

# BLAIR ACADEMY

2019-2020 COURSE CATALOG





# *Table of Contents*

<b>GENERAL REQUIREMENTS</b> .....	2
<b>COMPUTER SCIENCE &amp; APPLICATIONS</b> .....	6
<b>ENGLISH</b> .....	9
<b>FINE &amp; PERFORMING ARTS</b> .....	12
<b>HISTORY</b> .....	22
<b>LANGUAGES</b> .....	27
<b>MATHEMATICS</b> .....	33
<b>RELIGION &amp; PHILOSOPHY</b> .....	38
<b>SCIENCES</b> .....	42

# GENERAL REQUIREMENTS



The Blair diploma is granted to students whom the faculty and Head of School judge to be members in good standing of the School community and who have met the following requirements for graduation:

Students will be eligible for a Blair diploma only if they have been enrolled for at least one full academic year, including senior year, and if they have successfully completed 54 units of academic work for four-year students, 51 units for three-year students, and 48 units for two- and one-year students. For each year that the student has attended Blair, he or she must complete three units of physical activity. For the freshman, sophomore and junior years, two of the three units must be in the form of interscholastic team sports or the approved equivalent thereof. Only under very unusual circumstances will the faculty, through the Athletic Committee, make exceptions to these requirements.

The academic year is divided into two semesters and a student receives 1.5 units of credit for the successful completion of a single-semester and 3 units of credit for a successfully completed yearlong course. No partial credit is awarded.

The units of academic work must include the following:

**ENGLISH:** 3 units of English each year—*total 12 units for a four-year student*

**MATHEMATICS:** 9 units in mathematics—*Algebra I, Geometry and Algebra II or their equivalents*

**LANGUAGES:** 6 units in a modern or classical language—*two years of one language*

**SCIENCES:** All students must present 6 units in a laboratory science—*3 units in Biology and 3 units in Chemistry, Robotics or Physics*. Beginning with the class of 2015, four-year students at Blair must present 9 units of science, at least 6 units of which must be laboratory sciences, as described previously. **Beginning with the class of 2019, all freshmen will take either Biology or Biology Honors for their 9th-grade science. Members of the freshman class who are repeating the grade and who have high-school credit for an acceptable, full-academic-year biology lab science, and a grade of B or better (or its equivalent) will not have to meet this requirement.**

**HISTORY:** 6 units in United States History/Modern European History—*see department requirement regarding two-year United States History courses taken at another school*. In addition, four-year students will have taken Global Issues for a total of 9 units.

**FINE & PERFORMING ARTS:** Units of fine and/or performing arts as described in the additional requirements on page 3 (see also the section on Fine & Performing Arts).

**RELIGION & PHILOSOPHY:** Units of religion or philosophy as described in the additional requirements on page 3 (see also the section on Religion & Philosophy).

## REQUIRED FOR FRESHMEN ONLY, IN ADDITION TO THE GENERAL REQUIREMENTS

3 units of Global Issues.

1.5 units of Religion or Philosophy, to be completed by graduation.

1.5 units of Freshman Seminar.

**Arts:** Prior to graduation, four-year students must take three semesters of art. At least one of these semesters must occur in grades 9-10 and at least one in grades 11-12. In addition, at least one of the three courses must be a performing art and at least one a fine art.

**Sciences:** Beginning with the class of 2019, all freshmen will take either Biology or Biology Honors for their 9th-grade science. Members of the freshman class who are repeating the grade and who have high school credit for an acceptable, full-academic-year biology lab science and a grade of B or better (or its equivalent) will not have to meet this requirement. In addition, four-year students at Blair must present 9 units of science, at least 6 units of which must be laboratory sciences (*3 units in Biology and 3 units in Chemistry, Robotics or Physics*).

## REQUIRED FOR SOPHOMORES, IN ADDITION TO THE GENERAL REQUIREMENTS

1.5 units of Blair Leadership (LEADS), beginning with the class of 2017.

## REQUIRED FOR NEW SOPHOMORES ONLY, IN ADDITION TO THE GENERAL REQUIREMENTS

1.5 units of Religion or Philosophy, to be completed by graduation.

3 units of Fine or Performing Arts, to be completed by graduation.

## REQUIRED OF NEW JUNIORS, IN ADDITION TO THE GENERAL REQUIREMENTS

1.5 units of Religion or Philosophy, to be completed by graduation.

1.5 units of Fine or Performing Arts, to be completed by graduation.

## REQUIRED OF NEW SENIORS & POSTGRADUATES

Irrespective of other requirements, these one-year students must carry a minimum of five courses each semester, with a minimum of four of those courses in the form of full-year courses.

## **SPECIAL SENIOR REQUIREMENTS**

No matter how many acceptable credits a re-enrolling student may already have, a returning senior must carry no fewer than 6 units per semester, none of which may take the form of an independent study (see below).

Returning seniors must pass the minimum academic load of 13.5 units for the year, satisfactorily completing 3 units of English and 9 units of electives. The remaining 9 units must be in full-year courses and the total schedule must represent the equivalent of a year's work in three different disciplines. A postgraduate is considered to be a member of the senior class and must fulfill all requirements, academic and non-academic, that seniors must meet, as well as those listed in the section on page 3, "Required of new seniors & postgraduates."

In addition, seniors or postgraduates who elect to take a Senior Project must complete it satisfactorily to graduate. Participation in commencement exercises by individual seniors who do not successfully complete the appropriate pattern of disciplines and a minimum of 13.5 units of credit will be determined by the faculty.

## **INDEPENDENT STUDY**

Students in the junior and senior year wishing a course that the School does not offer or a course that does not fit their schedules may propose an independent study as a fifth or, in exceptional cases, a sixth course. Students select a faculty advisor with whom they work to create a written proposal. The proposal must make clear the purpose, process and outcomes of the independent study and receive the written approval of the faculty member, the student's advisor and class monitor, the relevant department head(s) and—finally—the Dean of Academics. All proposals are to be typewritten. A student may undertake only one independent study per term.

## **ADVANCED PLACEMENT (AP) COURSES & EXAMS**

The AP examination is required of all students enrolled in an AP course. Such courses end in either an examination or, in the case of the arts, a portfolio of work. The examination or portfolio is an integral part of an AP course and its final focus. Thus, the examination is required if a student is to receive credit and designation for an AP-designated course. In any case where a student withdraws from an AP class during the college application process, a corrected transcript will be issued to each of the student's colleges.

Fees for AP examinations are billed to student accounts in the late fall of the year. Students who are later counseled to withdraw from an AP class will have the amount credited on their account. The fee for AP examinations is approximately \$90 per examination.



# COMPUTER SCIENCE & APPLICATIONS

*All courses in the department require that a student own a laptop computer that runs in the English language.*

### ■ ROBOTICS: FULL YEAR

Offered in conjunction with the Science Department, Robotics meets the lab-science requirement for a physical science. This full-year course explores the combination of electronics and computer science, covering robotic history and the construction of working autonomous robots (which requires design and programming skills). Topics include components of robotic systems, sensors and feedback loops. An important aspect is the design of computer algorithms that intelligently make use of sensor information describing the environment and purposefully act upon it. The course is strictly limited to 10 students. *Prerequisite: Completion of Biology or Biology Honors. Three units.*

### ■ ADVANCED PLACEMENT (AP) COMPUTER SCIENCE: FULL YEAR

This yearlong course follows a nationally standardized curriculum for computer science and seeks to prepare students who work well independently for the AP computer science exam in May, which is a requirement for the course. This class is taught in the JAVA programming language, now used in the AP curriculum. The course will include programming projects culminating in a single, larger project by the end of the year. Projects may include graphics and an introduction to game design. AP students should expect to spend time working through sample test problems outside of class. Students will participate in the development of a larger-scale open-source robotics project that will include input from multiple student groups. *Concurrent enrollment in a math class at the Precalculus Honors level or higher is required. Permission of the department required. Three units.*

### ■ POST-ADVANCED PLACEMENT (AP) COMPUTER PROJECTS: FULL YEAR

As the title suggests, this advanced course takes up project development where the AP Computer Science course ceased. Based on larger and more technical projects, Post-AP Computer Projects challenges students to work independently with increasing creativity and be clearly adept at installing and configuring software. Students will participate in the development of a larger-scale open-source robotics project that will include input from multiple student groups. *Completion of AP Computer Science and concurrent enrollment in a math class at the AP Calculus level or higher is required. Permission of the department required. Three units.*

### ■ INTRODUCTION TO PROGRAMMING: SEMESTER

This semester-long computer science offering is designed for students new to programming. The course focuses on the basics of the Python programming language and centers on project-driven work aimed at deepening students' conceptual understanding. *No prior experience is required. 1.5 units.*

**■ SOFTWARE DESIGN: SEMESTER**

This semester-long computer science offering builds on the concepts introduced in the introductory class or might represent a good starting point for students with programming experience, regardless of the programming language they have pursued previously. Students will complete more complex and involved projects, including one of their own choosing, to continue their learning in the discipline. *1.5 units.*

**■ ADVANCED SOFTWARE DESIGN: SEMESTER**

This semester-long computer science offering allows students to continue the work they began in the software design course. *Approval of the instructor required. 1.5 units.*

**■ ARTIFICIAL INTELLIGENCE: SEMESTER (NOT OFFERED IN 2019-2020)**

This semester-long class explores the ways in which humans and machines interact through project-based work such as prototyping, design and 3D printing. Students work with software such as voice-activated controls, voice recognition, voice-to-text translation, virtual reality and control systems and hardware-controlling robotics, drones and electronic systems. *1.5 units.*

# ENGLISH



MR. JAMES MOORE, CHAIR

## Department Requirements

*To graduate, students must take English each year and in each term of the senior year. Placement in honors sections of English is by department permission only.*

### ■ ENGLISH 1: FULL YEAR

English 1 is designed to develop the reading and writing skills of freshman students at the same time that it fosters a knowledge and appreciation of literature. The course is organized around several units in which students read and write extensively. In a typical year, they will read works such as *The Odyssey*, *Macbeth*, *Ordinary People* (or another modern novel), a selection of short stories and an assortment of poetry. In addition, there is a short but formal introduction to public speaking, which examines key skills and rhetorical devices and provides students with the opportunity to deliver oral presentations to their classmates. Vocabulary enrichment, public speaking opportunities and punctuation study are also integral to the year's work. *Three units.*

### ■ ENGLISH 2: FULL YEAR

English 2 complements the various components of English 1 as it continues to strengthen reading, writing and study. After an initial review of essay elements and of good writing practices, students study units on poetry, the short story, Shakespeare and the novel. In a typical year, authors have included Shakespeare, Dickens, Walker, Steinbeck, Cummings, Frost, Cather and Huxley. Emphasis is on reading critically and writing persuasively. Written work demands personal response, close literary analysis and a familiarity with literary criticism; vocabulary enrichment and grammar study will be integral parts of the course. *Prerequisite: English 1. Three units.*

### ■ ENGLISH 3: FULL YEAR

English 3 is an exploration of American literature from the pre-Revolutionary era to the present. Along the way, students consider the questions: Who gets to be an American and who decides? What makes someone "American?" What are the values and ideas that we have come to understand as uniquely American? How has American literature been used to influence, critique and applaud society? Students also examine the relationship and tension between the individual and the collective, and are encouraged to form opinions about the nature of American society. Some of the most influential texts from some of the greatest American writers are read and discussed in order to understand the American experience from its early beginnings. Knowledge gained from a concurrent U.S. History course enhances students' understanding of texts and helps them make interdisciplinary connections between history and literature. *Prerequisite: English 2. Three units.*

### ■ ENGLISH 3 ADVANCED PLACEMENT (AP) LITERATURE: FULL YEAR

This course is designed for students with a demonstrated talent for language and a heightened interest in literature. The course undertakes a close reading of works by writers as diverse as Donne,

Wordsworth, Hurston, Shelley, Dostoevsky, Miller and Shakespeare, placing a yearlong emphasis on form and content: The mechanics of composition—whether in a student’s writing or in the author being studied—receive as much attention as the ideas being discussed. Extensive grammar, sentence structure and vocabulary study occur throughout the year. All students are expected to sit for the AP English Literature exam in May. *Department approval required. Prerequisite: English 2. Three units.*

### ■ SENIOR ENGLISH: FULL YEAR

Most seniors take either AP English Language or English 4 Capstone. Students who have not completed AP Literature as juniors may choose this option as well. Students (from another school) who have completed AP Language must elect AP Literature or Capstone. *Three units.*

### ■ ENGLISH 4 ADVANCED PLACEMENT (AP) LITERATURE: FULL YEAR

Open to seniors who have not taken the AP Literature exam as juniors, the English 4 AP Literature course is conducted as a seminar and emphasizes close literary reading. Students write compositions of sustained literary analysis, as well as in-class essays similar to those required on the AP exam. Readings in a typical year include works by Shakespeare, Hardy, Morrison, Camus and Conrad, as well as an assortment of traditional, modern and contemporary short story writers and poets, including Wordsworth, Frost, Keats and Owen. Group and individual oral presentations make up a core component of the course. Enrollment presumes a love of reading, a high level of proficiency in writing and a willingness to participate actively in class discussion. The course prepares students for the AP English Literature exam, given in May; this exam is a requirement of the course. *Three units.*

### ■ ENGLISH 4 ADVANCED PLACEMENT (AP) LANGUAGE: FULL YEAR

AP English Language is open to seniors who wish to pursue intensive work in English language, but not to those who have previously completed an English AP Language course. The course prepares students for the AP English Language and Composition exam, given in May; this exam is a requirement of the course. Students will have the opportunity to study a range of rhetorical modes from diverse historical periods. Those with previously demonstrated proficiency in close textual analysis will be especially well served by this course. Source readings include essays, letters, poems and speeches. Throughout, students will be challenged to increase and sharpen their knowledge of advanced literary and rhetorical terms and techniques while developing their ability to recognize a range of rhetorical strategies. Students will have many opportunities to practice their public speaking skills. *Three units.*

### ■ ENGLISH 4 CAPSTONE: FULL YEAR

English 4 Capstone offers Blair seniors the opportunity to conceive, develop, complete and present a project focused on a strong personal interest. At the core of the project is a substantial written assignment that could take almost any literary form; potential projects include, but are not necessarily limited to, a collection of short stories or personal essays, the script for a one-act play or short film, a collection of poetry or a longer academic piece that explores the works of a particular author or literary movement. The capstone process begins in the fall, while capstone students are enrolled in English 4 electives, with a series of meetings designed to help each student identify that strong personal interest and begin to lay the groundwork for the project. During the winter rhetoric program (taken by all seniors), the student prepares to begin his or her work in the spring, laying out objectives and timelines. During the spring, the student works independently and with the teacher to complete his or her project by the mid-May deadline, in time to make a public presentation of his or her work before commencement. *Three units.*



# FINE & PERFORMING ARTS

MRS. JENNIFER PAGOTTO, CHAIR, PERFORMING ARTS  
MRS. KATHERINE SYKES, CHAIR, FINE ARTS

## Department Requirements

### FOUR-YEAR STUDENTS:

Prior to graduation, four-year students must take three semesters of art. At least one of these semesters must occur in the lower grades (9-10) and at least one in the upper grades (11-12). In addition, at least one of the courses must be a performing art and at least one must be a fine art.

### THREE-YEAR STUDENTS:

Prior to graduation, three-year students must complete two semesters of art.

### TWO-YEAR STUDENTS:

Prior to graduation, two-year students must complete one semester of art.

### ONE-YEAR STUDENTS:

Prior to graduation, one-year students who are carrying only four full-year courses must complete either a semester of art or a semester of philosophy/religion.

### ALTERNATIVES:

Four-year students may, in the 11th or 12th grade only, substitute the successful completion of a full school year of instrumental lessons (see “Applied Music Instruction” on page 18) for one semester of their three-semester requirement. No credit is awarded.

Alternatively, four-year students may, in the 11th or 12th grade only, substitute the successful completion of major participation in a school theatre production for one semester of their three-semester requirement. No credit is awarded. *Approval of the Performing Arts Department Chair required.*

Only one substitution is allowed in a student’s career.

# Fine Arts

## Two Dimensional

### ■ TWO-DIMENSIONAL ART: LEVELS 1 & 2 (SEMESTER)

Two-Dimensional Art 1 students will be exposed to the fundamentals of drawing and painting while developing personally meaningful works. Students will work from life, as well as their imaginations, usually with an eye toward a theme or issue that is relevant to contemporary art. In level 2, students will build on the repertoire of skills presented in 2D Art 1. Some lessons at level 2 may include more robust considerations of color, mixed-media and the figure. *1.5 units.*

### ■ ADVANCED DRAWING: SEMESTER

Advanced Drawing builds on work of the level 2 Two-Dimensional Art course. Students draw from life, as well as create images from their imagination, usually with an eye toward a theme or issue that is relevant to contemporary art. There is an emphasis on experimentation. Many Advanced Drawing students are preparing for Advanced Placement (AP) Portfolio or AP Drawing courses. *May be taken more than once for credit. Prerequisite: Two-Dimensional Art, level 2.*

**1.5 units.**

### ■ ADVANCED PAINTING: SEMESTER

Advanced Painting builds on work of the level 2 Two-Dimensional Art course. Students paint from life, as well as create images from their imagination, usually with an eye toward a theme or issue that is relevant to contemporary art. There is an emphasis on experimentation. Many students in Advanced Painting are preparing for Advanced Placement (AP) Portfolio or another AP-level course. *May be taken more than once for credit. Prerequisite: Two-Dimensional Art, level 2.*

**1.5 units.**

### ■ PHOTOGRAPHY 1: SEMESTER

In Photography 1, students use a 35-mm manual camera and black-and-white film to gain familiarity with the parts of the camera, darkroom equipment, film developing and printing, presentation, and the elements of good film exposure (including aperture, shutter speed and film speed). The course consists of basic reading assignments and hands-on activities that guide students to an understanding of what makes a good photograph and how it can be a form of self-expression. A 35-mm manual camera is strongly recommended for this course. **1.5 units.**

### ■ DIGITAL PHOTOGRAPHY: SEMESTER

This course will introduce the fundamentals of digital photography. Emphasis and instruction will focus on these four areas: digital photo editing software, both Adobe Photoshop and Lightroom, digital asset management, advanced composition and lighting techniques. Students will also experiment with smartphone-based photography, editing software and social-media publishing platforms. Examples of modern and historical photography will shape regular class discussions. Students will present their work and comment on classmates' work during regular critique sessions. A 35-mm manual digital SLR camera and a portable hard drive are required for this course. *Prerequisites: Photography 1.* **1.5 units.**

### ■ ADVANCED ANALOG PHOTOGRAPHY OR ADVANCED DIGITAL PHOTOGRAPHY: SEMESTER

Advanced Photography follows Photography 1 or Digital Photography. Students continue to work at achieving proper exposure using either a 35-mm manual or a digital SLR. The course focuses more on creating a picture with strong composition, working with alternative light sources and exploration of different photographic techniques. Students are evaluated specifically on three essential factors: composition, subject matter and technical facility. Ideally, each student in Advanced Photography will develop a consistent body of work, presenting a continuous theme or developing theme, which will exhibit increasing technical mastery. Personal responsibility for time management, research, and exploration of the history of photography and technique is an

expectation of the course. Students are to record these ideas in a visual journal. *Either a 35-mm manual or a digital SLR camera and a tripod are required for this course. Prerequisites: Photography 1 or Digital Photography & teacher approval. May be taken more than once for credit. 1.5 units.*

#### ■ ART PORTFOLIO: FULL YEAR OR SEMESTER

This non-Advanced Placement (AP) course is for the serious art student who wishes to master essential skills and techniques while also developing ideas for his or her own work. The course will allow students to begin the “breadth” section of the AP Portfolio class (description on page 16) and have a body of work to use for a college portfolio. *By permission of the instructor only. Three units per year; 1.5 units per semester.*

#### ■ GRAPHIC DESIGN & ADVANCED GRAPHIC DESIGN: SEMESTER

Graphic Design students create digital works of art that promote the development of digital design skills on Adobe Illustrator and Photoshop, as well as an understanding of design concepts and fundamentals. The projects are designed to be personally meaningful while fostering creative thinking, project planning, time management and problem solving. The next course in the sequence, Advanced Graphic Design, challenges experienced students to expand their vision and techniques. *1.5 units.*

#### ■ ARCHITECTURE 1: FULL YEAR

This course emphasizes the development of accurate drawing and visual presentation skills, the ability to visualize three-dimensional forms, multi-view drawing, basic geometric constructions, isometrics and perspective work. As well as the application of these skills to the design of shelter, students will explore the principles of architectural design such as the relationships of space and human activity. Students will work with drafting instruments. *Preference given to seniors. Three units.*

#### ■ ARCHITECTURE 2: SEMESTER

This course continues the approaches taken in Architecture 1 while expanding student skills to include CAD functionality and applicability. *Prerequisites: Architecture 1 & teacher approval. Preference given to seniors. Three units.*

#### ■ ADVANCED ARCHITECTURE: FULL YEAR

This course is a continuation of Architecture 2, and explores broader design concepts while building on the basic visualization and presentation skills introduced in the previous course. Course work includes rendering, model building and site considerations as supplements to the design process. A discussion of the nature of contemporary architecture is included. *Prerequisite: Architecture 1, Architecture 2 & teacher approval. Preference given to seniors. 1.5 units.*

#### ■ INTRODUCTION TO FILM PRODUCTION: SEMESTER

In Introduction to Film Production, students are immersed in all aspects of digital film production, from script to screen. With an emphasis on storytelling, projects are designed to develop basic skills in screenwriting, directing, cinematography, sound design and editing. In addition, students hone their cinematic literacy through guided peer critiques. *Owning a digital camcorder is not a prerequisite. 1.5 units.*

### ■ ADVANCED FILM PRODUCTION: SEMESTER

Building on the skills learned in Introduction to Film Production, students have the opportunity to pursue projects independently while focusing on either film or animation. Time management is an essential skill for this course. Ideally, students will have the tenacity to stick to their ideas and conclude the semester with three to five finished pieces. Students work on Macintosh computers, using industry-grade software. *Owning a digital camcorder is not a prerequisite. Prerequisite: Introduction to Film. May be taken for credit more than once. 1.5 units.*

### ■ MEANING & MEDIA: FALL & SPRING SEMESTERS

Students develop a language for constructive critique and a sophisticated level of media literacy. This theoretical and creative course looks at religious, cultural, political and historical representations of good versus evil, normal versus abnormal, and us versus them. Students will create visual works that may use Photoshop, iMovie HD and Final Cut X, as well as traditional art media. This one-semester elective is offered in conjunction with the Religion & Philosophy Department. *Students may take this course to meet either their fine arts requirement or religion & philosophy requirement, but not both. 1.5 units.*

### ■ FUNCTIONAL DESIGN: SEMESTER

Functional design comprises three major projects and several smaller ones based around the concepts of brainstorming, iteration, testing and evaluation. Among the projects that students work on are an educational interactive experience designed for preschoolers, a concept for a new school building on campus, and a capstone that they investigate on their own or as part of a small team. This is an atypical fine arts course offering that is more about studying, building, and designing products and systems through scientific and aesthetic processes rather than through a fine arts lens. *1.5 units.*

## Three-Dimensional

### ■ CERAMICS 1, 2: SEMESTER

The goal of Ceramics is to expose students to the process of ceramic art making. Students will make hand-built, wheel-thrown and sculptural pieces, as well as learn to glaze their projects using high-temperature and Raku glazes. *1.5 units.*

### ■ ADVANCED CERAMICS: SEMESTER

Advanced Ceramics is a continuation of the basic course and focuses on creating more complicated forms, appendages to pots (spouts, lids, knobs and handles), and refined claymaking techniques. Students will work on refining the form, shape, height and weight of their pots. In addition to experimenting with glazes, students are encouraged to employ decorative techniques such as faceting, scraffito, stamping, texturizing, carving and incising. Successful completion of the course requires a sketchbook. *Prerequisite: Ceramics 1. 1.5 units.*

### ■ SCULPTURE/CERAMICS: SEMESTER

In the sculpture/ceramics course, students experience various sculpting techniques and learn to express themselves in three-dimensional formats. Projects utilize numerous techniques (including carving, molding, modeling, assembling, constructing and 3D printing) and several materials (including plaster, clay, paper, metal, wire, Paris-craft or found objects). *This course may be taken more than once for credit. 1.5 units.*

## Advanced Placement & Independent Study Opportunities in Fine Art

### ■ ADVANCED PLACEMENT (AP) ART HISTORY 1: SURVEY OF ART HISTORY (FULL YEAR)

Art History is the study of a visual culture that reflects complex social, economic, religious and political factors. Students electing AP Art History will engage the material in depth, learning specific characteristics and stylistic traits of 250 seminal works of art. Evaluation will be based on examinations, oral presentations and projects. Previous background in history, such as United States History and/or European History is helpful. *Three units.*

### ■ ADVANCED PLACEMENT (AP) STUDIO ART PORTFOLIO: FULL YEAR

AP Portfolio is a college-level course in which students prepare art portfolios for submission to the College Board's Studio Art 3D, 2D or Painting/Drawing Design Portfolio. The course is based on completing the three sections of the portfolio: Breadth, Concentration and Quality. In all, students create approximately 24 original works that demonstrate mastery of materials and techniques, as well as a strong personal style and point of view. Students should expect to spend considerable time outside of class preparing their work for submission in May. *By permission of the instructor only. Three units.*

### ■ INDEPENDENT STUDY IN ART: SEMESTER

Independent study offers an opportunity for advanced and highly motivated students to work on special projects not normally within the scope of the art curriculum. Individual programs of study and course obligations will be developed in conjunction with fine arts department faculty. *Prerequisite: Previous study in the area in which independent study is to be undertaken. Permission & approval of the independent study by the teacher & department chair. 1.5 units.*

# Performing Arts

## ■ IMPROV: SEMESTER (NOT OFFERED IN 2019-2020)

Improv will cover the fundamentals of unscripted performance through exercises in listening, spontaneity, agreement and character development. Experienced actors will gain a valuable new skill set, while those without stage experience will build confidence and empathy as they challenge themselves to think quickly and react authentically onstage. The class will travel to see at least one professional improv show, and the semester will culminate with a public performance composed of a combination of short-form games (à la *Whose Line Is It Anyway?*) and long-form improv. *1.5 units*

## ■ THEATER 1: SEMESTER

The course is designed to teach the rudiments of acting. A primary focus is the development and interpretation of a character through use of body, voice and imagination. Course work also entails the presentation of wide-ranging performance projects with emphasis on scene work. *1.5 units.*

## ■ THEATER 2: SEMESTER

This course allows students to explore and improve their performance techniques. A primary focus is the development and interpretation of character through script analysis into dramatic presentation. Course work entails the presentation of a wide range of performance pieces from classical to modern. The goal of this course is for the student to develop an understanding of thousands of years of theatrical traditions and break away from simply playing in the style of realism. This course will focus a great deal on what the class as a whole can bring to a common understanding of different eras, from the Greeks to the present. *1.5 units.*

## ■ THEATER 3: THE THEATRICAL SELF: SEMESTER (NOT OFFERED IN 2019-2020)

This course explores the question of the self in any given text. Through script, historical and performance analysis, the actor is required to present his or her findings about the inner and outer roles of a given character. The creation of a dynamic being is the culmination of each study, including a working understanding of historical style. Through a substantial performance piece, each actor will exhibit mastery of his or her subject. *Offered as an independent study only. 1.5 units.*

## Music: General Classroom

Music offerings at Blair are scheduled into the academic day, allowing more structured time for rehearsal. There are offerings for academic credit in both choral and instrumental music. These courses are graded. Other offerings, not for credit, are scheduled into the school day and may, in certain circumstances, meet part of the School's performing arts requirements.

### ■ ADVANCED PLACEMENT (AP) MUSIC THEORY: FULL YEAR

This course is designed for the serious music student who has clearly mastered knowledge of scales, key signatures and pitch/rhythm reading, and has the ability to recognize and perform pitch and rhythm patterns. To be admitted to the class, students must demonstrate this knowledge through their work in one of Blair's performance ensembles or by passing an exam before the fall semester begins. Information regarding the exam is available from Blair's Director of Instrumental Music. *Prerequisites: In addition to the aforementioned exam, at least one year's study of an instrument or voice. By permission of the instructor only. Three units.*

### ■ DIGITAL MUSIC: SEMESTER

Students will create, record and produce their own music in this course. By the end of the semester, they will have learned how to use music software including Logic ProX, Finale and GarageBand to compose songs in various popular styles, and produce digital- and professional-quality recordings in the audio recording studio in Blair's Chiang Center for Innovation and Collaboration. *Preference given to seniors. 1.5 units.*

### ■ INDEPENDENT STUDY IN MUSIC: SEMESTER

Students with prior background in music are offered an opportunity to work on individual projects, the scope and content of which will be structured in cooperation with music faculty members. Academic credit will be given for the successful completion of a music independent study. *Prerequisites: Prior study in the project area, as well as permission of the teacher & department chair. 1.5 units.*

### ■ APPLIED MUSIC/DANCE INSTRUCTION: SEMESTER

Music and dance lessons are offered to instrumental, dance or vocal students by professional performers. Intermediate or advanced students are expected to participate in recitals and other performances and activities. Minimum participation is one term. *This is an extra-fee course and is not given for credit. Four-year students who, in their junior or senior year, successfully complete a full school year of consecutive lessons (fall, winter, spring) may substitute this for one semester of the department requirement. 1.5 units.*

## Choral Music

### ■ BLAIR ACADEMY SINGERS: FULL YEAR

This is the School's main vocal performing ensemble. The majority of its performances take place on or near campus (at seasonal concerts and festivals, as well as Christmas Vespers, among many others). While the course meets during the school day, extended rehearsals prior to performances, often in the evening, will be an occasional requirement. Students may audition for an honors section of the group; for those selected, participation in the honors group will require some extra rehearsal time. *Three units.*

### ■ RELIGIOUS ROOTS IN CHORAL MUSIC: FULL YEAR

This course allows students to continue their participation in the Blair Academy Singers and meets the School's religion and philosophy requirement. The course adds homework

to the usual rehearsal time, work that takes the form of special lectures, assigned readings and viewings, written reflections, and—in the second semester—a final project that is presented to the entire group. *Open only to three- and four-year Blair seniors who will have participated in Singers during all their semesters at Blair. 1.5 units.*

#### ■ RELIGIOUS MUSIC OF THE WORLD: SEMESTER (NOT OFFERED IN 2019-2020)

In this course, students listen to and interpret music. Additionally, students examine the music of their own world, specifically focusing on the spiritual experience of music through the lens of various world religions. Students are encouraged to constantly talk about their beliefs and personal interpretations of music in class, which ultimately culminates in the examination of their own religion and sacred music. *This one-semester elective is offered in conjunction with the Religion & Philosophy Department. Students may take this course to meet either their fine-arts requirement or religion & philosophy requirement, but not both. 1.5 units.*

## Instrumental Music

Instrumental Music is open to all students who have at least three years of experience with an instrument and who wish to continue their study of music through ensemble playing. Ensembles may require extended rehearsals prior to performances, often in the evenings.

### FULL-YEAR ENSEMBLES

#### ■ SYMPHONY ORCHESTRA: FULL YEAR

This ensemble is available to all students who have at least three years' experience playing string, wind or percussion instruments. Students focus on various aspects of ensemble playing, which are studied primarily through our performance literature that includes a wide range of classical and contemporary genres. Performances include (but are not limited to) seasonal concerts, Christmas Vespers, and off-campus performances and field trips. Students may audition for an honors section of this ensemble; for those selected, participation in the honors group will require some extra rehearsal time. *Additional evening rehearsals prior to concerts are required. Three units.*

#### ■ JAZZ & ORCHESTRA: FULL YEAR

This section is designed for the wind, brass or percussion player who wishes to participate in a variety of instrumental ensembles—Jazz Ensemble, Chamber Orchestra and Symphony Orchestra. These students focus on many aspects of musicianship through the study of a variety of classical and jazz repertoire. *Performances include (but are not limited to) seasonal concerts, off-campus performances and field trips. Additional evening rehearsals prior to concerts are required. Three units.*

#### ■ JAZZ ENSEMBLE: FULL YEAR/REDUCED MEETINGS

Guitarists, bassists and pianists must audition for this ensemble, which comprises the rhythm section of Blair's Jazz Ensemble. The group's primary focus is the study of various styles within

the jazz genre and learning techniques for improvising and ensemble playing. Performances include (but are not limited to) seasonal concerts, off-campus performances and field trips. Additional rehearsals prior to concerts are required. The Ensemble meets two times each week for the full year. *1.5 units.*

#### ■ RELIGIOUS ROOTS IN ORCHESTRAL MUSIC: FULL YEAR

This seniors-only course runs concurrently with the Symphony Orchestra and Jazz Ensemble. The course, which meets the School's religion and philosophy requirement while allowing students to continue to participate in their chosen ensembles, adds homework to the usual rehearsal time in the form of special lectures, readings, viewings, written reflections and—in the second semester—a final project that is presented to the entire group. *Open only to three- & four-year Blair seniors who will have participated in an instrumental ensemble during all their semesters at Blair. 1.5 units.*

## SEMESTER ENSEMBLES

#### ■ CHAMBER ENSEMBLE: SEMESTER

This ensemble is available to advanced music students who are interested in working in chamber group settings. Similar to an independent study, students will meet with the instructor once or twice a week, and work independently two or three times a week. *Permission of the instructor required. 1.5 units.*

# HISTORY



## Department Requirements

Global Issues is required of all freshmen; Modern European History is required of all three- and four-year students and is taken in the sophomore and junior years, always preceding the required U.S. History course. Students entering Blair who have taken the first year of a two-year high school U.S. History course/requirement must complete the Modern European History course if they have not already taken a similar course. Depending on the nature of the U.S. History course at the former school, these students may have to complete the single-year U.S. History class at Blair.

### ■ GLOBAL ISSUES: FULL YEAR

This course focuses on a singular question for the entire year: How should the world respond to the challenges and opportunities of globalization? Topics include the changing demographics of the world, the rise of China and globalization of trade, energy and the environment, and recent history and current developments in the Middle East. In addition to a variety of texts, students follow current affairs in the region of study, attend lectures presented on Tuesday nights by the Society of Skeptics and read historical novels. A range of electronic media is used in instruction. Basic academic skills such as note taking, reading a newspaper, study techniques and writing are incorporated into the course, as are a number of geography and computer skills. *The course is required of all freshmen. Three units.*

### ■ MODERN EUROPEAN HISTORY: FULL YEAR

Most students will take Modern European History in the sophomore year, as much of its material serves as a foundation for the U.S. History requirement. The course is a thematic-focused survey of European history from the Renaissance to Cold War. It focuses on major historical themes and the development of student skills (such as note taking and essay writing) through various student projects and activities, including a research paper. Documentary and commercial films, literature and primary sources further complement study. *Three units.*

### ■ U.S. HISTORY: FULL YEAR

This course surveys and analyzes significant events and issues in United States history, beginning with the first colonial settlements. The main goals are for students to develop a sense of historical continuity; to appreciate the interrelationships of past, present and future; to be aware of current issues facing the United States; and to engage in the practice of critical reading and thinking. Special attention is given to the development of public speaking, research and writing skills. Students will produce a significant research paper on a topic of their choosing. *Prerequisite: Modern European History or its equivalent. Three units.*

### ■ ADVANCED PLACEMENT (AP) U.S. HISTORY: FULL YEAR

Designed to approximate an introductory college course in United States history, this highly rigorous course prepares students to take the AP examination. Successful completion of this exam can result in college credit. In addition to acquiring a firm knowledge of historical themes and basic chronology, students will develop their analytical abilities. This course demands that students are self-motivated and willing to actively participate in class discussion. *Prerequisite: Modern European History or its equivalent.*

*Departmental permission is needed for admission to this course. Three units.*

### ■ **ADVANCED PLACEMENT (AP) EUROPEAN HISTORY: FULL YEAR**

AP European History is rigorous in terms of its assigned reading, essay writing and analysis of basic historical source documents. Wide-ranging class discussion and debate, independent reading of current events and specific preparation for the May AP examination will be pursued throughout the year. *Prerequisites: This course follows Modern European History and AP U.S. History. Students receiving a 3 or better on the AP U.S. History exam automatically qualify for this course. All others will need departmental permission. Three units.*

### ■ **ECONOMICS HONORS: HISTORY & THEORY (FULL YEAR)**

The course is taught at an advanced level and aims to familiarize the student with the complex processes providing for the material well-being of society. Main concerns are with the production and distribution of goods and services necessary for the survival and enjoyment of mankind. Students survey the history of economic thought and study the “giants” from the past (e.g., Adam Smith, Karl Marx and John Maynard Keynes) before moving on to analyze the complexities of our modern capitalist system. Urban problems, healthcare issues, Social Security constraints, further integration of the European Union and more will be examined over the course of the year. The extensive use of film, guest lecturers and a major research paper are highlights of the course. *Three units.*

### ■ **INTELLECTUAL HISTORY HONORS: EXISTENTIALISM & MODERN THOUGHT (FULL YEAR)**

Using a variety of texts, this course explores the role of the individual in shaping historical narrative and asks fundamental questions about the good, the beautiful and the true. In doing so, we seek to address how these ideas and questions are reflections of the historical narrative of their times. The class revolves around readings, films, discussion and writing. Students are expected to be active participants in each class and will be graded accordingly. Authors include Sartre, Camus, Kierkegaard, Nietzsche, Melville, Dostoevsky, Fromm and Arendt. *Three units.*

### ■ **ADVANCED PLACEMENT (AP) COMPARATIVE GOVERNMENT/POLITICS: FULL YEAR**

AP Comparative Politics will provide students with an understanding of the diversity in world political systems, as well as an introduction to the frameworks political scientists use to compare those systems. Topics of focus will be each nation’s political structure and recent changes in the political arena, society and citizenry. The course will cover political behavior and the sources and outcomes of authority and power. Students will consider the impact of culture, especially religion, on a country’s political system, as well as its economic and public policies. The class also spends time studying an overview of United States government—as a framework for understanding government and also because it is unavoidably a bias point for American citizens. At the conclusion of the course, students will be required to take the AP Comparative Politics examination. *Three units.*

**■ 1968: A YEAR IN CRISIS (NOT OFFERED IN 2019-2020)**

The events of 1968 were instrumental in defining our modern notion of the United States: war in Vietnam, civil unrest and riots in major U.S. cities, student protests on university campuses, civil rights and equality movements, the assassinations of MLK and RFK, and the chaos of the presidential election that fall. Each of these events led to significant changes in American life and impact how we react to destabilizing moments in our modern life. Through film, fiction, news reports and historical analysis, we ask fundamental questions about what we can learn from the crisis of American identity in 1968. *Prerequisites: Completion of a course in U.S. History or departmental approval. 1.5 units.*

**■ HISTORY OF WOMEN'S RIGHTS (NOT OFFERED IN 2019-2020)**

One hundred seventy years ago, two women organized a convention to “discuss the social, civil and religious condition and rights of woman” in Seneca Falls, New York, and the Women’s Rights Movement was born. Unfortunately, it would take another 72 years before the 19th Amendment was adopted, guaranteeing American women the right to vote, and women continue to face discrimination (in various forms) in the U.S. and throughout the world. This course examines the history of the Women’s Rights Movement, from its birth in Seneca Falls through the present. Students study the interplay between the abolitionist, temperance and suffrage movements, while exploring divisions within the Women’s Rights Movement itself. Students also study those who have opposed the Women’s Rights Movement and discuss the obstacles that remain for women in 21st-century America. *Prerequisites: Completion of a course in U.S. History or departmental approval. 1.5 units.*

**■ RACE IN AMERICA: FULL YEAR**

This course examines the question “What is race?” through the lens of American history. Other questions addressed include: How have definitions of whiteness changed over the course of American history? How do racial classifications in American differ from those elsewhere? Is race biological or cultural? Issues considered include immigration, labor, crime, wealth, education, and ever-shifting legal identifications along racial and ethnic lines. Discussions are wide-ranging, drawing on a diverse array of readings and independent student review of current events. *Prerequisites: Completion of a course in U.S. History or departmental approval. Three units.*

**■ AMERICAN GOVERNMENT: CONSTITUTIONAL LAW (FULL YEAR)**

This introduction to the U.S. Constitution through the analysis of landmark Supreme Court opinions focuses on a host of controversial topics, including freedom of speech, freedom of religion, abortion, the death penalty, affirmative action, search-and-seizure law, gun control, gay marriage and many more. There is also a heavy emphasis on current events, derived from *The New York Times*. *Prerequisites: Completion of U.S. History. Preference given to students selecting the full-year course, of which this is the fall semester; preference given to seniors and to those seniors who have also completed a course in European History. Three units.*

**■ ADVANCED PLACEMENT (AP) MICROECONOMICS: FULL YEAR**

The full-year AP Microeconomics course provides a thorough understanding of the principles of economics that apply to the functions of individual decision makers, both consumers and producers, within the larger economic system. The course, which prepares students for the AP Microeconomics exam, places primary emphasis on the nature and functions of product

markets, and includes the study of factor markets and of the role of government in promoting greater efficiency and equity in the economy. *Prerequisites: Completion of U.S. History or its equivalent; enrollment in a mathematics course and completion of Precalculus with a 4.5 or better GPA. Three units.*

■ **AMERICA AT WAR: CONFLICTS THAT SHAPED A NATION: THE WORLD WARS (SEMESTER)**

This elective examines the history and literature of World War I and World War II, and explores how these wars helped redefine America's role in the world. The class studies the history of the wars and the people who fought them, both on the battlefields and the home front. Source materials include contemporary literature, speeches, art and music, as well as modern literary and cinematic treatments of these major conflicts. Students also study the means by which Americans and Europeans have chosen to memorialize the wars and to honor the men and women who fought and died for their countries. Our interdisciplinary approach is designed to lead to a rich appreciation of the lasting legacy left by the 20th-century world wars. *This course is team-taught by the History & English Departments. 1.5 units.*

■ **TWENTY-FIRST-CENTURY CONFLICTS: SEMESTER (NOT OFFERED IN 2019-2020)**

This course examines issues and challenges facing the United States and the world in the 21st century, focusing primarily on the rise of failed states in Syria and Venezuela, as well as the nuclear standoff between North Korea and the U.S. Students explore these conflicts and issues in relation to each other and in comparison to the conflicts of the Cold War and the 20th century. *Preference given to seniors. May be taken concurrently with U.S. History. 1.5 units.*

# LANGUAGES



MRS. JOYCE LANG, CHAIR

## Department Requirements

To graduate, students must complete 6 units of study in one foreign language. This requirement may be waived for students for whom English is not a native language. In French and Spanish, honors designations are available at the second, third and fourth levels.

### ■ SPANISH 1, SPANISH 2 & SPANISH 2 HONORS: FULL-YEAR COURSES

The first two years of Spanish support and develop the five Cs of language study: communication, culture, connections, comparisons and communities. Components of the program, including interactive lessons and other resources, offer a variety of materials, many of which are technology-based. These address and support a range of student strengths, while encouraging and reinforcing readiness skills, critical thinking, creative problem solving and the ability to work cooperatively in the target language. The two-year sequence introduces and emphasizes all basic grammar. Vocabulary is thematically organized, emphasizing traditional and everyday topics. Speaking and listening skills, and, later, reading and writing, are the principal focus. Spanish 2 Honors will advance at a faster academic pace, involve more homework and include higher expectations of class participation. *The Language Department will determine recommendations. Three units each.*

### ■ SPANISH 3 & SPANISH 3 HONORS: FULL YEAR

These courses reinforce the grammar skills and basics of the language developed in the first two years of study, while also seeking to develop communication almost entirely in the target language. Reading provides exposure to interesting background of Hispanic cultures through legends and historical material from throughout the Spanish-speaking world. Technology continues to be a major component of the program. Vocabulary activities provide the fundamentals useful for interaction on a daily basis. Creative writing projects each semester allow students to focus on writing skills as they demonstrate their grasp of multiple tenses, moods and grammatical structures. The difference between the honors and regular sections involves the length and nature of various assignments, choice of readings and expectations for proficiency. *Prerequisite: Spanish 1 & 2. Placement by current teacher. Three units, either course.*

### ■ SPANISH 4 & SPANISH 4 HONORS: FULL YEAR

These courses seek to improve further the proficiencies developed in intermediate Spanish classes. Spanish will be used almost exclusively in class, for it is expected that students at this level will be committed to developing fluency. Readings will involve excerpts from great writers of Hispanic literature, as well as from essays and articles intended for Spanish-speaking populations. Throughout the year, students will be assigned research, projects and presentations pertaining to a range of social and political topics. Native-language films provide exposure to the varying accents and dialects of the Spanish-speaking world. Intense preparation for the AP language exam will be a principal focus for all honors-level students. All students at this level, regardless of designation, are expected to have mastered the essentials of the language prior to beginning the

course. Students must be committed to functioning at an advanced level in each of the four skill areas: reading, writing, speaking and listening. *Three units.*

#### ■ HONORS SPANISH LITERATURE & CONVERSATION: FULL YEAR

This course is intended for students who have taken Spanish 4, 4H or 4AP. Students should be strong speakers and decent writers of the target language who maintain an eagerness to explore a range of prose and poetry from Spain and Latin America, and a desire to grow in their knowledge and understanding of the cultures of Spain and the Americas. Selected authors include Martí, Allende, Lorca, Marquez, Neruda, Borges, de Burgos, Cisneros and Fuentes, among others. Discussion and writing are in the target language, and students will be expected to analyze and comment upon the works at hand. Conversation around the history and cultures of the Spanish-speaking world will take precedence in the spring term. *Prerequisites: As noted in course description. Three units.*

#### ■ ADVANCED PLACEMENT (AP) SPANISH LANGUAGE & CULTURE: FULL YEAR

AP Spanish Language and Culture is an advanced course focusing intensely on communication through three modes: presentational, interpretive and interpersonal. The course is divided into six cultural themes that provide structure to our inquiry and is designed around the curriculum provided by the College Board. Students will be expected to take the AP exam at the end of the year. *Prerequisite: The satisfactory completion of Spanish 4 or 4H, or the permission of the teacher & department chair. Three units.*

#### ■ ADVANCED PLACEMENT (AP) SPANISH LITERATURE & CULTURE: FULL YEAR (NOT OFFERED IN 2019-2020)

AP Spanish Literature and Culture is an advanced course covering Spanish-language literature from Spain, Latin America and the United States. Three modes of communication (presentational, interpretive and interpersonal) and five themes (communication, communities, comparisons, connections and cultures) provide a framework for study. Students read many authors, including Borges, Rulfo and Darío. The AP exam is required. *Prerequisite: The satisfactory completion of AP Spanish Language & Culture or permission of the teacher & department chair. Three units.*

#### ■ FRENCH 1 & FRENCH 2: TWO FULL-YEAR COURSES

The series *Espaces* uses a communicative approach to French as it is spoken in the Francophone world. Students develop proficiency in listening to, speaking, reading and writing French as they work together in paired and group activities; in addition, students acquire cultural sensitivity and awareness of everyday life of French-speaking peoples. Proficiency activities serve as a catalyst for the authentic use of French, as students begin to internalize and master the language. Students with exceptional ability and interest may be invited to receive an honors designation, which would require further commitment to additional work in French. *Three units per course.*

#### ■ FRENCH 3 & FRENCH 3 HONORS: FULL YEAR

Third-level French will use the *Imaginez* program, through which students develop cultural

understanding about how people in French-speaking regions live, act, think and value. Students continue to build upon the communicative tasks and skills of former courses and also acquire skills allowing them to act independently and successfully in new cultural situations. This course may be taken for honors designation/credit by meeting increased expectations for homework and class work and through the completion of more-demanding assessments. *Prerequisite: French 1 & 2. Three units.*

#### ■ FRENCH 4, FRENCH 4 OR 5 HONORS & FRENCH 4 OR 5 AP: FULL YEAR

In order to develop strong proficiency in speaking, listening, reading and writing, the course prepares students to function within a French-speaking community. Readings from literature and current articles provide the basis for role-plays, debates and discussions. Video clips, films and recorded materials expose students to a wide range of accents and views of the French world today. The AP designation is an option for approved students who undertake the necessary extra preparation for the language exam. *Prerequisite: Recommendation of current teacher. Three units.*

#### ■ CHINESE 11: FULL YEAR

Chinese 11 is a basic, introductory course in standard Chinese (Mandarin) intended for students who have had no exposure whatsoever to the languages of the area. The course guides students through the development of four basic skills (aural comprehension, speaking, reading and writing), while also emphasizing functional use of language. Instruction begins with learning pinyin, the Romanization system of Chinese pronunciation. Students then progress to learning vocabulary, grammar and how to write 200 Chinese characters. *Three units.*

#### ■ CHINESE 12: FULL YEAR (NOT OFFERED IN 2019-2020)

Chinese 12 moves at a faster pace than Chinese 11, and students will most likely cover the work necessary to be placed in Chinese 3 in the following year (though such placement is at instructor discretion). In some cases, further study may be required. Students should enroll in Chinese 12 if they have any exposure to the speaking of the language (regular classroom or occasionally through family). *Prerequisite: Chinese 11. Final placement may be adjusted through the year and will be at the discretion of the instructors. Three units.*

#### ■ CHINESE 2: FULL YEAR

This course is a continuation of the work begun in Chinese 11. Learning advances beyond the survival level to include more extensive classroom interaction and systematic grammar development. Students are asked to use learned vocabulary to express their own thoughts, respond to simple statements and maintain face-to-face conversations dealing with daily life. Students learn to write their thoughts in sentence and paragraph form, as well as master another 200 characters. *Prerequisite: Chinese 12. Three units.*

#### ■ CHINESE 3 & CHINESE 3 HONORS: FULL YEAR

While continuing to strengthen the essentials of grammar, syntactical structure and vocabulary, this course emphasizes the ability to communicate effectively with native speakers. The class textbook is *Integrated Chinese: Level 1, Part 2*. In addition to textbook and project work related to Chinese history and literature, students perform dialogues in class and continue to develop

their writing skills. The Chinese 3 Honors course covers the material in depth, focusing more on characters and vocabulary, with higher expectations in terms of spoken and written performance. *Prerequisite: Chinese 2. Three units.*

#### ■ CHINESE 4 & CHINESE 4 HONORS: FULL YEAR

This course for the advanced student concentrates on continuing to expand vocabulary and grammar. Students read and translate articles from Chinese sources (newspapers, poems and websites). They participate in a month-long research project on Chinese dynasties and present a PowerPoint presentation in Chinese. The Chinese 4 Honors course covers the material in more depth, focusing more on characters and vocabulary, with higher expectations in terms of spoken and written performance. *Prerequisite: Chinese 3 or Chinese 3 Honors. Three units.*

#### ■ CHINESE 5: ADVANCED PLACEMENT (AP) CHINESE LANGUAGE & CULTURE (FULL YEAR)

This course is designed to prepare advanced students for the AP Chinese language and culture exam. Students develop their skills in reading, writing, listening and speaking by reading and discussing news articles about Chinese events and culture, engaging in group projects and presentations, and analyzing literature and poetry. This course is conducted completely in Chinese. Students will sit for the AP exam in May. *Prerequisite: Chinese 4 or Chinese 4 Honors. Three units.*

#### ■ LATIN 11 (LATIN 1): FULL YEAR

Latin 1 introduces students to fundamentals of the Latin language and its history. Students read adapted stories in Latin of increasing complexity designed to introduce them to the history and culture of ancient Rome. The course emphasizes frequent comparisons between English and Latin grammar, as well as English derivations and vocabulary roots. Thus, through their study of Latin, students increase their proficiency in both languages and deepen their awareness of language as a medium for thought and communication. Films, projects and online activities are also incorporated. *Three units.*

#### ■ LATIN 21 (LATIN 2): FULL YEAR

This second-year course emphasizes the completion of the study of Latin grammar, the broadening of students' Latin vocabulary and knowledge of English derivatives. Continued study of mythology and history will be supplemented by films and research projects. In the second semester, students will begin to translate authentic Latin by such authors as Pliny and Ovid. *Three units.*

#### ■ LATIN 31 (LATIN 3): FULL YEAR

This course is devoted to completing the students' understanding of the more complex elements of Latin grammar and syntax and to developing the ability to read unadulterated Latin. Students translate Caesar's *Commentaries On The Gallic Wars*, a work useful for both its clarity of prose and its considerable political and historical interest. Students then begin a detailed reading of Cicero's *First Catalinarian Oration*, with attention paid to the development

of oratory in the Roman world. The year concludes with an introduction to Latin poetry through the works of the late Republican poet C. Valerius Catullus. *Prerequisite: Latin 11, 21 & teacher approval. Three units.*

#### ■ LATIN 41 (LATIN 4): FULL YEAR

This course is an advanced reading course in which students deepen their knowledge of the Latin language and Roman culture through close study of one or more influential texts. Authors may include Virgil, Horace, Ovid, Sallust, Tacitus, Pliny and Petronius. In addition to translation, students apply historical and literary analysis to their readings. *Teacher approval required. Three units.*

#### ■ LATIN 51 (LATIN 5 & ADVANCED PLACEMENT LATIN): FULL YEAR

Latin 5 is an advanced literature course for students who have completed the normal four-year Latin curriculum or for exceptional students who wish to pursue a more rigorous course of study. Consequently, authors to be read vary depending on student interest. Possibilities include Virgil, Horace, Seneca, Sallust, Plautus and more. Students will be expected not only to translate at a high level of accuracy, but also to engage the text using all the tools of traditional classical philology. *Teacher approval required. Three units.*

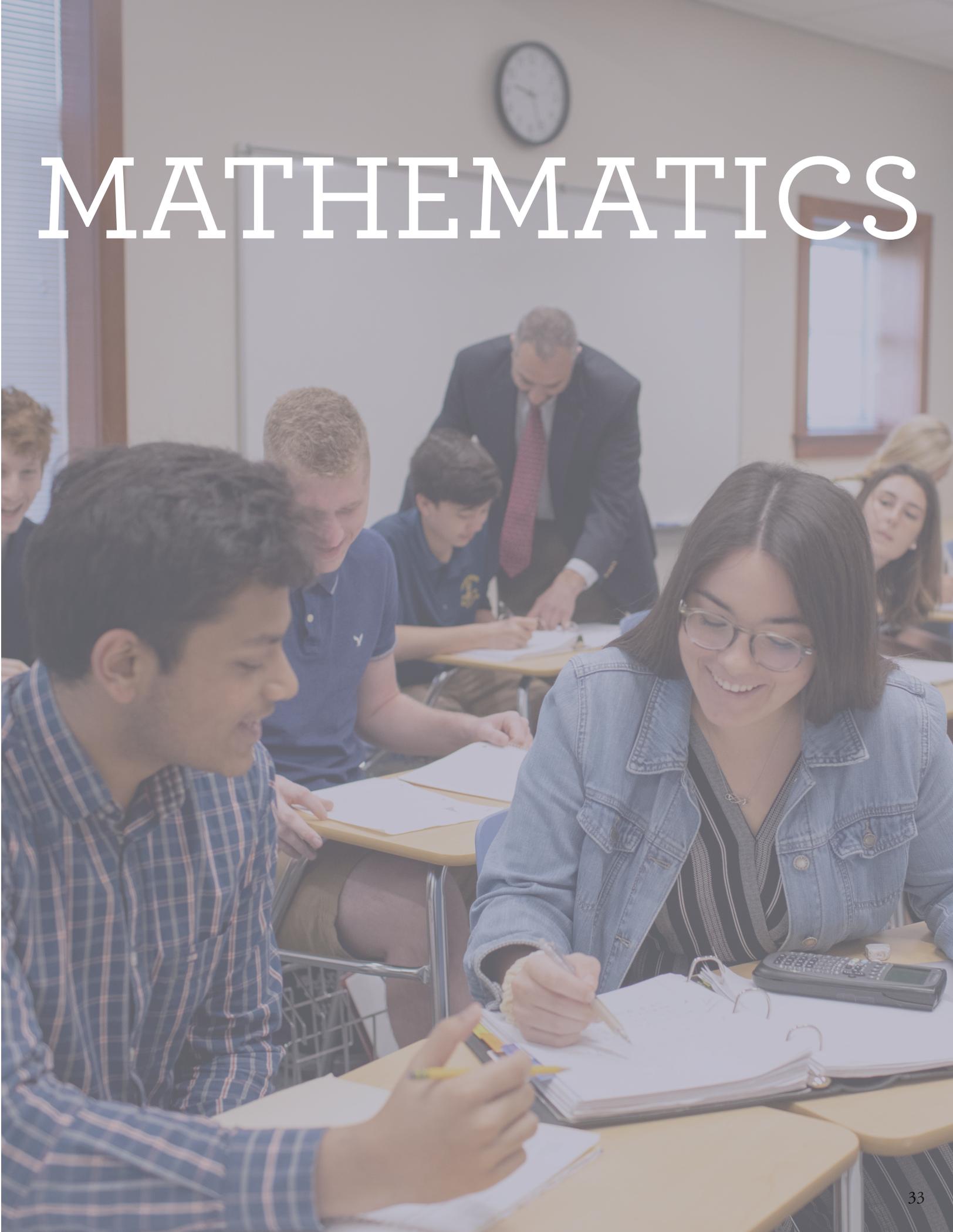
#### ■ ANCIENT GREEK 1: FULL YEAR

This course introduces students to the Ancient Greek spoken in Athens at its height (530-350 BCE). The class centers on creating a strong foundation of grammar and vocabulary in the language while learning about the culture of those who spoke it millennia ago. Students should be prepared to read unadulterated Ancient Greek from authors such as Xenophon, Plato and Herodotus. While a background in Latin is helpful, it is not required. *Prerequisites: Completion of at least the third level of study of a non-English, non-native language; completion of at least 9 units of study in the same non-English language at the 4.5 (or its equivalent) level or better in each year. Three units.*

#### ■ ANCIENT HISTORY: GREECE & ROME (FULL YEAR)

This class offers a chronological survey of major periods in Ancient Greek and Roman history, from the Mycenaean Bronze Age and the emergence of the polis, to the fall of the Roman Republic and its transformation into the leading power in the Ancient Mediterranean. Some of the major questions of the course include: What is democracy and citizenship? Is there such a thing as “Western” civilization? How does antiquity continue to influence the modern world? The course will focus on analysis and interpretation of a wide variety of ancient evidence with emphasis on primary sources, including historical/literary texts, inscriptions, art, and archaeological material. No experience in Latin or Greek necessary. *Prerequisites: Modern European History & U.S. History or their equivalents. Three units.*

# MATHEMATICS



MR. JOHN PADDEN, CHAIR

## Department Requirements

### MATH 11, MATH 21, MATH 31 OR THEIR EQUIVALENTS

**Placement:** Returning students select their courses for the subsequent academic year in February. Placement in those courses is dependent on the student's achieving a particular year mark in their current course. New students are placed over the summer by the Dean of Academics in conjunction with the department head. Students are generally permitted to undertake summer work to advance their program, with the sole exception that summer work in Geometry will not be recognized. Students should discuss their plans with the department head to receive approval and to understand the parameters under which any work will be done.

#### ■ MATH 11: ALGEBRA 1 (FULL YEAR)

Algebra 1 is a full-year introduction to algebra. Students work with radicals, rational expressions, factoring and the quadratic formula in order to develop the tools needed to solve linear and quadratic equations. Linear and polynomial functions and their graphs are studied extensively, as are linear combinations and linear equalities. *Placement by department. Three units.*

#### ■ MATH 21: GEOMETRY (FULL YEAR)

Geometry is a full-year course stressing both the discovery of postulates and theorems, as well as applications. In the first term, the postulates and theorems of Euclid, revised and restated to agree with contemporary mathematical thinking, form the basis for the study of geometry as a mathematical system. Students make extensive use of The Geometer's Sketchpad software to make and test conjectures. Later in the year, the emphasis is on applications, including ratios and similarity, triangle trigonometry, circles, areas and volumes. *Prerequisite: Math 11. Three units.*

#### ■ MATH 22: GEOMETRY HONORS (FULL YEAR)

Geometry Honors is an accelerated course in Euclidean geometry. The course follows the same syllabus as the regular section, but problems requiring more creativity are investigated in the course. Students need a solid background in the algebra of linear and quadratic equations prior to taking the course. Returning Blair students with a year mark of 5.5 or higher in Math 11 may select this course if they evince a strong interest in mathematics. *Prerequisite: Math 11. Three units.*

#### ■ MATH 30: ALGEBRA 2S (FULL YEAR)

Open to juniors and seniors only, Algebra 2S is designed for the junior or senior who has struggled with algebraic concepts. The topics studied cover most of those in the Algebra 2 syllabus, with an emphasis on factoring, solving linear and quadratic equations, and working with radicals, exponents and functions. The instructor works very closely with students to improve their confidence in mathematics. Extensive group work is intended to lead students to enjoy more fully their study of mathematics. *Prerequisite: Math 11, Math 21 & department approval. Three units.*

■ **MATH 31: ALGEBRA 2 (FULL YEAR)**

The course reviews and extends the study of algebra begun in Math 11, with the expectation that students have mastered the fundamentals of geometry. Students learn to solve polynomial equations over the set of complex numbers, study rational and exponential functions, learn to manipulate logarithms and investigate circular trigonometry. *Prerequisite: Math 11 & Math 21 or 22. Three units.*

■ **MATH 32: ALGEBRA 2 HONORS - AB (FULL YEAR)**

Algebra 2 Honors follows a syllabus similar to that of Algebra 2, but with much greater rigor. The standard Algebra 2 curriculum is completed early in the spring term so that the remainder of the year can be devoted primarily to intermediate topics in conic sections and sequences and series. Students in Algebra 2 Honors (AB) should expect to progress to Precalculus Honors (AB) the following year with placement in AB Calculus the year after that. Returning Blair students must earn a year grade of 4.5 in Geometry Honors or a year grade of 5.5 in Geometry in order to be placed into the course. *Prerequisite: Math 11, Math 22 & placement by the department. Three units.*

■ **MATH 33: ALGEBRA 2 HONORS - BC (FULL YEAR)**

Algebra 2 Honors (BC) is the first course in a three-year sequence leading to BC Calculus. Students study trigonometric and logarithmic functions, conic sections, sequences and series, all with an eye to the calculus that such study supports. Limits inform the course throughout the year. The fast pace and level of rigor of the course are appropriate for those students who plan to pursue engineering or pure or applied math in the future. Returning Blair students must earn a year grade of 5.5 in Geometry Honors in order to be placed into the course. *Prerequisite: Math 11, Math 22 & placement by the department. Three units.*

■ **MATH 41: COLLEGE ALGEBRA (FULL YEAR)**

College Algebra is a bridge course between Algebra 2 and Precalculus for students who are likely to need an extra year of background preparation before they enter Calculus in the future. Students review linear, polynomial and trigonometric functions first encountered in previous algebra courses. In addition, matrices, descriptive statistics, and sequences and series are taught in preparation for important standardized tests. *Prerequisite: Math 31 or Math 30 with departmental approval. Three units.*

■ **MATH 51: PRECALCULUS (FULL YEAR)**

Precalculus is the final course in a student's preparation for non-Advanced-Placement (AP) Calculus. Topics studied include linear, quadratic, polynomial, rational, logarithmic and trigonometric functions. In addition, students study sequences and series and conic sections during the spring semester. *Prerequisite: Math 32 or Math 31 & departmental approval. Three units.*

■ **MATH 52: PRECALCULUS HONORS - AB (FULL YEAR)**

Precalculus Honors (AB) follows the same syllabus as that of Math 51. Additional topics include

sequences, series and limits. Students successfully completing this course will be competent to take Advanced Placement calculus (AB) the following year. To this end, problems requiring significant creative thought and extensive algebraic rigor will be practiced frequently. Returning Blair students must earn a year grade of 4.5 in Algebra 2 Honors (AB) or a year grade of 5.5 in Algebra 2 in order to be placed into the course. *Prerequisite: Math 32 & department approval. Three units.*

■ **MATH 53: PRECALCULUS HONORS - BC (FULL YEAR)**

Precalculus Honors (BC) is the first year of a two-year sequence leading to the Advanced Placement (AP) Calculus (BC) exam in May of the following year. It is open to underclass students only and covers elementary functions in depth, including exponential, logarithmic, polynomial, rational and trigonometric functions. Emphasis is placed on graphing. In addition, topics from triangle trigonometry, sequences and series, polar coordinates and limits are studied. In the spring, students follow the AP syllabus and study differential calculus, including continuity of functions; the definition of the derivative; differentiation algorithms; relative and absolute extrema problems; and related rates of change. Returning Blair students must earn a year grade of 5.0 in Algebra 2 Honors (BC) or a year grade of 5.3 in Algebra 2 Honors (AB) in order to be placed into the course. *Prerequisite: Math 32 & department approval. Three units.*

■ **MATH 61: ADVANCED PLACEMENT (AP) CALCULUS (FULL YEAR)**

Calculus is a non-AP course in differential and integral calculus of a single variable. The pace of the course and the extent of the material covered are dictated by the ability of the students. The focus of the course is on applications of differentiation (related rates, applied minimum and maximum problems) and integration (area under a curve, volumes of solids of revolution and rectilinear motion) rather than mathematical theory. It is not expected that this course will substitute for the first semester of calculus at the university level. *Prerequisite: Math 51 or Math 52 & department approval. Three units.*

■ **MATH 62: ADVANCED PLACEMENT (AP) CALCULUS - AB (FULL YEAR)**

Calculus AB closely follows the syllabus prescribed by the College Board for Advanced Placement Calculus. The material covered is fundamental to the first semester of a traditional college calculus program. Included in the course is a study of both the theory and the practical applications of differential and integral calculus. Trigonometric, exponential and logarithmic functions will be studied extensively. Considerable emphasis will be placed on graphing and the TI-89 will be used extensively. Students are expected to take the AP exam in May. *Prerequisite: Math 52, Math 53 or Math 61 & department approval. Three units.*

■ **MATH 63: CALCULUS - BC (FULL YEAR)**

BC Calculus is a continuation of Math 53 (AP Calculus A). Students who complete BC Calculus will have learned the equivalent of an entire year of college calculus. The course includes all the material normally studied in AB Calculus (differential and integral calculus of a single variable), as well as sequences and infinite series, parametrically defined curves and polar functions. In addition, several theoretical topics not required by the College Board's syllabus are presented to

provide an overview to the foundations of rigorous mathematics. Students in the course are expected to take the AP exam in May. Summer work is required of all students enrolling in Math 63. *Prerequisite: Math 53 or Math 62. Three units.*

■ **MATH 64: ADVANCED STATISTICS (FULL YEAR)**

Advanced Statistics provides a high-level introduction to the major concepts employed in collecting and analyzing data. Describing patterns, sampling, random probability and statistical inference form the core of the topics investigated in the course. At the end of the year, students may sit for the Advanced Placement Statistics exam, although they are not required to do so. The course may be taken only as a second math class if a student has not already passed a course in Calculus. *Prerequisite: Math 33, Math 52, Math 53 or any course numbered 62 or higher. Three units.*

■ **MATH 71: MULTI-VARIABLE CALCULUS (FULL YEAR)**

Multi-Variable Calculus is the equivalent of a third-semester college calculus course. It expands upon the study of calculus of a single variable that forms the basis of the BC Calculus curriculum. Topics include partial differentiation, multiple integration and Green's Theorem. *Prerequisite: Math 63 & departmental approval. Three units.*

■ **MATH 72: NUMBER THEORY & PROOFS (FULL YEAR)**  
**(NOT OFFERED IN 2019-2020)**

Math 72 is designed for the students who plans to major in mathematics after graduation from Blair. Students will spend half the year investigating different types of rigorous mathematical proofs on a number of topics. During the second semester, students will begin the study of elementary number theory. *Prerequisite: Math 63 & departmental approval. Three units.*

# RELIGION & PHILOSOPHY



## Department Requirements

All students entering Blair in the freshman, sophomore or junior years must complete 1.5 units in religion or philosophy before graduation.

### ■ RELIGIOUS MUSIC OF THE WORLD: SEMESTER (NOT OFFERED IN 2019-2020)

In this course, students listen to and interpret music. Additionally, students examine the music of their own world, specifically focusing on the spiritual experience of music through the lens of various world religions. Students are encouraged to constantly talk about their beliefs and personal interpretations of music in class, which ultimately culminates in the examination of their own religion and sacred music. *This one-semester elective is offered in conjunction with the Performing Arts Department. Students may take this course to meet either their fine arts requirement or religion & philosophy requirement, but not both. 1.5 units.*

### ■ INTRODUCTION TO ETHICS: THE ART OF LIVING (FALL SEMESTER ONLY)

Philosophy gets a bad rap, and not undeservedly. Indeed, much of the time, philosophy seems overly complicated and unnecessarily tedious. Still, there are some philosophers—like Plato, say—who don't see philosophy as merely a theoretical enterprise, divorced from issues relevant to our daily lives. Rather, Plato saw philosophy as crucial to learning how to live and live well. In this class, students are immersed in Plato's most famous (and very accessible) writings, namely in order to examine how philosophy contributes to the art of living. Plato helps students think through some of the most foundational questions about human life and conduct, including: Why should we be moral? How do we become good or virtuous? What does religion or belief in God have to do with deciding the right course of action? What's the nature of the relationship between our individual moral choices and the structures and arrangements of wider society? Students complete short, reflective essays designed to help them think through the many philosophical implications of their everyday beliefs and behaviors. *Open to freshmen and sophomores only. 1.5 units.*

### ■ MORALITY & THE MODERN WORLD: SPRING SEMESTER ONLY (NOT OFFERED IN 2019-2020)

The modern world is chock-full of perplexing moral quandaries: How should we approach problems related to world poverty and economic injustice? What's the right course of action when it comes to biomedical issues like abortion, euthanasia and/or cloning? How might we protect the environment, while also allowing human economies to flourish? By studying the three most influential schools of ethical thought—those associated with Aristotle, John Stuart Mill and Immanuel Kant—this class seeks to give students the necessary intellectual tools to attempt informed answers to these and other difficult questions. We'll take our study of the aforementioned ethicists slowly, making sure we understand their arguments for how we should think and act in the world, ethically speaking. Doing this, we'll also engage numerous case studies related to human sexuality, capital punishment, economic justice, animal rights, environmental

responsibility and more, giving students the opportunity to reason through where they stand on the most pressing moral dilemmas of our day. Students do not need to have taken Introduction to Ethics in order to enroll (and succeed) in this course. *Open to juniors and seniors. Highly qualified sophomores may be admitted with instructor's permission. 1.5 units.*

### ■ WORLD RELIGIONS: VISIONS OF TRANSFORMATION (FALL & SPRING SEMESTERS)

This course introduces students to the background and concepts of five of the world's major religions: Hinduism, Buddhism, Judaism, Christianity and Islam. The course also provides a foray into indigenous religious traditions, such as that of various Native American tribes. Our objective will be to consider the foundational beliefs, practices and worldviews of these religions, as well as the diverse ways these religions correspond to our lives and how we make meaning today. Emphasizing the theme of transformation, something all religions share, each religion studied is additionally paired with films (or film clips) from some of the world's most renowned filmmakers. These films allow students to see and experience the artful ways religious ideas have been represented in cinema. *1.5 units.*

### ■ GANDHI & NON-VIOLENT REVOLUTION: SPRING SEMESTER ONLY

The life and legacy of Mohandas K. (Mahatma) Gandhi is chronicled in film, in biographies, in his own autobiography, and is applied to the work of later 20th-century movements. The Civil Rights movement in the United States, particularly as demonstrated in the life, writing and activism of the Rev. Dr. Martin Luther King Jr., is a most powerful example of the continuing efficacy of civil disobedience. Where did Gandhi get his own ideas that galvanized the Indian independence movement? This course examines the earlier roots of non-violent resistance in various religious traditions, as well as in the works of America's own Henry David Thoreau. How might we take from these earlier examples our own lessons in the power of non-violence to effect political and social change? Writing assignments respond to some of the pivotal incidents in Gandhi's life as reflective of his philosophies, as well as the way in which King developed the idea of pacifism as an inherently active practice. *Open to sophomores, juniors & seniors. 1.5 units.*

### ■ MEANING & MEDIA: FALL & SPRING SEMESTERS

Students develop a language for constructive critique and a sophisticated level of media literacy. This theoretical and creative course looks at religious, cultural, political and historical representations of good versus evil, normal versus abnormal, and us versus them. Students create visual works that may use Photoshop, iMovie HD and Final Cut X, as well as traditional art media. *This one-semester elective is offered in conjunction with the Fine Arts Department. Students may take this course to meet either their fine-arts requirement or religion requirement, but not both. 1.5 units.*

### ■ RELIGIOUS THEMES IN MODERN LITERATURE: FALL SEMESTER ONLY

This course involves detailed reading of three novels of the late 20th century as reflective of varying religious traditions in the United States. *The Chosen*, by Chaim Potok, is a story of the relationship between Reuven, a modern Orthodox Jew with an intellectual Zionist father, and Danny, the brilliant son of a Hasidic rabbi in New York City; *Bless Me, Ultima*, by Rudolfo

Anaya, is a *bildungsroman* of a young New Mexican boy who works to understand competing worldviews as he prepares for his first communion in the Catholic church; finally, *Siddhartha* is Herman Hesse's telling of the life story of Siddhartha Gautama, who became the Buddha. *Open to juniors & seniors. 1.5 units*

#### ■ MIND, BODY & SPIRIT: SPRING SEMESTER

The class will explore issues of the mind, body and spirit through reading, writing, critical thinking, self-reflection, class discussion and several interdisciplinary projects. Students will endeavor to become more thoughtful versions of themselves—more rooted in the present moment and more connected to the greater good—by better understanding their own mental, physical and spiritual health and, in turn, their relationship with the world around them. The one-semester course is separated into five basic units: mindfulness, emotional well-being, the mind-body connection, relationships, and the pursuit of happiness. *Open to juniors & seniors. Sophomores by instructor permission only. 1.5 units.*

#### ■ HUMAN RIGHTS SEMINAR: FALL & SPRING SEMESTERS

This course explores the history, theory and current issues in the field of human rights. The group engages in readings, discussions and activities to explore foundational questions such as: What are human rights? What is a right and how does it work? Are rights universal or culturally determined? Next, the class explores some specific topics in depth. Topics might include war and torture; deprivations of life and liberty; free speech versus privacy; food, health, housing and work; discrimination and equality. *Open to all students. 1.5 units.*

# SCIENCES



## Department Requirements

All freshmen take either Biology or Honors Biology for their 9th-grade science. Members of the freshman class who are repeating the grade and who have high school credit for an acceptable, full-year Biology lab science and a grade of B or better (or its equivalent) will not have to meet this requirement. Four-year students at Blair must present 9 units of science, at least 6 units of which must be in the laboratory sciences (3 units in Biology and 3 units in Chemistry, Robotics or Physics).

### ■ BIOLOGY: FULL YEAR

The emphasis of this full-year laboratory course is both investigative and conceptual, seeking to address the major topics in biology as they relate to current events and the world around us. Beginning with the scientific method, topics include cell structure and a variety of functions, genetics and biotechnology, evolution, animals and their adaptations, plants and their functions, human anatomy and physiology, and ecology. Students develop critical organizational reading and note-taking skills, as well as analytical skills important to interpreting laboratory data. *Three units.*

### ■ HONORS BIOLOGY: FULL YEAR

Designed for motivated 9th- or 10th-grade students, this course serves as an introductory exposure to major concepts in the field of biology. With an emphasis on research skills, the course covers four major content areas: molecules and cells, heredity and evolution, human anatomy and physiology, and ecology. Science is presented as both a process and a body of knowledge, and emphasis is placed on learning the skills involved in acquiring, interpreting, analyzing and communicating data. An independent research project and a variety of inquiry lab experiences provide opportunities for students to learn these skills. In addition, the study skills involved in reading effectively, organizing and presenting information, and reviewing for quizzes and tests are emphasized. *Three units.*

### ■ FOUNDATIONS OF INTEGRATED SCIENCE RESEARCH (ISR): SPRING SEMESTER ONLY

This course gives motivated and scientifically curious students an extensive introduction to the world of independent research. Students accepted into this course learn how to read scientific literature, think critically, and understand how scientific experimentation is implemented. Emphasis is placed on the review of scientific literature and experimental design. The class will explore current scientific research and cutting-edge laboratory techniques. Upon completion of the course, each student will submit a proposal for an integrated research project which, if accepted, may be pursued during their junior or senior year. *Prerequisites: Completion of Biology/ Biology Honors or concurrent enrollment in an honors or AP science course. Applications are reviewed and approved by the ISR Committee. 1.5 units*

### ■ INTEGRATED SCIENCE RESEARCH: FULL YEAR

In this follow up to Foundations of ISR, students will attempt to answer their research question developed during the prior course. This portion of the program grants the students a large degree of autonomy, as their class time is almost entirely devoted to the completion of their research project with the support of an external mentor. Students who conduct exceptional research will be encouraged to submit their work to national talent searches in the sciences, such as the Regeneron STS and Intel ISEF competitions. *Prerequisite: Completion of Foundations of ISR. Open to juniors & seniors only. Three units.*

### ■ CHEMISTRY: FULL YEAR

This full-year laboratory-based course is the “standard” for chemical science education at Blair. It introduces the key methods and ideas of chemistry and their applications in our current technologically based society. Students explore methods for analyzing and presenting information useful in understanding debates over the development and use of technical resources. The course involves extensive hands-on “discovery” of chemical principles and methods so that, by year’s end, students have a solid grasp of the challenges and opportunities that connect chemical methods to our economy, culture and environment. *Three units.*

### ■ HONORS CHEMISTRY: FULL YEAR

This full-year laboratory-based course is designed for strong math and science students who identify themselves as likely candidates to pursue Advanced Placement–level science in the future. Honors Chemistry covers in depth the complete, standard chemical curriculum. A solid foundation in algebra is essential, and the rigor of this course reflects that of a typical honors-level class. Successful completion of Honors Chemistry is an excellent foundation for subsequent AP-level science classes. *Three units.*

### ■ ROBOTICS: FULL YEAR

Offered in conjunction with the Computer Science Department, Robotics meets the lab-science requirement for a physical science. This full-year course explores the combination of electronics and computer science, covering robotic history and the construction of working autonomous robots (which requires design and programming skills). Topics include components of robotic systems, sensors and feedback loops. An important aspect is the design of computer algorithms that intelligently make use of sensor information describing the environment and purposefully act upon it. Students are required to have their own laptops. The course is strictly limited to 10 students. *Prerequisite: Completion of Biology or Biology Honors. Three units.*

### ■ PHYSICS: FULL YEAR

This introductory course covers the same concepts found in the Honors Physics course; however, less emphasis is placed on the mathematical development of problem solving and more on the conceptual nature of the subject. Particular focus is placed on Newtonian mechanics and thermodynamics. Laboratory work is done throughout the course as a means of developing a more complete understanding of the principles being studied. *Prerequisites: Concurrent*

*enrollment in Algebra 2 or higher. Three units.*

#### ■ HONORS PHYSICS: FULL YEAR

The honors physics curriculum covers many of the basic laws of nature observed in everyday experience. Topics include Newtonian mechanics, thermodynamics, waves and oscillations, and electricity. Students perform extensive laboratory work throughout the year. Analytical thinking, mathematical modeling, solid study skills, clear presentation of arguments and organization of materials are emphasized. *Prerequisite: Concurrent enrollment in Algebra 2 Honors or higher. Three units.*

#### ■ ENVIRONMENTAL SCIENCE: FULL YEAR

Environmental Science continues to evolve as a project-based, hands-on course that explores three themes: food, energy and water. Each topic is vitally important to human existence, yet requires the use of diminishing natural resources. Instead of textbooks, lectures, quizzes and tests for each theme, students carry out both individual and cooperative group projects. Students also gather and present background information to the class, as well as read and discuss articles focused on current events. Documentaries, campus observational tours, forensic labs and multimedia resources are utilized. *Prerequisites: Biology & Chemistry. Preference given to seniors. Three units.*

#### ■ MARINE SCIENCE: FULL YEAR

Marine Science introduces students to many aspects of the oceans and fosters an awareness of society's connection to the sea. Material covered includes the physical science of oceans, particularly geology and chemistry, and the biology of various marine ecosystems with extensive focus on the living organisms that populate them. Classes include lectures, lab projects, regular class discussions centered on environmental topics and current events, and a possible spring break research trip. Students write several research papers and give presentations on marine science topics. *Prerequisites: Biology & Chemistry. Preference given to seniors. Three units.*

#### ■ ANALYTICAL CHEMISTRY: FULL YEAR

In this laboratory-based elective, students are introduced to a wide range of analytical techniques, and they learn how to summarize results in formal scientific reports. The first semester focuses on wet chemistry and uses gravimetric and volumetric analysis to determine answers to a variety of quantitative and qualitative questions. The second semester focuses on more complex instrumentation techniques, including spectroscopy and chromatography. Throughout the year, students learn about the practical applications of the discipline and gain experience in a variety of labs, including the extraction of caffeine in drinks, the separation of plant pigments and the determination of the identities of unknown chemical solutions. Students develop the ability to separate mixtures, isolate chemical compounds and then analyze the quantity of those compounds. The year concludes with an independent project where students pursue an analytical question of their choosing, write a formal laboratory report and create a scientific poster to communicate their findings. *Prerequisite: Successful completion of full-year*

*courses in Biology & Chemistry. Preference given to seniors. Three units.*

#### ■ ASTRONOMY: FULL YEAR

In this full-year elective, students learn about our universe, following the work of astronomers such as Copernicus and Galileo as they expanded our view of the cosmos. We work our way outward from Earth to the moon, to our solar system and to our Milky Way galaxy, studying everything from neighboring planets to the formation and inner workings of stars and black holes. Students taking Astronomy learn about modern advances and applications in the field, gaining a cosmic perspective beyond that of a standard physics or Earth science course. This course necessarily involves some evening class work with telescopes and may require some last-minute schedule adjustments due to weather and viewing conditions. Astronomy does not meet the graduation requirement for physical science. *Prerequisite: At least one science course meeting the Blair graduation requirement; completion of or concurrent enrollment in a Geometry course. Three units.*

#### ■ BIOCHEMISTRY HONORS: FULL YEAR (NOT OFFERED IN 2019-2020)

The investigation of human pharmacology serves as the basis for this upper-level course in biochemistry. The course first gives a detailed review of biology and chemistry, focusing primarily on cell signaling, enzyme function, metabolism, chemical bonding, protein structure and ion chemistry. The second half of the year integrates molecular biology and physiology in order to study the relationships between biological processes and therapeutic agents. This course introduces the basic sub-disciplines of pharmaceutical science, including pharmacodynamics, pharmacokinetics and pharmacogenomics. Students investigate the mechanisms and effects of drug action and chemical agents in living systems along with acute and long-term drug therapies. The final month of the course is devoted to a major research project, and students will summarize their results in a formal research paper and scientific poster presentation. *Prerequisites: Successful completion of full-year courses in Biology & Chemistry. Three units.*

#### ■ BIOMECHANICS: FULL YEAR (NOT OFFERED IN 2019-2020)

What can the sciences offer to the understanding and optimization of athletic performance? This course, an exploration of what has been commonly called “sports science,” employs a wide variety of disciplines, from kinesiology to biochemistry, to unravel how the field of exercise science guides the development of athletes in the present day. During the fall semester, students have the opportunity to investigate how human bodies move, combining the basics of kinesiology with a study of musculoskeletal anatomy and physiology. Students then analyze the principles of exercise, the fundamentals of injury prevention and the essentials of athletic training. Next, students focus their efforts on performance at the cellular level. After reviewing the basics of biochemistry, students encounter the significance of metabolism, nutrition and diet in relation to athletic performance. During this unit, the ethics of performance-enhancing drugs in sport is examined, in addition to an analysis of how genetics may play a role in creating athletic advantage. The final month of the course is devoted to a major research project, culminating in a major research paper and a presentation of findings during the Spring Science Expo. *Prerequisites: Successful completion of full-year courses in Biology & Chemistry. Three units.*

### ■ PHARMACEUTICAL SCIENCE: FULL YEAR (NOT OFFERED IN 2019-2020)

Pharmaceutical Science integrates chemistry and biochemistry, cell and molecular biology, and physiology in order to study the relationships between biological processes and therapeutic agents. This course introduces the basic sub-discipline of pharmaceutical science. Students investigate the mechanisms and effects of drug action and chemical agents in living systems, the difference between over-the-counter and prescription medications, and drug therapies. We also investigate the challenges and processes for bringing a new pharmaceutical agent from concept to market. *Open to junior & seniors, with preference given to seniors. Prerequisites: Successful completion of full-year courses in Biology & Chemistry. Three units.*

### ■ ADVANCED PLACEMENT (AP) PSYCHOLOGY: FULL YEAR

AP Psychology follows the prescribed AP curriculum and prepares students for the May AP exam. Broadly, the course is designed to introduce students to the systematic and scientific study of the behavior and mental processes of human beings and other animals. Students are exposed to the psychological facts, principles and phenomena associated with each of the major subfields within psychology. They also learn about the ethics and methods psychologists use in their science and practice. The course does not satisfy any science requirement. *Preference to seniors. Prerequisite: Successful completion of a course in Biology. Three units.*

## Advanced Placement (AP) in Biology, Chemistry & Physics

### ■ ADVANCED PLACEMENT (AP) BIOLOGY: FULL YEAR

AP Biology is built around the four Big Ideas in biology. Topics covered in depth include ecology, biochemistry, cell structure, respiration, molecular genetics and biotechnology, evolution, plant physiology and photosynthesis. Extensive lab work is integrated into the course throughout the year in order to emphasize the wide application of the principles being studied. Students also prepare and are required to sit for the AP exam in May. *Prerequisite: Honors Biology & Honors Chemistry. Enrollment in Chemistry course may be concurrent. Three units.*

### ■ ADVANCED PLACEMENT (AP) CHEMISTRY: FULL YEAR

AP Chemistry focuses on the process of solving complex problems in chemistry, as well as reaching intuitive-level understanding of abstract concepts. The major topics covered include chemical thermodynamics, kinetics, equilibrium, states of matter, atomic and molecular structure, oxidation and reduction, electrochemistry and chemical bonding. Weekly laboratory work enhances students' understanding of concepts being studied. *Prerequisite: The completion of Honors Chemistry, unless otherwise permitted by the department. Three units.*

### ■ ADVANCED PLACEMENT (AP) PHYSICS C: MECHANICS (FULL YEAR)

AP Physics C: Mechanics focuses extensively on the principles of classical mechanics in a curriculum that differs from AP Physics 1 in that it requires students to use differential and integral calculus explicitly. Topics in this course include an in-depth introduction to Newtonian mechanics with special attention given to the conservative principles of energy, linear momentum and angular momentum. Extensive laboratory work supplements the work being

done throughout the year. Students also prepare and are required to sit for the AP exam in May. *Prerequisites: Completion of a full-year Calculus course or concurrent enrollment in AP Calculus A, AB Calculus or BC Calculus. Three units.*

### ■ ADVANCED PLACEMENT (AP) PHYSICS C: ELECTRICITY & MAGNETISM (FULL YEAR)

AP Physics C: Electricity and Magnetism is a second-year physics course focused extensively on the principles of electricity and magnetism. This class aims to build on the principles seen during a student's first year of physics and adds topics that culminate with a thorough description of electromagnetic phenomena. The aim of this course is to ensure that students are well versed in the significance of electric and magnetic forces, while placing emphasis on their exposure to essential applications. The lab work is extensive and offers an in-depth analysis of the ways seemingly dense theoretical concepts are realized in our everyday lives. Like AP Physics C: Mechanics, this course adopts the use of integral and differential calculus exclusively. Students prepare and sit for the AP exam in May. *Prerequisites: Completion of AP Calculus A or AB Calculus or concurrent enrollment in BC Calculus & either AP Physics 1, AP Physics C Mechanics or the permission of the department chair. Three units.*

### ■ POST-ADVANCED-PLACEMENT (AP) SCIENCE: FULL YEAR (NOT OFFERED IN 2019-2020)

This course is designed for students who have completed one or more AP-level science courses in chemistry, physics and/or biology and who wish to attempt something other than simply another AP science elective. In its broadest sense, the course takes into account the enormous breakthroughs in all areas of science in the 20th and 21st centuries. While the specifics may be tailored from year to year to suit the tastes and interests of participants, the course gives students some grounding in several areas routinely dealt with in college science curricula, areas that are rarely encountered in high school. These include the theory of relativity and its applications; the philosophy, elementary results and applications of quantum mechanics; the physics and chemistry of semiconductors and superconductors; the chemistry of three-dimensional complex structures and nanotechnology; astrophysics, cosmology and (very elementary) string theory. While primarily a classroom-based course, there are also demonstration and laboratory components. *Prerequisites: The completion of a full-year AP science course in Chemistry, Biology or Physics with strong performance demonstrated by the AP exam grade; minimally, concurrent enrollment in AP Calculus AB. Permission of the instructor. Three units.*



[WWW.BLAIR.EDU](http://WWW.BLAIR.EDU)

