, digestive, urinary, and reproductive systems. The course also delves into cellular biology, exploring the fundamental units of life and their roles within the body. Through lectures, interactive activities, and hands-on laboratory experiences, participants will gain a comprehensive understanding of how these systems work harmoniously to sustain life.

## NEW SCI600 Science Research

minor elective | grades 10, 11, 12

Science Research is designed to provide students with hands-on experience in conducting scientific research within a laboratory setting. Students will develop their critical thinking, problem-solving, and data analysis skills through guided research project(s). Emphasis will be placed on the scientific method, experimental design, data collection and analysis, and effective communication of research findings.

# THEATRE

Theatre at GFS is centered around creating in many forms: acting & directing, technical theatre & design, writing/devising, film, and dance/movement. In addition to an active schedule of annual stage productions, students may elect to pursue coursework that supports the exploration of their passion, the development of their craft, and the expression of their voice as storytellers. With a focus on creative process, performance, and critical response, we are committed to the cultivation of the individual artist and their imagination - and to the communal practice of collaboration.

## » GRADUATION REQUIREMENT NOTE

As of the class of 2024, and for all subsequent classes, students must complete one semester of Ninth Grade Theatre.

## » THEATRE MAJOR

A theatre major is comprised of two year-long minors (or the equivalent) taken simultaneously. At course sign-up, students in eleventh and twelfth grades wishing to create a theatre major should select their two or three minors and also select THT990 Theatre Major. Departmental approval required.

## » A NOTE ON AFTERSCHOOL MAIN STAGE PRODUCTIONS

Students participating in a theatre production may elect to delay a season of athletics participation to the following year with department approval.

## THEATRE COURSES

### **THT725** Ninth Grade Theatre

required minor | grade: 9 | one semester

This introductory class investigates the art of theatre and explores performance as a vehicle for self-expression; it aims to bring to life each student's personal sensibility as a storyteller, story-maker, and story-seeker. The course includes a survey of the ritualistic and performative storytelling methods that have developed throughout time and how they have evolved into the forms of theatre we currently practice. Students will engage with the storytelling of personal narratives, dramatic theory, writing, and physical theatre exercises, as well as explore elements of design and technical theatre. In the spring, students also have the opportunity to participate in the Ninth Grade Musical, a long-standing GFS production onstage, backstage, and

beyond. Please note: Ninth Grade Musical must be chosen as an additional elective.

### **THT840** Ninth Grade Musical

minor elective | grade: 9 | one semester

In this course, students engage in the process of producing a musical play. Students will have the option of performing or being a part of the stage crew. Performers can be involved as dancing and singing members of the ensemble or in featured solo roles. Stage Crew works on building the set and preparing lights, sound, and other technical aspects of the production. Performances occur in early May and will require evening and/or weekend rehearsals. No previous singing, acting, or technical experience is necessary. May be taken for Music or Theatre credit. Please note: participation in the Ninth Grade Musical is in addition to the required Ninth Grade Theatre course.

## **NEW** THT250 **Text & Performance**

minor elective | grade: 10, 11, 12

This course is an exploration of the journey from page to stage. *How does a character actually get from the written page to the physical and shared space of the theatrical stage? What gives form to story?* This class is about the study of dramatic composition and how the actor translates what is on the page into an honest, physically and vocally strong performance. The class explores how different interpretations and a deep understanding of dramaturgical context affect both direction and performance. Students can expect to do the work of observation, memorization, character study, scene & script analysis - all in service of exploring and stretching their own capacity as performers and theatre-makers. As part of their study, students will have an opportunity to perform in a fall Reader's Theatre and coursework will culminate in a performance at this spring's Poley Festival of student work.

## **THT733** **Acting for the Screen**

minor elective | grades: 11, 12 | spring semester only

Acting for the camera is very different from acting on the stage! Students in this spring semester class are introduced to the craft of screen acting and the principle that on screen, less is more. Students collaborate with Intermediate and Advanced Filmmaking classes to gain experience working on a student-led set. We will study and discuss great performances from tv and film - and then try our hand at performing in front of the camera ourselves: first as we film our own self-tapes and then in front of a camera helmed by a student director and their crew. Join us and get ready to hear 'lights, camera, action' for your on-screen debut! This course can be taken supplementary to study in Theatre & Film, or independently, as an experiment in performance.

## **THT122** **Scriptwriting Workshop for Stage & Screen**

minor elective | grades: 11, 12

Whether we are writing a script to be performed on stage or filmed for a streaming platform, we start in the same place: the empty page with a story in our mind. We then set out to create an event where bodies, language, sound, movement, and visual arts are equal partners in transforming an audience. In the writing workshop, students will study and explore

playwriting and writing for television and film. Students will sample a range of scripts, surveying the vast array of structures. They will be offered writing prompts in class to hone various aspects of the form and can expect to write both a pilot script for TV and a one-act play. This is a course for students who enjoy writing and are eager to explore a new form.

## **THT830** **Musical Theatre**

minor elective | grades: 10, 11, 12

Acting, singing, dancing: this course is what they call a 'triple threat.' We will study Broadway musicals, both past, and present, through the complementary but distinct lenses of libretto, score, and choreography. Students can expect to learn through participation as we study the vocal, acting, and movement techniques common in this genre of theatre. Coursework will also include dramaturgical studies of particular periods in history as they relate to the creative team and director's vision, performance, and writing styles of a given show. The course will culminate with a showcase of student work and can be taken for either Music or Theatre credit.

## **THT735** **Theatre Lab: Advanced**

major elective | grade: 12 | prerequisite: two (or more) yearlong courses in Theatre and involvement in at least one co-curricular Mainstage Production; departmental approval required

This advanced lab class is designed for students to explore and develop their own artistic voice and style as theatre-makers - with an emphasis on the practical application of skills acquired over the course of their GFS Theatre career. An exploration of personal vision, artistic passion, and creative aesthetic in the fall semester is followed by a period of idea generation and project proposal and development. Students then spend the bulk of the year investigating and producing an independent (or collaborative) project with the guidance and support of GFS Theatre Faculty. This course is intended for students who have demonstrated a commitment to theatre-making as performers, writers, directors, and/or designers and who wish to hone their skills and personal point-of-view in a collaborative, laboratory-style environment.

## DANCE & MOVEMENT COURSES

### **NEW** THT720 Jazz & Hip-Hop

minor elective | grades: 10, 11, 12 | fall trimester

This fall course is an all levels studio-style dance class in the jazz and hip-hop traditions. With an emphasis on rhythm, style, and technique, students will explore choreography, musicality, and movement composition. Students can expect the class to be dynamic, high energy, and celebratory. This is not a performance-based class and no prior experience is necessary. This course can be taken for Theatre or PE credit.

### THT820 World Dance

minor elective | grades: 10, 11, 12 | winter trimester

This winter course is an opportunity to explore a number of cultural dance forms from Latin America and the African Diaspora. Accompanied by live musicians and led by guest artist teachers, students will feel the rhythms, learn the cultural significance, and experience the movement of several different global dance traditions. Students can expect this class to be vigorous but playful and a chance to move their body in a fun, low-stakes environment. This is not a performance-based class and no prior experience is needed. This course can be taken for Theatre or PE credit.

### THT810 Modern Dance

minor elective | grades: 10, 11, 12 | spring trimester

This spring course is an all-level modern dance class that includes explorations in technique, improvisation, and choreography. Students will engage methods and language common to a variety of modern dance styles and concepts. Most material will be learned through physical participation as students deepen their awareness of the body and explore the connection between the physical, cognitive, and emotional aspects of themselves. Should they choose, students will have the opportunity to perform as part of the annual Poley Festival of student-created work. Course material will be leveled, based on the experience of those registered; therefore, previous dance experience is welcome, but not necessary. This course can be taken for Theatre or PE credit.

## TECHNICAL THEATRE COURSES

### **NEW** THT792 Scenic Carpentry and Prop Making

minor elective | grades: 9, 10, 11, 12

In Scenic Carpentry and Prop Making, students have an opportunity to work with power tools and various building materials while learning the craft of scenic carpentry and prop making. The class will explore design elements, multiple types of technical drawings, as well as the safe use of tools used to create theatrical scenery. Students are expected to participate as a member of a build team for at least one mainstage show, which will include call times outside of the regular school day.

### **NEW** THT786 Lighting and Sound for the Stage

minor elective | grades: 9, 10, 11, 12

In Lighting and Sound for the Stage, students will learn about the technology used to create various effects for the stage. In this hands-on course, students will do the work of bringing a concept to life through the 'magic' of theatre. The study will include lighting instruments, hanging and focusing various instruments, sound systems, microphones, and the physics behind light and sound. In addition to class time, students are expected to be involved in at least one GFS Theatre production throughout the performance season; this will include call times outside of the regular school day.

### **NEW** THT300 Theatre Management

minor elective | grades: 11, 12

In this course, students will take a deeper dive into the roles of technical direction, as well as production and stage management. A leadership-building class, students will be expected to help problem-solve real-world issues related to theatrical production. The focus of this class will be on leadership and management: scheduling, troubleshooting, space & equipment maintenance, and of course managing a production. Students enrolled in this course are expected to support at least one major production as a member of the Stage Management team each semester; this will include call times outside of the regular school day.

## **THT791** Scenic and Costume Design

minor elective | grades: 10, 11, 12

This course exists at the intersection of fine art and theatrical storytelling. Design is an essential part of the theatrical form; sets and costumes create the world of the play and have a powerful effect on how an audience experiences the story being told. In this class, students will learn both conceptual and practical skills related to theatrical set design, scenic painting, and costuming. Students will support GFS Theatre productions as part of their work in the course.

## **FILMMAKING COURSES**

### **THT780** Filmmaking I:

#### **An Introduction**

minor elective | grades: 10, 11, 12 | yearlong

This entry-level course provides students with a foundation in cinema studies and filmmaking. Students begin the course by examining the history and technology of film while discovering their cinematic voices through micro-films and exercises shot and edited with their smartphones. Students will gain an appreciation of the technical, theatrical, and narrative elements of cinema through assignments that introduce concepts related to cinematography, production design, genres, and editing. Once essential terminologies are defined and students have a greater appreciation for the production process, professional filmmaking equipment is introduced to the mix as students are trained to use and maintain the necessary hardware and software to create films. By the end of this course, students will have a firm grasp of pre- and post-production filmmaking techniques. They will also have a portfolio of films that demonstrate their burgeoning skills and unique point of view as a storyteller. The course will also include assignments related to film criticism and screenings to create dynamic cinephiles out of every student. Students enrolled in Filmmaking I will be required to attend a one-day, weekend Film Boot Camp during the fall semester.

### **NEW THT785** Filmmaking II:

#### **Cinematic Storytelling & Technique**

minor elective | grades: 11, 12 | yearlong | prerequisite: Filmmaking I

In this intermediate course, students will learn the creative power of cinematography and post-production. Building on foundational skills, students will begin with a deep dive into aspects of cinematography, storyboarding, mise-en-scene, and lighting. Students will fundamentally learn that the process of telling stories one frame at a time is as much a science as it is an art; one must strike a delicate balance of technical know-how with creative ingenuity. This course will also rely on collaborative, hands-on, and theoretical approaches to understanding sound and film editing. Students will learn a non-linear editing software that will provide them an outlet to apply methods and theories that heighten and propel narrative and visual storytelling. Each component of the course will establish a fundamental understanding of the philosophy and craft of editing that allows students the creative skill to imbue their projects with greater substance and meaning.

### **THT783** Filmmaking III : The Picture Is the Thing: Advanced

minor elective | grade: 12 | yearlong | prerequisite: Filmmaking II

The goal of this yearlong course is to complete one feature-length film by year's end. Requirements will consist of a series of short films. Collectively, students will determine the genre of the feature film; narrative, documentary, or experimental, and complete the film. The final feature-length will be between 20 and 70 minutes long. During the course of the year, we will commit to making two to three short films and simultaneously complete work on the long term feature-length film. We will focus on lighting, sound, set design, etc. as well as story construction, budgeting, casting, etc. From time to time we will have subject-area guest lecturers visit with the class. Participants will also be required to attend the Philly Youth Film Festival. Additional assignments will include watching and discussing multiple films with an eye towards approach and execution.



# REQUIRED PROGRAMS

## JANUARY TERM (J-TERM)

January Term enables our community to live the mission and values of our school and explore new passions, interests and interdisciplinary ways of learning about the world. Through a schedule dedicated to course offerings outside of the regular curriculum, January Term provides teachers and students a space for experimentation, investigation and reflection. Students sign up for their January term courses during the fall of each school year.

### GRADUATION REQUIREMENT NOTE

Students must satisfactorily complete January Term in ninth, tenth, and twelfth grades.

## JUNIOR PROJECTS

The faculty believes that independent study outside the bounds of any particular classroom is an important part of any student's education. The experience of creating a project, organizing it and sustaining it to completion is invaluable in helping students take responsibility for what they learn and how they learn it. By completing their Junior Projects before senior year, students will be able to incorporate the experience of their project into their work in 12th grade. Colleges often ask for assessments of the student's ability to do independent work.

### GRADUATION REQUIREMENT NOTE

In eleventh grade, students must satisfactorily complete a month-long independent project during the month of January.

### JUNIOR PROJECT PROCESS

In early May, each member of this year's 10th grade class will be assigned a liaison from the Junior Project Committee. Students should arrange to meet with their liaison twice before the end of the school year. Liaisons help students decide on a project by discussing opportunities that are available to them through members of the school community and programs outside school.

## JUNIOR PROJECT COMMITTEE

This committee, composed of faculty and staff, the eleventh grade advisors and the Upper School Division Director, oversees the students as they plan and complete their proposals. The committee works hard to give every student the support they need to select a project and complete a successful proposal by December.

## GUIDELINES

- All projects must be student-initiated and student-designed.
- All projects must have definite start and end dates. Students are expected to undertake their projects five days a week for four weeks.
- Proposals must clearly state goals for the project and plans for final presentations, which include both oral and written reports.
- Each student must arrange to have an advisor, who is a member of the GFS faculty, and an on-site supervisor.
- Proposals must be specific, may require a bibliography and always require a letter from the on-site supervisor confirming details of the project.
- Students must report to their GFS advisors once a week during the duration of the project.
- Expensive projects are discouraged. Students are required to earn at least half the money necessary to cover the cost of any project.

# GLOBAL ONLINE ACADEMY

GFS is a founding member of Global Online Academy (GOA), a consortium of outstanding independent schools offering an innovative selection of online courses. Sophomores, juniors, and seniors can supplement their education by taking an online course in a variety of interdisciplinary subjects offered by experienced teachers around the world.

Students in tenth through twelfth grades may elect, as part of their academic schedule, a semester or year-long course in GOA. Students must be responsible for collaborating with their classmates across time zones as they complete class assignments. GOA online courses may be taken as an elective major or as an overload. Students considering registering for a GOA course should consult GFS' Site Director for GOA and their grade dean. Students enrolled in GOA courses will have check-ins once per cycle with the Site Director to assist and oversee student progress. GOA registration will take place through the GOA Site director. Sophomores will need to register with the approval of the Upper School Division Director. Once enrolled in a course, students will receive an email from Global Online Academy about their course and what the next steps are.

The subsidized cost for GOA courses is \$100 for a semester-long course and \$200 for a year-long course. The Business Office will bill families this amount. Should a student withdraw from a course after the drop deadline, all associated late-drop fees will be billed to the family. The cost of a summer course is \$750.

## ➤ KEY DATES

- Semester 1: August 28, 2024 - December 13, 2024
- Yearlong: August 28, 2024 - April 25, 2025

### GOA266 Abnormal Psychology

This course provides students with a general introduction to the field of abnormal psychology from a western perspective while exploring the cultural assumptions within the field. Students examine the biopsychosocial aspects of what we consider abnormal while developing an understanding of the stigma often associated with psychological disorders. Through book study, videos, article reviews, and discussions, students consider how our increasingly global world influences mental health in diverse settings. In learning about the different areas of western abnormal psychology, students study the symptoms, diagnoses, and responses to several specific disorders such as anxiety, depression, eating disorders, or schizophrenia. Students develop an understanding

of how challenging it can be to define “normal” as they begin to empathize with those struggling with mental distress. Throughout the course, students are encouraged to attend to their own mental well-being. The course culminates in an independent project where students showcase their learning with the goal of making an impact in their local communities.

### GOA330 Applying Philosophy to Global Issues

This is an applied philosophy course that connects pressing contemporary issues with broad-range philosophical ideas and controversies, drawn from multiple traditions and many centuries. Students use ideas from influential philosophers to examine

how thinkers have applied reason successfully, and unsuccessfully, to many social and political issues across the world. In addition to introducing students to the work of philosophers as diverse as Socrates, Confucius, and Immanuel Kant, this course also aims to be richly interdisciplinary, incorporating models and methods from diverse fields including history, journalism, literary criticism, and media studies. Students learn to develop their own philosophy and then apply it to the ideological debates that surround efforts to improve their local and global communities.

### **GOA258** Architecture

In this course, students build an understanding of and apply skills in various aspects of architectural design. While gaining key insights into the roles of architectural analysis, materials, 3D design, and spatial awareness, students develop proficiency in architectural visual communication. We begin by learning the basic elements of architectural design to help analyze and understand architectural solutions. Through digital and physical media, students develop an understanding of the impact building materials have on design. At each stage of the course, students interact with peers from around the globe, learning and sharing how changes in materials, technology, and construction techniques lead to the evolution of contemporary architectural style and visual culture. The course culminates with a final project in which each aspiring architect will have the opportunity to work towards a personal presentation for the GOA Catalyst Conference. Students will, through a variety of outcomes, present an architectural intervention that they have proposed as a solution to an identified need, one emanating from or focused within their own community. Throughout the course, students will refer to the design process and will use techniques to track, reflect, and evidence their understanding of architecture.

### **GOA360** Arts Entrepreneurship

In this course, aspiring visual artists, designers, filmmakers, musicians, and other creatives will learn how to find success in the dynamic fields of their choosing. Students will learn about arts careers and organizations by attending virtual events and interviewing art practitioners, entrepreneurs, and administrators. Beyond exploring trajectories for improving their crafts, students will build skills in networking and

personal branding while examining case studies of a variety of artistic ventures - some highly successful and some with teachable flaws. Using real-world examples of professional and emerging creatives and arts organizations, students will gain a better understanding of the passion and dedication it takes to have a successful creative career.

### **GOA267** Bioethics

Ethics is the study of what one should do as an individual and as a member of society. Bioethics refers to the subset of this field that focuses on medicine, public health, and the life sciences. In this course, students explore contemporary, pressing issues in bioethics, including the “right to die,” policies around vaccination and organ transplantation, competence to consent to care, human experimentation and animal research, and genetic technologies. Through reading, writing, research, and discussion, students will explore the fundamental concepts and questions in bioethics, deepen their understanding of biological concepts, strengthen their critical-reasoning skills, and learn to engage in respectful dialogue with people whose views may differ from their own. The course culminates with a student-driven exploration into a particular bioethical issue, recognizing the unique role that bioethics plays within the field of ethics.

## **GOA361** Data Visualization

Through today's fog of overwhelming data, visualizations provide meaning. This course trains students to collect, organize, interpret, and communicate massive amounts of information. Students will begin wrangling data into spreadsheets, learning the basic ways professionals translate information into comprehensible formats. They will explore charts, distinguishing between effective and misleading visualizations. Employing principles from information graphics, graphic design, visual art, and cognitive science, students will then create their own stunning and informative visualizations using Datawrapper, Tableau Public and/or Python. From spreadsheets to graphics, students in this course will practice the crucial skills of using data to decide, inform, and convince. There is no computer science, math or statistics prerequisite for this course, though students with backgrounds in those areas will certainly find avenues to flex their knowledge in this course.

## **GOA321** Cybersecurity

Cyber criminals leverage technology and human behavior to attack our online security. This course explores the fundamentals of and vulnerabilities in the design of computers, networks, and the internet. Course content includes the basics of computer components, connectivity, virtualization, and hardening. Students will learn about network design, Domain Name Services, and TCP/IP. They will understand switching, routing and access control for internet devices, and how denial of service, spoofing and flood attacks work. Basic programming introduced in the course will inform hashing strategies, while an introduction to ciphers and cryptography will show how shared-key encryption works for HTTPS and TLS traffic. Students will also explore the fundamentals of data forensics and incident response protocols. The course includes analysis of current threats and best practice modeling for cyber defense, including password complexity, security, management, breach analysis, and hash cracking. Computational thinking and programming skills developed in this course will help students solve a variety of cybersecurity issues. There is no computer science prerequisite for this course, though students with some background will certainly find avenues to flex their knowledge.

## **GOA350** Developmental Psychology

Over a few short years, most human beings grow from infants who are not even able to hold up their heads to become walking, talking, thinking people who are able to communicate using language, to understand complexities, to solve problems, and to engage in moral reasoning. This course is an introduction to the fascinating study of human growth and development focusing on the significant changes that occur physically, emotionally, cognitively and socially from birth through adolescence. Students consider the big questions of heredity versus environment, stability versus change, and continuity versus discrete stages of change as they investigate language acquisition, sensorimotor development, thinking and learning, and personality and emotions. Through readings, observations, case studies, and application activities, students examine development from the perspectives of major theorists in the field from both Western and non-Western traditions.

## **GOA254** Digital Photography

In an era where everyone has become a photographer obsessed with documenting most aspects of life, we swim in a sea of images posted on Instagram, Facebook, Snapchat, Pinterest, and other digital media. To that end, why is learning how to use a digital camera important and what does taking a powerful and persuasive photo with a 35mm digital single lens reflex (DSLR) camera require? Digital Photography explores this question in a variety of ways, beginning with the technical aspects of using and taking advantage of a powerful camera and then moving to a host of creative questions and opportunities. Technical topics such as aperture, shutter, white balance, and resolution get ample coverage in the first half of the course, yet each is pursued with the goal of enabling students to leverage the possibilities that come with manual image capture. Once confident about technical basics, students apply their skills when pursuing creative questions such as how to understand and use light, how to consider composition, and how to take compelling portraits. Throughout the course, students tackle projects that enable sharing their local and diverse settings, ideally creating global perspectives through doing so. Additionally, students interact with each other often through critique sessions and collaborative exploration of the work of many noteworthy professional

photographers whose images serve to inspire and suggest the diverse ways that photography tells visual stories. Prerequisite: Students must have daily access to a DSLR camera.

### **GOA285** Game Theory

In this course, we explore a branch of mathematics known as game theory, which uses mathematical models to inform decision making. There are many applications to everyday dilemmas and conflicts, many of which we can treat as mathematical games. We consider significant global events from fields like diplomacy, political science, anthropology, philosophy, economics, and popular culture. We examine models of world conflicts and scheduling of professional athletic contests. Specific topics include two-person zero-sum games, two person non-zero-sum games, sequential games, multiplayer games, linear optimization, and voting theory.

### **GOA362** Gender & Society

This course uses the concept of gender to examine a range of topics and disciplines that include feminism, gay and lesbian studies, women's studies, popular culture, and politics. Throughout the course, students examine the intersection of gender with other social identifiers: class, race, sexual orientation, culture, and ethnicity. Students read about, write about, and discuss gender issues as they simultaneously reflect on the ways that gender has manifested in and influenced their lives.

### **GOA315** International Relations

Are China and the U.S. on a collision course for war? Can the Israelis and Palestinians find a two-state solution in the holy land? Will North Korea launch a nuclear weapon? Can India and Pakistan share the subcontinent in peace? These questions dominate global headlines and our daily news feeds. In this course, you will go beyond the soundbites and menacing headlines to explore the context, causes, and consequences of the most pressing global issues of our time. Through case studies, you will explore the dynamics of international relations and the complex interplay of war and peace, conflict and cooperation, and security and human rights. Working with classmates from around the world, you will also identify and model ways to prevent, mediate, and resolve some of the most pressing global conflicts.

### **GOA366** Introduction to Blockchain & Cryptocurrency

Much attention has been brought to the cryptocurrency space by the meteoric rise in the valuation of Bitcoin and other cryptocurrencies. More recently, meme tokens have also grabbed the spotlight. When thinking about cryptocurrency, there is much more to consider than just market capitalization or coins named after canines. Introduction to Blockchain & Cryptocurrency is an entry level course for anyone excited by the space. This course explores how we arrived at the place we are now, and what the current and possible applications of crypto are. We'll explore how markets in crypto operate, where they've received practical application, and where the space may head in the future through the lenses of creators, consumers, and governments. In addition, we will take a deeper look at blockchain, the underlying technology that powers cryptocurrencies, and its many, far-reaching implications for the future of government, business, the arts and more.

Each lens represents a different way to view the complex and interrelated causes and outcomes of the changing crypto landscape. Using a variety of technologies and activities, students work individually and with peers to evaluate each lens. Students then analyze and explore how these technologies may shape and disrupt the future not only of the crypto space, but of many current and future industries.

### **GOA316** Introduction to Legal Thinking

Inspired by GOA's popular Medical Problem Solving series, this course uses a case-based approach to give students a practical look into the professional lives of lawyers and legal thinking. By studying and debating a series of real legal cases, students will sharpen their ability to think like lawyers who research, write and speak persuasively. The course will focus on problems that lawyers encounter in daily practice, and on the rules of professional conduct case law. In addition to practicing writing legal briefs, advising fictional clients and preparing opening and closing statements for trial, students will approach such questions as the law and equity, the concept of justice, jurisprudence and legal ethics.

## **GOA263** Introduction to Psychology

What does it mean to think like a psychologist? In Introduction to Psychology, students explore three central psychological perspectives - the behavioral, the cognitive, and the sociocultural - in order to develop a multi-faceted understanding of what thinking like a psychologist encompasses. The additional question of “How do psychologists put what they know into practice?” informs study of the research methods in psychology, the ethics surrounding them, and the application of those methods to practice. During the first five units of the course, students gather essential information that they apply during a group project on the unique characteristics of adolescent psychology. Students similarly envision a case study on depression, which enables application of understanding from the first five units. The course concludes with a unit on positive psychology, which features current positive psychology research on living mentally healthy lives. Throughout the course, students collaborate on a variety of activities and assessments, which often enable learning about each other’s unique perspectives while building their research and critical thinking skills in service of understanding the complex field of psychology.

## **GOA281** Linear Algebra

In this course students learn about the algebra of vector spaces and matrices by looking at how images of objects in the plane and space are transformed in computer graphics. We do some paper-and-pencil calculations early in the course, but the computer software package Geogebra (free) will be used to do most calculations after the opening weeks. No prior experience with this software or linear algebra is necessary. Following the introduction to core concepts and skills, students analyze social networks using linear algebraic techniques. Students will learn how to model social networks using matrices as well as discover things about the network with linear algebra as your tool. We will consider applications like Facebook and Google. Prerequisite: Geometry and Algebra 2 or the equivalents.

## **GOA264** Medical Problem Solving I

In this course, students collaboratively solve medical mystery cases, similar to the approach used in many medical schools. Students enhance their critical thinking skills as they examine data, draw conclusions, diagnose, and identify appropriate treatment for patients. Students use problem-solving techniques in order to understand and appreciate relevant medical/biological facts as they confront the principles and practices of medicine. Students explore anatomy and physiology pertaining to medical scenarios and gain an understanding of the disease process, demographics of disease, and pharmacology. Additional learning experiences include studying current issues in health and medicine, interviewing a patient, and creating a new mystery case.

## **GOA269** Medical Problem Solving II

Medical Problem Solving II is an extension of the problem-based approach in Medical Problem Solving I. While collaborative examination of medical case studies remain at the center of the course, MPS II approaches medical cases through the perspectives of global medicine, medical ethics, and social justice. The course examines cases not only from around the world but also in students’ local communities. Additionally, the course addresses the challenges patients face because of a lack of access to health care, often a result of systemic discrimination and inequity along with more general variability of health care resources in different parts of the world. All students in MPS II participate in the Catalyst Conference, a GOA-wide conference near the end of the semester where students from many GOA courses create and publish presentations on course-specific topics. For their projects, students use all of the lenses from the earlier parts of the course to choose and research a local topic of high interest. Further, their topics enable identifying a local medical problem, using local sources, and generating ideas for promoting change. Prerequisite: Medical Problem Solving I.

## GOA278 Multivariable Calculus

In this course, students learn to differentiate and integrate functions of several variables. We extend the Fundamental Theorem of Calculus to multiple dimensions and the course will culminate in Green's, Stokes' and Gauss' Theorems. The course opens with a unit on vectors, which introduces students to this critical component of advanced calculus. We then move on to study partial derivatives, double and triple integrals, and vector calculus in both two and three dimensions. Students are expected to develop fluency with vector and matrix operations. Understanding parametric curves as a trajectory described by a position vector is an essential concept, and this allows us to break free from one-dimensional calculus and investigate paths, velocities, and other applications of science that exist in three-dimensional space. We study derivatives in multiple dimensions and use the ideas of the gradient and partial derivatives to explore optimization problems with multiple variables as well as consider constrained optimization problems using Lagrangians. After our study of differentials in multiple dimensions, we move to integral calculus. We use line and surface integrals to calculate physical quantities especially relevant to mechanics, electricity and magnetism, such as work and flux. We will employ volume integrals for calculations of mass and moments of inertia and conclude with the major theorems (Green's, Stokes', Gauss') of the course, applying each to some physical applications that commonly appear in calculus-based physics. Prerequisite: The equivalent of a college year of single-variable calculus, including integration techniques, such as trigonometric substitution, integration by parts, and partial fractions. Completion of the AP Calculus BC curriculum with a score of 4 or 5 on the AP Exam would be considered adequate preparation.

## GOA290 Neuropsychology

Neuropsychology is the exploration of the neurological basis of behavior. Within this course, students will learn about basic brain anatomy and function as well as cognitive and behavioral disorders from a neurobiological perspective. They will do an in depth analysis of neural communication with an emphasis on how environmental factors such as smartphones affect nervous system function, their own behaviors, and the behaviors of those around them. Students will also have the opportunity to choose topics in neuropsychology to explore independently including Alzheimer's disease, Addiction, Neuroplasticity, and CTE and share their understanding with their peers in a variety of formats. The course concludes with a study of both contemporary and historic neuropsychological case studies and their applications to everyday life.

## GOA298 Number Theory

Once thought of as the purest but least applicable part of mathematics, number theory is now by far the most commonly applied: every one of the millions of secure internet transmissions occurring each second is encrypted using ideas from number theory. This course covers the fundamentals of this classical, elegant, yet supremely relevant subject. It provides a foundation for further study of number theory, but even more, it develops the skills of mathematical reasoning and proof in a concrete and intuitive way and is necessary preparation for any future course in upper-level college mathematics or theoretical computer science. We progressively develop the tools needed to understand the RSA algorithm, the most common encryption scheme used worldwide. Along the way we invent some encryption schemes of our own and discover how to play games using number theory. We also get a taste of the history of the subject, which involves the most famous mathematicians from antiquity to the present day, and we see parts of the story of Fermat's Last Theorem, a 350-year-old statement that was fully proven only twenty years ago. While most calculations will be simple enough to do by hand, we will sometimes use the computer to see how the fundamental ideas can be applied to the huge numbers needed for modern applications. Prerequisite: A strong background in precalculus and above, as well as a desire to do rigorous mathematics and proofs.

## **GOA322** Personal Finance

In this course, students learn financial responsibility and social consciousness. We will examine a wide array of topics including personal budgeting, credit cards and credit scores, career and earning potential, insurance, real estate, financial investment, retirement savings, charitable giving, taxes, and other items related to personal finance. Students will apply their understanding of these topics by simulating real life financial circumstances and weighing the costs and benefits of their decisions. Throughout the course, students will have the opportunity to learn from individuals with varying perspectives and expertise in numerous fields. By reflecting on their roles in the broader economy as both producers and consumers, students will begin to consider how they can positively impact the world around them through their financial decisions.

## **GOA305** Positive Psychology

What is a meaningful, happy, and fulfilling life? The focus of psychology has long been the study of human suffering, diagnosis, and pathology, but in recent years, however, positive psychologists have explored what's missing from the mental health equation, taking up research on topics such as love, creativity, humor, and mindfulness. In this course, we will dive into what positive psychology research tells us about the formula for a meaningful life, the ingredients of fulfilling relationships, and changes that occur in the brain when inspired by music, visual art, physical activity, and more. We will also seek out and lean on knowledge from positive psychology research and experts, such as Martin Seligman's well being theory, Mihaly Csikszentmihalyi's idea of flow, and Angela Lee Duckworth's concept of grit. In exploring such theories and concepts, students will imagine and create real-world measurements using themselves and willing peers and family members as research subjects. As part of the learning studio format of the course, students will also imagine, research, design, and create projects that they will share with a larger community. Throughout the development of these projects, students will collaborate with each other and seek ways to make their work experiential and hands-on. Students will leave the class with not only some answers to the question of what makes life meaningful, happy, and fulfilling, but also the inspiration to continue responding to this question for many years to come.

## **GOA310** Prisons and Criminal Justice Systems

How do societies balance individual freedoms with security? How do definitions of "crime" and "punishment" shift across jurisdictions and time periods? How do recent protests and discussions about racial biases and systemic racism inform our understanding of criminal law and its applications? Although the United States has been frequently cited as having the highest "mass incarceration" rate, other countries in the world have also been criticized for injustices in their criminal justice systems. In this course, students become familiar with the legal rules and institutions that determine who goes to prison and for how long. Along the way, students gain a concrete, practical understanding of legal systems while grappling with mass incarceration as a legal, ethical, and practical issue. To understand current views on crime and criminal punishments and to examine proposed systemic reforms, we immerse ourselves in the different forms of rhetoric and media that brought the U.S. and other nations to our present. We read and analyze jury arguments, courtroom motions, news op-eds, judicial decisions, recent cases, and other forms of public persuasion that shape the outcomes of criminal defendants. The final project requires students to advocate for a major reform to a criminal justice system in a city, state, or country. Having developed research skills, students apply them to build an effective argument that includes a real-world solution.

## **GOA340** Religion & Society

Religion is one of the most salient forces in contemporary society but is also one of the most misunderstood. What exactly is religion? How does religious identity inform the ways humans understand themselves and the world around them? How can increased levels of religious literacy help us become more effective civic agents in the world today? Students in this course will conduct several deep dives into specific case studies in order to understand how religious identity intersects with various systems of power, including race, gender, class, sexual orientation, and ethnicity. By engaging with material from a variety of academic fields (history, sociology, anthropology, psychology), students will grapple with the complex ways in which society and religious identity relate to one another.



## GOA367 Social Psychology

Are you thinking and acting freely of your own accord or is what you think, feel, and do a result of influences by the people around you? Social psychology is the scientific study of how and why the actual, imagined, or implied presence of others influences our thoughts, feelings, and behavior. The principles of social psychology help explain everything from why we stop at stop signs when there is no one around to why we buy certain products, why in some situations we help others and in some we don't, and what leads to more dramatic (and catastrophic) events such as mass suicides or extreme prejudice and discrimination. As we take up these topics and questions, students will build and engage in a community of inquiry, aimed primarily at learning how to analyze human behavior through the lens of a social psychologist. Social Psychology invites students to explore, plan, investigate, experiment, and apply concepts of prejudice, persuasion, conformity, altruism, relationships and groups, and the self that bring the "social" to psychology. The course culminates in a public exhibition of a student-designed investigation of a social psychological topic of their choice. This course uses a competency-based learning approach in which students build GOA core competencies that transcend the discipline and learn how to think like a social psychologist. Much of the course is self-paced; throughout the semester, students are assessed primarily in relation to outcomes tied to the competencies.



## NOTES





---

## NOTES



**GFS**

**GERMANTOWN FRIENDS SCHOOL**

215.951.2300 | 31 West Coulter Street, Philadelphia, PA 19144