



MILLER SCHOOL  
*of* ALBEMARLE

## **COURSE DESCRIPTIONS**

**2017-2018**

**140<sup>TH</sup> Session**

### **School Mission**

Our aim is to prepare young women and men for a productive, meaningful and successful life, in college and beyond. MSA will achieve these goals with a rigorous and supportive program, talented faculty and staff, small classroom settings, actual leadership opportunities and an emphasis on building character, improving communication skills and developing genuine fellowship. MSA's unique community builds responsible citizens, critical and insightful thinkers, and compassionate individuals. Our nurturing and controlled environment promotes physical and emotional well-being, an understanding of world cultures and values, in a safe environment. MSA's historical tradition of implementing an approach of "Mind, Hands and Heart" stresses the need to learn how to accomplish ideas and projects in a sincere, heartfelt manner.

## MILLER SCHOOL OF ALBEMARLE COURSE OF STUDY

2017-2018

### Curricular Offerings

#### **English**

English 8  
English 9 (Hum. 9/Ancient Lit.)  
English 10 (European Literature)  
English 11 (American Literature)  
English 12  
DE Creative Writing  
AP English Language & Comp.  
AP English Literature & Comp.  
DE British Literature

#### **History**

World Cultures & Geography  
Humanities 9 (Ancient & Medieval Civilizations)  
Europe & the World (Grade 10)  
US History & Government (Grade 11)  
Government: Political Philosophy  
Economics  
AP European History  
DE US History  
AP US History  
AP US Government & Politics  
AP Macroeconomics\*

#### **Science**

Earth Science  
Biology (Grade 9)  
Chemistry (Grade 10)  
Conceptual Physics  
Applied Engineering  
Land Management  
Environmental Science  
DE Human Anatomy  
AP Biology  
AP Chemistry  
AP Physics I

#### **Mathematics**

Pre-Algebra  
Algebra I  
Geometry  
Algebra II  
Algebra III  
Pre-Calculus  
Calculus  
Statistics  
Computer Programming  
AP Calculus AB  
AP Calculus BC\*  
AP Statistics

#### **Language**

English for Speakers of Other Languages (ESOL) I, II  
French I\*, II, III  
French IV/V/AP French Lang & Culture  
Spanish I, II, III  
Span IV/AP Spanish Lang & Culture  
Spanish V/AP Spanish Lit & Culture  
DE Spanish  
Latin I, II, III,  
Latin IV/V or AP Latin  
DE Latin

#### **Fine Arts**

Art I, II  
Advanced Art (III-V)  
Honors Studio Art  
Graphic Des./Yearbook  
Studio Music (I-V)  
Singing (I-V)  
Design/Build (I-III)  
Design/Build  
(Independent Study)  
Beginning Photo  
Intermediate Photo  
Photography III  
Photo (Independent Study)

#### **Special Programs**

Study Skills  
DE Principles of Psychology  
DE Business/Entrepreneurship

\*Course will be offered contingent upon adequate enrollment.  
DE courses will be offered contingent on adequate enrollment.

## **Miller School of Albemarle Applied Engineering Program Description**

Students interested in learning more about engineering are encouraged to review the following information regarding MSA's Applied Engineering Program. Multiple facets of academia are incorporated into the Applied Engineering Program curriculum all of which are in line with the school mission of a continued emphasis on "mind, hands, and heart". A full program description, including required and recommended activities, is listed below. As you can see, required activities include both academic coursework as well as extra-curricular activities.

To gain entry into the Applied Engineering Program, students must submit an Applied Engineering Program Application, which includes a brief essay. Those who complete the program successfully, in addition to meeting MSA graduation requirements, will receive a Certificate of Completion upon graduation. Additionally, graduates from the Applied Engineering Program will have the distinct advantage of having a robust Applied Engineering Portfolio that may be presented during the selection process to prospective colleges and universities. This portfolio will allow program graduates the opportunity to showcase the wide-range of engineering-related achievements that they have accomplished during their tenure as MSA Applied Engineering students.

Colleges and Universities are specifically looking for students who have taken full advantage of every opportunity given to them. The MSA Applied Engineering Program has been uniquely designed to allow students to do just that. As you can see, AP courses are listed in the required coursework section as strongly recommended. It is important to note that most engineering colleges expect students to use their STEM-based (Science, Technology, Engineering, and Mathematics) AP coursework in high school to add breadth and depth to their academic foundation. However, most engineering colleges will require students to retake most, if not all, of these STEM-based AP courses in college. Lastly, it is important to note that obtaining a MSA Applied Engineering Program Certificate of Completion does not guarantee admission into a college-level engineering program.

### **Goals:**

The goal of MSA's Applied Engineering Program is broad reaching. Initially, the goal of the program is to inspire and promote curiosity for engineering. It is through this awareness that students' perspectives are opened to the wide-reaching avenues of engineering. After students have been "hooked" on the general notion of engineering, the Applied Engineering Program is designed to expose students to various engineering disciplines from traditional engineering fields such as Civil and Mechanical to more modern engineering fields such as Biomedical, Environmental, and Chemical. During this process, Applied Engineering students will explore the Engineering Method and how it differs from the Scientific Method. Additionally, students will learn the basics of 3D CAD (Computer-Aided Design) software and modeling along with its various applications within nearly all engineering fields. All of these goals culminate in the final goal of preparing students for their upcoming search for a suitable engineering college followed by the academic rigors that await them as they pursue their engineering interests at the next level.

### **Required Coursework:**

- Applied Engineering - This course is an introduction to the engineering field as a whole including case studies of major engineering feats, Engineering Challenges, the Engineering Method, ancient to modern Engineering Connections, CAD software, engineering ethics, science of materials, presentation skills, technical reading and writing, and modern field focus.
- Calculus or AP Calculus AB or AP Calculus BC (AP Calculus BC strongly recommended)
- Physics or AP Physics I (AP Physics I strongly recommended)
- Chemistry or AP Chemistry (AP Chemistry strongly recommended)
- Design/Build - This course provides students with experience using a 3D printer as well as learning a computer-aided design (CAD) software.

**Required Activities:**

- Applied Engineering Portfolio (typically in electronic format) that showcases their Applied Engineering Program accomplishments
- Engineering Team including [Technology Student Association](#) competitions or Engineering Sponsored Service Group
- Engineering related field trips including Lake Anna Nuclear Power Plant and PVCC/CBIC Tech Tour
- January mini-mester (WWOWW) course pertaining to engineering concepts

**Recommended Activities:**

- Computer Programming
- Participation in [Society of Women Engineers](#) (SWE) Club (sorry boys, girls only!)
- University of Virginia SWE High School Visitation and Ladies in the Lab (sorry boys, girls only!)
- Summer camps
- Internships and/or Co-ops
- Additional engineering competitions
- PVCC STEM Saturdays
- University of Virginia Engineering Open House
- Virginia Tech Engineering Open House
- Tinker!

## Miller School of Albemarle Humanities Program Description

### Objective

To enable students to pursue excellence in the Humanities by providing an organizational structure and an incentive to make the most of their academic opportunities at the Miller School.

### Overview

As a college preparatory institution, the Miller School of Albemarle aims to “prepare young women and men for a productive, meaningful, and successful life, in college and beyond.”

Toward this end, we have created the Humanities Program, which is designed to:

- give shape and direction to a student’s curricular and cocurricular work;
- spur rigorous academic productivity;
- inspire students to engage proactively with their studies, while encouraging them to see their studies as an extension of their own interests and passions;
- challenge students to maintain momentum in their senior year and to view it as a summative experience of their career at Miller; and
- award students with a **Certificate of Distinction** on their diploma.

Our students crave an outlet for high academic achievement as well as a platform for genuine involvement. Students are more enthusiastic and ambitious about their studies when they have a long-term goal to pursue. This has been demonstrated in the success of the Applied Engineering Program. The Humanities Program provides a complementary academic track, affording students who are passionate about Literature, History, Fine Arts, Foreign Language, and Performing Arts an opportunity to flourish creatively and scholastically. The Humanities Program awards students who apply themselves to and excel in these areas of a classical liberal education. The Certificate of Distinction they can earn on their diploma would be a crowning achievement of their high school career, and it would be highly visible to college admissions committees. More significantly, the Humanities Program would be inherently fulfilling, in that students will have cultivated their own academic growth.

The Humanities Program allows students to accumulate credits toward the Humanities Certificate on [a track of their own making](#). Credit is awarded for curricular work and cocurricular activities. Coursework in the junior and senior years is emphasized, with more weight being given to Advanced Placement, Dual Enrollment, and Senior Seminar options. The amount of curricular credit applied toward the Humanities Certificate is capped; the remainder must be earned through cocurricular activities, so that students round out their studies in ways that emphasize enrichment, participation, and applying themselves. For a Major Certificate, students must engage in a yearlong Capstone Project, which is offered via Senior Seminars or an Independent Study. Capstone Projects proceed according to a detailed scaffolding.

## GRADE 8

### ENGLISH

#### **English 8 - Introduction to Literature**

Eighth-grade students read and study a variety of literature, including *Lord of the Flies*, *The Giver*, *A Midsummer Night's Dream* and a selection of classic and contemporary poetry. These texts allow students to explore themes of the individual's place in a community and the relationship between natural order and civilized order. Formal vocabulary and grammar study begins, and a portfolio approach to writing develops the student's ability in composition, persuasive writing, and the analytical essay.

### MATHEMATICS

#### **Pre-Algebra**

This course is designed to provide the necessary foundation to assist students in the transition from elementary mathematics to Algebra. Students discover the underlying concepts and principles of algebra and geometry and how they relate. Topics include percents, probability, statistics, multi-step equations, geometric relationships and formula, and the coordinate plane. An exploratory and discovery approach will be emphasized in this course.

#### **Algebra I (Prerequisite: Pre-Algebra)**

This course serves as the first in the sequence of college preparatory mathematics. Concepts are introduced in the context of real-world problems in order to increase the conceptual development of the student. This course covers graphs in the coordinate plane, linear equations and inequalities, radicals, polynomials, quadratics, and data analysis. The concept of functions is emphasized using graphical, verbal, numerical, and algebraic methods.

#### **Geometry (Prerequisite: Algebra I)**

This class emphasizes two- and three-dimensional reasoning skills, coordinate and transformational geometry, the use of geometric models to solve problems, and algebraic connections in Geometry. Concepts are introduced in the context of real-world problems in order to increase conceptual development. A variety of application problems and problem-solving skills are included. This course covers properties of geometric figures, coordinate geometry, constructions, introduction to Trigonometry, informal proofs, and cultural, artistic and historical contexts of Geometry. Students will need a computer for this class and use of Geogebra and Google SketchUp.

### SCIENCE

#### **Earth Science**

This course introduces students to the basic concepts of Earth Science. Specific topics include mapping Earth's surface; minerals, rocks and the rock cycle; plate tectonics, earthquakes, and volcanoes; surface processes; Earth's freshwater and saltwater systems; weather and climate; and astronomy. Class discussions and written homework assignments emphasize mastery of

topics. Frequent field activities and exercises encourage students to master and use inquiry and critical thinking skills. Projects are designed to allow students to explore topics in depth and to develop skills in organization, the use of library/media center and online resources, and writing carefully documented science reports.

## **SOCIAL STUDIES**

### **World Cultures and Geography**

This class examines the cultures and geography of the continents and major nations of the world in order to provide students with a perspective on “global” issues, such as the environment, human rights, and economic interdependence. Students have the chance to learn how location and topography can affect a country’s culture and interaction with the rest of the world. The class emphasizes the development of map skills, knowledge of specific locations, and an appreciation for the cultures of the world.

## **FOREIGN LANGUAGE**

### **Latin I**

Latin I introduces students to Latin vocabulary, sentence construction, grammatical rules, syntax and the richness of Roman culture. Students acquire beginning translation and construction skills for the written word, as well as learn proper pronunciation and inflection for oral reading. This is a proficiency-based course, which provides active practice in listening, speaking, reading and writing in the Latin language. It is also enriched with numerous elements of the Roman civilization, including daily life, customs, architecture, and historical relevance.

Note: All 8th grade students who are not enrolled in ESOL are required to take Latin I unless they have enough language experience to be placed in French or Spanish or an upper-level Latin course.

### **English for Speakers of Other Languages (ESOL)**

In ESOL, students will participate in an in-depth study of vocabulary, grammar, and sentence structures found in the English language. This study will be developed on an assessment of students’ language needs. Students will study a variety of vocabulary terms that will be centered on the themes outlined within our textbooks, as well as within readings done during class. Similarly, students will discuss grammar topics that will be based on student need, while reviewing basic grammatical structures, such as sentence formation, through more complex concepts such as adverb clauses and discourse connectors. As a class, students will consistently work in all of the language domains, including speaking, reading, writing, listening, and culture. Students’ culture studies will consist not only of the culture of the United States, but the distinct personal cultures that each student brings to the ESOL class. Students will encounter a focus on practical application of the English language, in the hopes that as they complete their year in ESOL, students will feel as though their comfort level, fluency, and knowledge about the English language and cultures will have increased greatly.

## **FINE ARTS**

### **Art I**

Art I is an entry-level art class designed for students in grades 8-12 who have no prior art credits at the secondary level. Through opportunities and challenges in the studio arts of drawing, painting and sculpture, students will gain artistic knowledge and skills. The emphasis of the course is on art production. Art history is integrated into the curriculum through the study of various artists and art periods, usually as they relate to the students' projects.

### **Singing I**

This class is open to all skill levels and offers individual and group voice coaching and performance opportunities for young singers. Students receive individualized instruction tailored to their musical ability and singing experience, and are assigned time slots for daily practice during the class period. Because classes are typically small, students receive one-on-one coaching in vocal technique, proper breathing, posture, tone and diction, and are encouraged to explore classical, blues, jazz, pop and Broadway musical styles. In addition, the instructor provides an introduction to music theory, sight singing, solfeggio, music listening and ear training, all of which contribute to well-rounded training for high school musicians. Students will track and analyze their own musical growth in a detailed journal or blog.

Throughout the year there are opportunities to participate in several performing events, including Family and Friends Weekend; school assemblies; holiday concerts; fall and winter recitals and the Spring Honors Ceremony. Miller School of Albemarle students may enroll in Singing Class for up to five academic years.

### **Studio Music I**

Open to instrumentalists of all skill levels, this class offers individual and ensemble coaching and performance opportunities. Students receive instruction tailored to their musical ability and playing experience, and are assigned time slots for daily practice during the class period. Because classes are typically small, students receive one-on-one coaching in instrumental technique to include articulation, bowing, proper breathing, posture, tone production, and are encouraged to explore classical, blues, jazz, pop and global musical styles. In addition, the instructor provides an introduction to music theory, sight reading, music listening and ear training, all of which contribute to well-rounded training for high school musicians. Students will track and analyze their own musical growth in a detailed journal or blog.

Throughout the year there are opportunities to participate in several performing events, including Family and Friends Weekend; school assemblies; holiday concerts; fall and winter recitals and the Spring Honors Ceremony. Young pianists, in particular, have frequent chances to accompany other students. Miller School of Albemarle students may enroll in Studio Music Class for up to five academic years.



## UPPER SCHOOL

Miller School of Albemarle offers a rigorous college preparatory curriculum for students from average to above-average ability. Students learn through traditional classroom methodology and also receive instruction through the philosophy of “mastery” learning, which includes a demonstration of that mastery through a variety of formats during their academic career.

Classes are offered through a standard core curriculum with the addition of many opportunities for interdisciplinary learning, possible by the frequent interaction of faculty on joint projects and cooperative learning for all. Furthermore, the School’s service and athletic programs complement the learning experience. Successful completion of the requirements for graduation prepares students to continue that academic progress in college.

## GRADUATION REQUIREMENTS

Miller School of Albemarle requires the following to qualify for a diploma:

- 4 credits in English
- 3 credits in History (including United States History and American Government)
- 3 credits in Mathematics (including Geometry and Algebra II)
- 3 credits in Science (including Biology and Chemistry or Physics)
- 3 credits in Foreign Language (at least 2 credits must be in the same language)
- 3 credits in Elective Courses\*\*
- 2 credits in Fine Arts
- 2 credits in Health and Physical Education (completed during participation in annual mandatory athletics)

Successful completion of a Senior Chapel Talk

23 credits – Total Requirement

\*\*After requirements have been satisfied in a subject area, additional courses taken in that subject area can fulfill the elective course credit requirement.

## ENGLISH

The English curriculum is designed to reinforce and develop a student's ability to think, read, write, and speak. Students explore connections between literature and the human experience, learning to consider increasingly complex questions through the analysis of a great variety of texts that range from the canonical to the contemporary. Over the course of their MSA career, students study the great texts of literature in English and of world literature, including a Shakespeare play at every grade level. Students study vocabulary and grammar throughout their MSA career, although students in their junior and senior years are expected to have mastered formal grammar studies and have increased responsibility for the application of grammar in their writing. Students receive a systematic introduction to academic argument, rhetoric, and the scholarly writing process. They are taught to structure their essays around conceptually rich claims, to support all assertions with well-chosen evidence, to address other viewpoints, and to edit carefully. Students' writing progress is assessed regularly through the use of portfolios, which follow them through each grade level. In sum, the goal of the English Department is to develop thoughtful, confident, well-read, and articulate students who are fully prepared for the rigors of the college classroom and a life of intellectual adventure.

### **English 9 – Humanities 9 – Ancient Literature**

This course is designed in coordination with the ninth-grade history course, Ancient & Medieval Civilizations, teaching students to examine how literary texts engage with their historical context. Students are introduced to man's earliest stories, including examples from the Bible, mythology and ancient epic poetry, and they learn to trace mythic prototypes into more modern texts, all the while grappling with questions that man has asked since the beginning of time. Formal study of grammar and vocabulary is emphasized, and students are acquainted with the formal writing process.

### **English 10 — European Literature**

This course surveys the history of European literature, beginning with Homer, moving through Shakespeare and the Renaissance, and concluding with Modernism and the 20<sup>th</sup> century. Texts studied include the *Iliad*, the *Aeneid*, the *Inferno*, *Henry IV*, Machiavelli's *The Prince*, *Paradise Lost*, *The Rape of the Lock*, *The Importance of Being Earnest*, and *Things Fall Apart*. Students will explore how literature is influenced by historical events and how literature in turn influences society. As such, the course is designed in conjunction with the tenth-grade course Europe and the World and provides a historical framework for understanding the history of literature and literary genres in Europe. Formal study of grammar and vocabulary continue. Writing portfolios begun in the ninth grade continue, and students are introduced to the fundamentals of academic argument.

### **English 11 – American Literature**

In this course, we will delve deep into some classics of American literature, including Arthur Miller's *The Crucible*, Mark Twain's *The Adventures of Huckleberry Finn*, and Nathaniel Hawthorne's *Rappaccini's Daughter*. (We will also take one major detour to closely read *Hamlet*, Shakespeare's longest and arguably most rewarding play, as part of the school-wide

Shakespeare unit in January.) These works will be studied with an eye to their literary genius, their historical significance, and the timeless themes that make them relevant to all people in all eras. Students will also embark on a whirlwind tour of our rich literary canon through a nightly reading curriculum designed to instill a powerful habit of reading and foster a genuine love of great stories and poems. At the end of the year, students will read a classic American novel of their choice. In addition to serving as a solid introduction to our national literature, this course follows a writing curriculum tailored to the college-bound junior. We begin the year ironing out stubborn grammatical problems and reviewing argumentative structure and end it with a focus on developing an authentic voice and an engaging style, qualities that will prove invaluable to rising seniors as they prepare to tackle some of the most important writing assignments of their lives: the senior speech the college application essay.

### **AP English Language and Composition (90+ average in English 10 and placement test)**

AP English Language and Composition follows the same trajectory as English 11, but its reading and writing load are far more intensive. In order to prepare for the AP exam, students are given a rigorous introduction to rhetorical analysis and logical fallacies. Reading comprehension is developed through challenging assignments, regular reading questions, and systematic test preparation.

### **English 12 – The Art of Reading, Thinking, Writing, and Speaking**

Why do we read? Why do we write? How do these two actions help us find our place in our worlds? How do writing and reading help us to think? This course proposes that thinking and writing and reading are inextricably linked. The students' ability to think critically will enhance their ability to further develop writing skills they have begun developing in their earlier high school years. Through engaging poetry, essays, and texts such as Ray Bradbury's *Fahrenheit 451*, F. Scott Fitzgerald's *The Great Gatsby*, Shakespeare's *Hamlet*, and J.D. Salinger's *The Catcher in the Rye*, the students sharpen their own emotional intelligence as they pursue such themes as conformity, individual responsibility, ethical dilemmas, and the pursuit of self knowledge. The composition and presentation of their senior Chapel Talks, along with *Poetry Out Loud* and Shakespeare recitations, satisfy the major public speaking component of the course.

### **AP English Literature and Composition (90+ average in AP English 11/English 11 and placement test)**

This course hones the advanced English student's ability to render close literary analysis of literature, in order to prepare him or her for the AP exam and college-level courses. Students sharpen their close reading skills while examining various rhetorical styles in poems, novels, and plays. In a university seminar-style environment, students pay particular attention to their own use of style and rhetoric in both timed and formal essays, and they compose their own poems according to the forms presented in *The Making of a Poem*. In addition to a wide range of poetry, authors studied include Ernest Hemingway, James Joyce, Herman Hesse, J. D. Salinger and F. Scott Fitzgerald. The plays of Shakespeare and Samuel Beckett provide rich examples of how rhetoric and style are delivered in dramatic works. The composition and presentation of their senior Chapel Talks, along with *Poetry Out Loud* and Shakespeare recitations, satisfy the major public speaking component of the course. Final assessments of their writing portfolios allow students to analyze and reflect on their growth in written expression.

### **DE Survey of English Literature (12th Grade)**

#### **PVCC ENG 243-244 (3 credit hours per semester)**

Students will study connections between British history and the development of British literature, as well as analyze the characteristics of major movements in British literature. In the first semester, we will cover significant literary movements during the Anglo-Saxon period, the Medieval period, and the Renaissance. In the second semester, we move on through the Age of Reason, the Romantic period, the Victorian period, and Modernism. Some of the works and authors studied include *Beowulf*, Chaucer's *The Canterbury Tales*, Shakespeare's *Hamlet*, the Metaphysical poets, Wordsworth, Shelley, Tennyson, Browning, Eliot, Pound, Yeats, and Auden.

### **DE Creative Writing (11th - 12th Grades)**

#### **PVCC ENG 211-212 (3 credit hours per semester)**

Creative Writing introduces you to the fundamentals of writing imaginatively. The class assumes that you have an interest in creative writing and that you will each have varying levels of experience writing creatively. We will focus our efforts on creative nonfiction, poetry, and short fiction. We will write about, discuss, and imitate the work of published authors, and regularly engage in activities that generate writing spontaneously, imaginatively and playfully. We will then develop selected pieces of this work with the goal of creating polished essays, poems, and stories. These creative works will be developed in stages and revised with feedback from your instructor and classmates. A cornerstone of the class will be reading and sharing your own work with your peers and learning to give thoughtful feedback. You will use this feedback to develop polished pieces by the semester's end. You will revise to craft your work into more intentional pieces.

Through daily journals, the reading of great literature, creative exercises, and class discussion, Creative Writing students develop a spectrum of writing abilities. Units of study include short fiction, poetry, play and screenwriting, the personal essay, journalism, book arts, and persuasive writing. Students write with the intent of "finding a voice." The course teaches grammar for the purpose of improving the clarity and sophistication of student writing. Daily journals and reflection pieces form the bulk of the workload; all students should expect to write between 100 - 150 pages of polished work over the course of the year. The course assesses a student-writer's development through a portfolio system. By the end of the course, students have a portfolio of writing across genres, a clearly developed voice on the page, and several artist statements to accompany their work. Readings change from year to year.

## **FINE ARTS**

As a reflection of the School's Mission, the Fine Arts Program enables students to create with their own minds, hands, and hearts a variety of works of art and projects. Students can also develop their own vocal talents, write, conduct, and perform music. Specific projects enable students to learn a process that includes planning, construction, and evaluation. The goals of the Fine Arts Program are to instill a desire for excellence, increase creativity, and expand knowledge of the arts.

### **Art I**

Art I is an entry-level art class designed for students in grades 8-12 who have no prior art credits at the secondary level. Through opportunities and challenges in the studio arts of drawing, painting and sculpture, students will gain artistic knowledge and skills. The emphasis of the course is on art production. Art history is integrated into the curriculum through the study of various artists and art periods, usually as they relate to the students' projects.

### **Art II (Prerequisite: Art I)**

Art II is a course designed for students who have earned at least one studio art credit at the secondary level. Students will build upon their knowledge of perspective, color theory and observational drawing to produce a variety of projects in the studio arts of drawing, painting and sculpture. Art II students who are new to Miller School of Albemarle may be required to complete some of the projects from the Art I curriculum, in order to ensure that they have the necessary skills for the more challenging projects typically found in the Advanced Art classes.

### **Advanced Art (III-V) (Prerequisite: the preceding level)**

Advanced Art is for students who have earned at least two studio art credits at the secondary level. Advanced Art is a course for the serious art student who is motivated to further develop his or her art skills and knowledge. Through the exploration of various techniques and materials, students will have opportunities for creative self-expression through drawing, painting and sculpture projects. A student may take the Advanced Art course for more than one year, earning credit each year that the course is taken.

### **Honors Studio Art (Instructor Approval Required)**

Honors Studio Art is an intensive portfolio-based course for art students in their senior year, contingent upon approval by the instructor. Students will produce numerous 2-D or 3-D works that show their skills, versatility, and originality, working from observation or from their own photographs. This course is recommended for students who plan to apply to art schools or who plan to major in art in college.

### **Graphic Design/Yearbook Production (Instructor Approval Required)**

Students enrolled in the Graphic Design/Yearbook class will help to design and produce the School's yearbook, under the supervision of the faculty yearbook coordinator. This Fine Arts elective is a computer-intensive course, with a maximum of two openings available. Students should have good general computer skills. Experience with Adobe Photoshop is preferred, but not required. Students who are interested in registering for this course must complete a Graphic Design Course application and provide at least two teacher recommendations. Preference will be given to seniors, but juniors may also apply

### **Singing (I-V) (Prerequisite: the preceding level)**

Open to Grades 8 through 12 and all skill levels, this class offers individual and group voice coaching and performance opportunities for young singers. Students receive individualized instruction tailored to their musical ability and singing experience, and are assigned time slots for daily practice during the class period. Because classes are typically small, students receive one-on-one coaching in vocal technique, proper breathing, posture, tone and diction, and are encouraged to explore classical, blues, jazz, pop and Broadway musical styles. In addition, the instructor provides an introduction to music theory, sight singing, solfeggio, music listening and ear training, all of which contribute to well-rounded training for high school musicians. Students will track and analyze their own musical growth in a detailed journal or blog.

Throughout the year there are opportunities to participate in several performing events, including Family and Friends Weekend; school assemblies; holiday concerts; fall and winter recitals and the Spring Honors Ceremony. Miller School of Albemarle students may enroll in Singing Class for up to five academic years.

### **Studio Music (I-V) (Prerequisite: the preceding level)**

Open to instrumentalists in Grades 8 through 12 of all skill levels, this class offers individual and ensemble coaching and performance opportunities. Students receive instruction tailored to their musical ability and playing experience, and are assigned time slots for daily practice during the class period. Because classes are typically small, students receive one-on-one coaching in instrumental technique to include articulation, bowing, proper breathing, posture, tone production, and are encouraged to explore classical, blues, jazz, pop and global musical styles. In addition, the instructor provides an introduction to music theory, sight reading, music listening and ear training, all of which contribute to well-rounded training for high school musicians. Students will track and analyze their own musical growth in a detailed journal or blog.

Throughout the year there are opportunities to participate in several performing events, including Family and Friends Weekend; school assemblies; holiday concerts; fall and winter recitals and the Spring Honors Ceremony. Young pianists, in particular, have frequent chances to accompany other students. Miller School of Albemarle students may enroll in Studio Music Class for up to five academic years.

### **Design/Build I**

Design/Build is open to students in grades 9-12. Design/Build I introduces students to computer aided design using Google SketchUp, prototyping using a 3-D printer, and safe, efficient use of tools to build a project. This class is a problem solving class based on the fundamentals of safety and the craftsmanship of woodworking. Through classroom instruction and the construction of woodworking projects, students will learn the fundamentals of working with wood, including project drawing and design, basic shop math, the use of hand tools, portable and stationary power tools, measuring techniques, the use of jigs and fixtures, joinery, fabrication and assembly processes.

### **Design/Build II (Prerequisite: Design/Build I)**

Design/Build II focuses on increasing proficiency with computer aided design, woodworking craftsmanship, and problem solving skills. An emphasis is placed on wood joinery techniques to ensure projects have strong, attractive joints. These joints are not possible without precision, accuracy, and attention to detail so these aspects are emphasized throughout the course.

Different approaches to finishing a project are also addressed once a project is assembled.

**Design/Build III (Prerequisite: Design/Build II)**

Design/Build III increases the complexity of projects that are designed and built while improving on a student's creativity. A skin-on-frame model glider is built to demonstrate various new techniques including lightweight, high strength building and incorporating 3-D printing into the final project. Student selected projects using advanced woodworking techniques are designed and constructed.

**Design/Build Independent Study (Prerequisite: Design/Build III)**

Design/Build Independent Study is open to seniors who have completed Design/Build 3 and who wish to explore specific issues or techniques in order to build their portfolio.

**Beginning Photography**

Beginning Photography is an entry level course designed for students in grades 9-12 who have no prior photography credits at the secondary level. Students investigate the use of cameras and other machines associated with photo production. Lessons include the characteristics of film, exposure time, depth of field, composition, chemical processing, and the ethics associated with photography. In addition to working in the darkroom, students have weekly photo assignments and participate in class discussions and critiques. A student-furnished Single Lens Reflex (SLR) 35mm camera with manual override of shutter speeds and aperture is required for the course. Film and paper will be purchased from the Photography teacher.

**Intermediate Photography (Prerequisite: Beginning Photography)**

Intermediate Photography is a continuation of the Beginning Photography course. Students build upon their knowledge of black and white photography in the areas of composition, exposure, and darkroom technique, and they learn advanced techniques in processing film and printing negatives. A variety of photographic subject matter is discussed and explored in this course. Students are also introduced to digital photography, scanners, and digital concepts. A student-furnished Single Lens Reflex (SLR) 35mm camera with manual override of shutter speeds and aperture is required for the course. Film and paper will be purchased from the Photography teacher.

**Photography III (Prerequisite: Intermediate Photography)**

In the Photo III course, students are introduced to digital capture in photography and in motion pictures. Students become familiar with the tools of digital capture such as computers, software (Adobe Photoshop CS, Final Cut Pro), flatbed scanners, digital cameras and digital video cameras. Through a hands-on approach, students learn the similarities and differences of a digital workflow. This course is offered to 11<sup>th</sup> and 12<sup>th</sup> grade students who have successfully completed the Intermediate Photography course.

**Photography Independent Study (Prerequisite: Photography III)**

Photography Independent Study is open to students who have completed both Beginning and Intermediate Photography and who wish to explore specific issues or techniques in order to build their photography portfolio. This course is offered to seniors who have successfully completed the Photography III course.

## **FOREIGN LANGUAGE**

The Foreign Language Department offers instruction in English for Speakers of Other Languages, French, Latin, and Spanish. Students in level IV of French and Spanish have the option of taking the Advanced Placement exam in Language. Students in level IV of Latin have the option of taking the Advanced Placement exam on Virgil. Students in level V of Spanish have the option of taking the Advanced Placement exam in Literature and Culture. In the spring of each year French, Latin, and Spanish students take the National Exams related to their levels. In order to graduate, a student must complete three credits of foreign language study. While an underlying goal of the Department is to help students develop a greater awareness of the world as a whole, the specific area of concentration is on effective communication skills in the target language, that is, fluency. The traditional skills of listening, speaking, reading, and writing encourage students to understand and produce both spoken and written forms of the language, thus permitting them the means to communicate effectively with native speakers.

### **French I\***

French I is an introduction to the French language as well as francophone countries. French is spoken in class from the onset, enabling students to recognize as well as be comfortable with the language. Students develop skills in reading, writing, listening, and speaking. Over the course of the year, students are exposed to vocabulary and language structures to develop a basic ability to communicate in the language. Students will compose basic sentences and short paragraphs communicating about themselves and familiar topics in French. Students will work toward mastering spoken and written narrations using the present, past, and future tenses. Students will also study French and francophone culture. The goal of the course is to develop a strong foundation in the language and culture to build upon in future levels. \*This course will be offered contingent upon adequate enrollment.

### **French II (Prerequisite: French I)**

French II students will expand their basic knowledge of French language and culture through the addition of new grammatical structures, verb tenses, and a broader vocabulary base. Students will continue to develop skills in reading, writing, listening, and speaking. Like French I, this course will be taught primarily in French, allowing students to increase their comfort with the language as well as gain the ability to commence thinking in the language. Students will interpret and respond to a variety of media to develop their reading and listening skills. Students will continue to work toward mastering spoken and written narration of events using the present, past, imperfect, and future tenses. The course will foster a deeper knowledge and appreciation of the cultural aspects of the francophone world.

### **French III (Prerequisite: French II)**

French III builds upon the foundations built in levels I and II, enhancing pronunciation skills, augmenting grammar skills, improving writing, and expanding general vocabulary. Students



develop a greater understanding of French and francophone culture, as well as build upon their knowledge of French history, all through the use of the French language. Students will engage in a more profound study of grammar, including relative pronouns, object pronouns, the use of the subjunctive and indicative moods, and an array of verb tenses. Writing will include formal essays, journal entries, critiques, and short research papers in French. Vocabulary study includes words of everyday situations, groups of a topical nature, and words associated with the readings. Students will examine a variety of French poetry and read a short novel in French. Students are encouraged to express their own thoughts in French.

### **Advanced French [French IV/V (Prerequisite: 85+ in French III or IV)/ AP French Language & Culture (Prerequisite: 90+ in French III/IV or Instructor Approval)]**

This course is designed for those students who have successfully completed three or more years of French with a grade of 85 or higher. In some cases, admission to the course will also require permission of the instructor or a written test. The course has a dual purpose in that it develops the student's overall proficiency in the French language with concentrations on literature, writing, speaking, and advanced grammar, while also preparing students to continue their study of French at the university level *or* to take the Advanced Placement examination in French Language and Culture. Students read a variety of traditional literature and poetry as well as contemporary works. Written work comprises textual analysis, essays, and a limited amount of creative writing. The class is conducted in French allowing students to further develop their pronunciation, vocabulary, and grammar skills. Students interested in taking the AP French Language and Culture examination will be allowed to do so with the permission of the instructor. These students will engage in supplemental activities to develop their familiarity with the AP exam format.

### **Latin I**

Latin I introduces students to Latin vocabulary, sentence construction, grammatical rules, syntax and the richness of Roman culture. Students acquire beginning translation and construction skills for the written word, as well as learn proper pronunciation and inflection for oral reading. This is a proficiency-based course, which provides active practice in listening, speaking, reading and writing in the Latin language. It is also enriched with numerous elements of the Roman civilization, including daily life, customs, architecture, and historical relevance.

### **Latin II (Prerequisite: Latin I)**

Latin II builds upon the Latin I foundation and exposes the students to more complex linguistic structures. The addition of these elements allows the students to significantly broaden the depth of their reading and writing. This is a proficiency-based course, which provides active practice in listening, speaking, reading and writing in the Latin language. Students in this course are exposed to key events in Roman history and mythology. They will also begin to read longer passages in Latin which focus on a wider variety of grammatical structures.

### **Latin III (Prerequisite: Latin II)**

Latin III is designed for the accomplished and self-motivated Latin student who is interested in solidifying his/her understanding of grammar from Latin I and II, and in gaining a broader translation experience in the language. Sample works from some of the great Roman writers of both prose and poetry are translated within a historical context, and continued emphasis is placed on cultural appreciation.

#### **Advanced Latin (Latin IV/V) (Prerequisite: 85+ in Latin III or Latin IV)**

This course is designed for those students who have successfully completed three years or more of high school Latin with an average of 85 or higher. In some cases, admission to the course will also require permission of the instructor or a written test. The focus of this class will be an advanced study of Latin prose and poetry, with special attention given to metrics, stylistic devices and thematic elements. Students will read selections from authors including Vergil, Caesar, Plautus, Catullus and Ovid. Readings may focus on a particular thematic topic as seen in the writings of multiple authors or focus more intently on an individual author.

#### **AP Latin (90+ in Latin III or IV or Instructor Approval)**

Students will follow the syllabus set forth by the College Board to prepare for an AP examination in May. The reading list will be composed of the AP selections from Caesar and Virgil, as well as occasional sight-reading passages. Throughout the year, students will practice short-answer and essays questions similar to those found on the AP exam. The course will require a significant amount of work to be done independently outside the classroom. Students may be asked to take an entrance exam prior to enrolling in the class.

#### **Dual Enrollment Latin**

Students will gain an understanding of and facility with Latin grammar, vocabulary and syntax through a mixture of textbook exercises, unit tests and semester exams. For students with prior Latin experience, placement into a course other than Latin 101 will depend on the results of a placement exam designed by PVCC. Students without prior experience in Latin will only need to meet the standard requirements for a dual enrollment course.

#### **Spanish I**

In Spanish I, students will receive an introduction to the basic vocabulary, grammar, and sentence structures found in the Spanish language. Students will study vocabulary ranging from the basics of conversation in Spanish, to vocabulary related to daily activities, the school environment, and family. Students will focus on discussing basic topics in both the present and simple past tenses with a moderate level of fluency. Students in Spanish I will also learn about the cultures and traditions of Spanish-speaking countries through interactive presentations made by the teacher, students themselves, and their peers. Each class period will consist of both vocabulary and grammar instruction or review, with an emphasis on practical application of the Spanish language, and lesson delivery with a hands-on and experiential instructional approach. Within Spanish I, students will be expected to complete nightly homework assignments to improve their understanding of the Spanish language, and to make attempts to participate in the target language whenever possible. Throughout the course of Spanish I,

students will consistently work in all of the language domains, including speaking, reading, writing, listening, and culture.

### **Spanish II (Prerequisite: Spanish I)**

Students will develop their interpersonal, interpretive, and presentational skills in Spanish while building upon their foundation in the areas of vocabulary, grammar, and sentence structures found in the Spanish language. Students will gradually work towards initiating and maintaining an extended conversation about work, school, recreation, and other topics. They will be able to interpret information spoken and written in Spanish, via various media platforms (images, voice recordings, videos, etc.). Writing will focus on being able to express ideas across various times (present and past tenses) and grammatical moods (indicative and subjunctive). Authentic resources, technology, meaningful context, and culture will all be a medium through which students will accomplish said goals. Students will be expected to complete nightly homework assignments to improve their understanding of the Spanish language, and to make attempts to participate in the target language whenever possible.

### **Spanish III (Prerequisite: Spanish II)**

Students will further develop their interpersonal, interpretive, and presentational skills in Spanish while acquiring additional vocabulary and improving the use and understanding of fundamental grammatical concepts. Their interpersonal skills will include narrating and describing familiar events in the present, past and simple future. They will learn to interpret information they hear and read in Spanish using visual aids and cues from the teacher. Writing exercises will focus on formulating complete sentences and constructing a well organized paragraph. Basic sequencing and transition words will be introduced to enhance their academic writing. Students will also begin to explore basic literary analysis focusing on the key vocabulary terms needed to speak and write about excerpts from the stories, plays and poems that they read. These terms will be derived from the list of Basic Terms of Achievement as outlined in the AP Glossary of Literary terms. Students will be expected to speak Spanish exclusively during class. They will explore authentic resources like literature, current events, artwork and music.

### **Advanced Spanish/Spanish IV (Prerequisite: 85+ in Spanish III or Instructor Approval)**

Students in advanced Spanish will continue to engage in a more indepth study of grammar and language. This will include introducing compound tenses in both the past and present as well as a more indepth study of the subjunctive. Additionally, students will engage in longer writing assignments (2-3 paragraphs) and learn how to write an effective and interesting thesis. They will read and interpret longer literary works in Spanish, while exploring major historical events relating to Spain and Latin America. They will be introduced to key terms included in the Intermediate Terms of Achievement list as outlined in the AP Glossary of Literary terms. Students will be expected to speak exclusively during class. They will explore authentic resources like literature, current events, artwork and music.

### **Advanced Spanish/Spanish V (Prerequisite: 85+ in Spanish IV or Instructor Approval)**

**Students in advanced Spanish will continue to engage in a more indepth study of** grammar and language. This will include introducing compound tenses in both the past and present as well as a more indepth study of the subjunctive. Additionally, students will complete

two major research projects during the year. In conjunction with Spanish IV, students will engage in an understanding of political history and philosophy as it relates to major historical events in Spain and Latin America. Additionally, they will read and interpret longer literary works in Spanish, while exploring major historical events relating to Spain and Latin America. They will be introduced to new key terms included in the Intermediate Terms of Achievement list as outlined in the AP Glossary of Literary terms.

**AP Spanish Literature & Culture Prerequisite: 90+ in Advanced Spanish IV or Instructor Approval)**

This course is intended to be the equivalent of a college level survey of Spanish and Latin American Literature. The literary selections chosen for this course are compatible with those on the AP Literature and Culture reading list. Students will study works which cover a variety of genres: short stories, plays, poetry and short novels. Students will be presented with the historical, biographical and cultural factors that influenced these works. Furthermore, students will develop critical thinking skills and expand their academic writing repertoire to include analytical essays. Terminology from the AP Advanced Literary Terms of Achievement List will be studied in detail. This course is designed to prepare students for the AP Literature and Culture Exam.

**English for Speakers of Other Languages (ESOL)**

In ESOL, students will participate in an in-depth study of vocabulary, grammar, and sentence structures found in the English language. This study will be developed on an assessment of students' language needs. Students will study a variety of vocabulary terms that will be centered on the themes outlined within our textbooks, as well as within readings done during class. Similarly, students will discuss grammar topics that will be based on student need, while reviewing basic grammatical structures, such as sentence formation through more complex concepts such as adverb clauses and discourse connectors. As a class, students will consistently work in all of the language domains, including speaking, reading, writing, listening, and culture. Students' culture studies will consist not only of the culture of the United States, but the distinct personal cultures, that each student brings to the ESOL class. Students will encounter a focus on practical application of the English language, in the hopes that as they complete their year in ESOL, students will feel as though their comfort level, fluency, and knowledge about the English language and cultures will have increased greatly.

**HISTORY**

Building "responsible citizens, insightful thinkers, and compassionate individuals" is at the center of the History Department's curriculum at the Miller School of Albemarle. The classical questions and problems of human society are presented to our students as theirs to solve. The focus of the History classroom becomes instruction in the critical tools of self-discovery: research, analysis, and synthesis. This education equips MSA students to be fully engaged and articulate

citizens with a deep sense of cultures, traditions, and ideas from around the globe.

Three upper school history courses are taken in sequence as a student progresses through Miller School of Albemarle. Ancient and Medieval Civilizations introduces ninth grade students to the timeless questions bequeathed by the Chinese and Islamic civilizations, the Ancient Hebrews, Greeks, Romans, and Medieval Europeans. Europe and the World asks tenth-grade students what it means to be “modern” in the wake of global cultural changes since the Renaissance. United States History and Government presents eleventh grade students with rival narratives of the American past and the struggles of the American people to honor the ideals of their revolution, while AP United States History offers the standard college-level introductory survey, with a special focus on College Board themes. At the senior level, students

are presented with more course options to enhance their humanities education, including AP United States Government and Politics, and Government: Political Philosophy. Each course represents a capstone to the Miller School of Albemarle History program. All courses are coordinated with the English Department curricula at each grade level to give students a rich interdisciplinary experience.

### **Humanities 9 – Ancient & Medieval Civilizations**

Ancient and Medieval Civilizations is the first half of a two-year course of study. In this course students examine the events, cultures, ideas, and personalities that shaped the foundation for our contemporary world. The course emphasizes the “roots” and development of Western Civilization: the Jews, the Greeks, the Romans, and medieval Christianity. However, because the western world did not develop in isolation, we spend a good deal of time exploring non-western cultures and traditions. As a class, we develop an awareness of world history in our lives through the study of the lives of “regular” people and by continually linking these lives and events of the past with our world today.

### **Europe & the World (10th Grade)**

This course traces the development of the modern global economy from Europe’s early modern period, the age of exploration. Students will learn how to understand patterns of interaction with Europe and global cultures, from the global trade in the sixteenth century to the cultural interactions with Islamic civilization that led to the Renaissance, to colonization in the Americas, Africa, and Asia. A special emphasis will be placed on writing with a critical vocabulary. The course will show how interactions between Europe and the world shaped the global present.

### **AP European History (10th Grade) (Prerequisite: 90+ in Humanities 9--Ancient & Medieval Civilizations or Instructor Approval)**

Advanced Placement European History course is an intensive survey of European history from 1450 to the present day, designed to prepare students for the AP examination in May. What is modernity, and why is it often assumed that modern history begins in Europe? The class investigates the political, social, economic and cultural developments in Europe that would powerfully influence the modern history of the world. Students will develop skills of clear analytical writing in a timed environment, persuasive argument, and interpreting primary source documents.

### **United States History & Government (11th Grade)**

This course will survey American history from the pre-Colombian period to the present with a special focus on the development of the United States government. The student will analyze political, social, economic and cultural themes within the context of broad, chronologically divided units. Special emphasis is placed on the development of American government at the federal, state, and local levels, and the mechanisms of government in America. In addition to a textbook, this course draws upon a wide range of both primary and secondary source material, and students are expected to do significant note-taking, reading, and writing. The goals of the course are threefold: to impart to students a working knowledge of the narratives of American history and the American government; to foster critical thinking and analysis; to engage and improve specific scholarly skills, including note-taking, organization, original research, test preparation, and academic writing.

### **AP United States History (Prerequisite: 90+ in Europe & the World or 88+ in AP European History or Instructor Approval)**

The Advanced Placement United States History course is designed to provide a rigorous college level experience in preparation for the AP examination in May. An emphasis will be placed on interpreting documents, mastering a significant amount of informational content, and writing critical essays in a timed environment. Students in this course will develop key historical thinking skills, including chronological reasoning, comparison and contextualization, crafting written arguments using historical evidence, and historical interpretation and synthesis. There will be a focus on the seven main themes of American history as outlined by the College Board: identity; work, exchange, and technology; peopling; politics and power; America in the world; environment and geography; and ideas, beliefs and culture. (Please note this course does not fulfill the graduation requirement for government. Students who take AP US History will need to take a government course prior to graduation.)

### **DE United States History (11th Grade)**

#### **PVCC HIS 121-122 (3 credit hours per semester)**

Students will study a survey of American history in two segments. Semester 1 will cover Pre-columbian America to 1877, and Semester 2 will cover 1877 to 9/11. The course will be structured similarly to college history courses; a majority of homework assignments will be readings from primary source documents, a college-level textbook, and literature from the periods studied. Students need to be capable of independent work and move at a faster pace than in a regular history class. The course aims to both impart a knowledge of the broad contours of American history and give students practice with the historical skills of analysis, comparison, assessing causes and effects, and synthesis. Major assessments will consist of unit tests and persuasive essays. DE American History students will also complete an 11th grade research paper similar to those assigned in the AP US History class and in US History and Government. Students who complete the year's coursework will receive 6 credits from Piedmont Virginia Community College.

### **Government: Political Philosophy**

This government seminar emphasizes ethical reflection, critical thinking, and advocacy in a collaborative environment. Political philosophy requires students to read the ancient and

modern texts that inform cultural values of democracy, liberalism, and the United States Constitution. Students work together to build the character and communication skills of responsible citizens, which include critical reflection and presenting ideas clearly.

**AP United States Government & Politics (Prerequisite: 90+ in US History & Government or 88+ in AP United States History or Instructor Approval)**

The course in AP United States Government and Politics is a topical study which begins with various modern economic and political systems, and proceeds through those subjects which are emphasized by the College Board's United States Government and Politics Advanced Placement exam. The goal is to produce future members of the "informed public" and, thus, in our own small way, help contribute to the future viability of our American democracy. The theme of the course is the following: there are both privileges and responsibilities involved with holding American citizenship. There is a direct relationship between the knowledge and understanding one has of the American political and economic system, and the contributions one makes to society.

**Economics (11th & 12th graders)**

This course consists of an overview of general economic reasoning skills. Students will be introduced to the principles of microeconomics, like supply and demand, trade, taxes, elasticity, and game theory. The course will also include an exploration of applied economics in the realms of personal finance, financial markets, and entrepreneurship. The ultimate goal of this class is to get students thinking like an economist. Economic decision making should be present in our everyday lives. Using the economic thinking gained in this course, students will become better decision makers and global citizens.

**AP Macroeconomics\* (11th & 12th graders and Instructor Approval)**

Macroeconomics is the study of behavior, decision-making, and efficiency of the entire economy. The scope of macroeconomics can be regional, national, or international. Given our recent economic history, this is an incredibly relevant topic. During the recent economic crisis, the president, congress, and Federal Reserve all used macroeconomics to inform their decisions. Our in-depth study of this field will allow us to evaluate our leaders' decisions. A big emphasis of this class is the use and creation of models and graphs to understand the various economic concepts from supply-demand analysis to exchange rate calculation. \*This course will be offered contingent upon adequate enrollment.

**History Department Senior Seminars**

The History Department's Senior Seminar course offerings are designed to combine high-level instruction in an area of faculty expertise with extensive guided research in an area of student interest. Instructors will teach a survey of an historical field, and help students determine an area of interest in the general (or an adjacent) field of study for further independent research. Each course will culminate with capstone projects, which allow students to apply the academic skills they have acquired throughout their time at the Miller School, in order to produce a work of college-level scholarship.

**Senior Seminar: Comparative Politics**

The aim of the Senior Seminar in Comparative Politics is to provide students with an in-depth understanding of the political structure and organization of the world's varied governments, and to understand the cultural and historical forces that shaped them. The course will be structured into units and sub-units, each one built around a particular nation-state and/or confederation. Beginning with the world's preeminent democracies, the course will then move to an examination of mixed-regimes around the world, followed by the few remaining theocracies and conclude with modern autocracies, as well as examples of failed-states. Students will choose an area of special interest and spend the duration of the course engaged in research and writing on that topic. The final project for the class will be to produce a senior capstone paper on the chosen topic, choose a committee to review the paper, and defend the project in front of a panel. The capstone project will follow the history department's senior capstone project scaffolding, which is the same for all senior capstone classes.

### **Senior Seminar: History of the American Civil War**

The aim of the Senior Seminar in Civil War History is to give students a deeper understanding of American history through a combination of focused topical study and higher-level independent research. In the course students will study a variety of subjects related to the Civil War, including U.S. Constitutional theory, racial history and relations, debates over the culture of the Old South and the Antebellum North, military history, and the economics systems of the newly industrialized world. Students will choose an area of special interest and spend the duration of the course engaged in research and writing on that topic. The final project for the class will be to produce a senior capstone paper on the chosen topic, choose a committee to review the paper, and defend the project in front of a panel. The capstone project will follow the history department's senior capstone project scaffolding, which is the same for all senior capstone classes.

### **Senior Seminar: Native American History**

The aim of the Senior Seminar in Native American History is to provide students with an in-depth understanding of the history of the tribes of North America before contact with European settlers, and through American westward expansion to the modern day reservation. The course will be structured into units focusing on Native American lifestyles broken down by geographic region and the devolution of tribes across the country after contact with European and American Settlers. Students will choose an area of special interest and spend the duration of the course engaged in research and writing on that topic. The final project for the class will be to produce a senior capstone paper on the chosen topic, choose a committee to review the paper, and defend the project in front of a panel. The capstone project will follow the history department's senior capstone project scaffolding, which is the same for all senior capstone classes.



## **MATHEMATICS**

The Mathematics Department provides a curriculum to help students develop the knowledge and skills for entrance into and success in college as well as an awareness, which enables them to apply mathematical principles in other academic disciplines. Students begin by establishing a solid base in algebra and geometry, emphasizing logical reasoning, problem solving, the interpretation of data, functions, and the use of computers and calculators. Students are exposed to different forms of technology throughout the curriculum. Students are encouraged to collaborate with their peers, creatively communicate their knowledge, and learn to be independent thinkers and learners.

### **Algebra I (Prerequisite: Pre-Algebra)**

This course serves as the first in the sequence of college preparatory mathematics. Concepts are introduced in the context of real-world problems in order to increase the conceptual development of the student. This course covers graphs in the coordinate plane, linear equations and inequalities, radicals, polynomials, quadratics, and data analysis. The concept of functions is emphasized using graphical, verbal, numerical, and algebraic methods.

### **Geometry (Prerequisite: Algebra I)**

This class emphasizes two- and three-dimensional reasoning skills, coordinate and transformational geometry, the use of geometric models to solve problems, and algebraic connections in Geometry. Concepts are introduced in the context of real-world problems in order to increase conceptual development. A variety of application problems and problem-solving skills are included. This course covers properties of geometric figures, coordinate geometry, constructions, introduction to Trigonometry, informal proofs, and cultural, artistic and historical contexts of Geometry. Students will need a computer for this class and use of Geogebra and Google SketchUp.

### **Algebra II (Prerequisite: Geometry)**

This course is a continuation of the Algebra I course. It is designed to give the student a strong connection between algebraic, numerical, verbal, and graphical representations of functions. It includes a review of basic algebra skills at the start of this course. A thorough study of advanced algebraic topics is done based on the study of functions, parent functions and their families, equations, inequalities, systems of equations, quadratics, radicals, exponents, and logarithms. Emphasis is placed on multiple representations of functions, including the use of technology. Students will also be expected to clearly communicate their understanding of the concepts in written form. The goals in this course are to develop a knowledge base of algebraic functions, types of equations, and the connections between the different formats these can be represented.

### **Algebra III (Prerequisite: Algebra II)**

This is the second course in a two-year series for the study of Algebra II, Trigonometry, Probability and Intro to Statistics. It is a continuation of the concepts from Algebra II. There is a basic review of Algebra II topics at the start of this course. Students continue with a study of polynomial functions, rational functions and exponential functions. Students will then study trigonometry content including right triangle trigonometry, general triangles, radian measures,

arc length, area of sectors, circular motion, graphs of trigonometric functions and properties of trigonometric functions, polar equations and parametric equations. The final phase of the course will cover an introduction to probability and statistics. Topics will include independent and dependent events, conditional probability, discrete random variables, probability distributions, measures of central tendency, normal distributions curves, and organizing and displaying data.

### **Computer Programming (Prerequisite: Algebra II)**

This course introduces students to basic web design and programming using HTML (Hypertext Markup Language), CSS (Cascading Style Sheets) and Javascript and ProcessingJS (Processing JavaScript). The course does not require any prior knowledge of web design or programming but will require Algebra II as a prerequisite as there are many algebraic and geometric elements in programming. Students will learn how to create websites by structuring and styling their pages with HTML and CSS as well as learn the fundamentals of JavaScript, the programming language of the Web. The course is designed to use Khan Academy's Computer Programming Curriculum and Codecademy's Curriculum to work through the modules and challenges in a self paced yet collaborative structure. Students will create and share multiple projects and will develop a portfolio of work by the end of the course. A computer will be required for this class.

### **Pre-Calculus (Prerequisite: 80+ Algebra II and Teacher Recommendation)**

In this course students study functions introduced through their applications. Students will study linear, absolute value, piece-wise, quadratic, polynomial, rational, exponential, logarithmic, and trigonometric functions. They will initially investigate these functions in depth from the perspective of transformations without the use of technology. Subsequently an emphasis will be placed on the use of elementary functions to investigate and analyze applied problems and questions, supported by the use of appropriate technology and the effective communication of quantitative concepts and results. The goals in this course are to learn how to manipulate functions and formulae, understanding the concepts involved in solving equations, and the ability to communicate this understanding clearly in written form. Such understanding is best gained from the combined viewpoints of geometry, algebra, logic, and numerical experiment. This course emphasizes the development of visual, numerical and logical intuition to complement the usual algebraic intuition.

### **Calculus (Prerequisite: 80+ Pre-Calculus and Teacher Recommendation)**

Standard Calculus is designed to be taught with the intention of learning the basic topics of Calculus without following the college level rigor and intensity of Advanced Placement Calculus. Generally, the first semester is devoted to differential calculus while the second semester teaches integral calculus. The primary aim of this class is to develop the student's understanding of the concepts of calculus and provide experience with its methods and applications. Since there is no AP test to prepare for, this course will be able to spend more time with these topics, completing more hands on labs to help reinforce the methods and applications covered. A graphing calculator is required for this course.

### **AP Calculus AB (Prerequisite: 85+ Pre-Calculus and Teacher Recommendation)**

AP Calculus AB is designed to be taught with the intention that the student will earn college credit or placement. This course follows the requirements set out by the College Board. Generally, the first semester is devoted to differential calculus while the second semester teaches integral calculus. The primary aim of this class is to develop the student's

understanding of the concepts of calculus and provide experience with its methods and applications. A graphing calculator is required for this course.

**Statistics (Prerequisite: 80+ Alg II and Teacher Recommendation)**

Statistics covers methods of data gathering, representation, analysis, and inference. Significant time is dedicated to design, administer, and tabulate results from surveys and experiments. Topics include correlation and regression, probability, binomial and normal distributions, and hypothesis testing. A graphing calculator is required for this course.

**AP Statistics (Prerequisite: 80+ Alg II and Teacher Recommendation)**

AP Statistics is a year-long high school equivalent of a one semester, introductory college statistics course which follows the requirements outlined by The College Board and prepares the students for the AP exam in May. In this course, students develop strategies for gathering, representing, analyzing, and drawing conclusions from data. Students design, administer, and tabulate results from surveys and experiments. Probability and simulations aid students in constructing models for chance phenomena. Sampling distributions provide the logical structure for confidence intervals and hypothesis tests. A graphing calculator is required for this course.

**AP Calculus BC w/ Math Seminar\* (Prerequisite: 90+ AP Calculus and Teacher Recommendation)**

This advanced mathematics course is designed for those students wishing to continue their study of calculus after the AP Calculus AB course. Students must be high achievers in the AP Calculus AB course, and they should wish to pursue their study of abstract mathematics further. This course will cover the topics of the BC curriculum that were not covered in the AB course and will prepare students for the BC exam in the spring. As time permits, interesting and relevant math topics will be covered including introduction to logic and proofs, elementary number theory topics, linear algebra introduction and applications as well as an introduction to complex analysis. \*This course will be offered contingent upon adequate enrollment.

## **SCIENCE**

The objectives of the Science Department are to develop students' scientific literacy as well as to provide a sound foundation of knowledge and skills for those students who pursue the study of science in college. Course designs and instructional methodologies are aimed at increasing students' awareness of science as a process of discovery as well as a body of knowledge about the natural world. Emphases are placed on developing students' understanding of the presence of natural processes in daily occurrences and the importance of basic science knowledge and problem-solving abilities as essential parts of the skills and mindsets of educated people.

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

Introductory Biology is a survey course designed to enhance students' appreciation of the living world and their understanding of how living systems function. The course also teaches the scientific method and how to conduct lab-based inquiry, and emphasizes the development of study skills which will serve students well through the rest of their high school careers.

Introductory Biology covers cell structures and functions, cellular processes such as photosynthesis and cellular respiration, genetics, DNA and protein synthesis, evolution, the history of life and a survey of life's diversity, and ecology. Students engage in hands-on labs and projects as a part of each unit, and these activities are designed both to enhance students' research skills and to develop practical skills such as accurate measurement, graphing, and safe handling of laboratory equipment. Students are challenged to use systems thinking to understand the interrelated nature of life processes, and are encouraged to engage with and appreciate the natural world as they experience it in their daily lives.

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

The course in Chemistry explores the nature of matter on the atomic as well as macroscopic level. Students complete written assignments, labs, and algebraic mathematical problems as they seek an understanding of what things are made of and how these things can undergo different types of changes. Projects relating the theoretical to the "real world" or chemistry's practical applications are also completed. Access to a graphing calculator is required.

### **Conceptual Physics (11th or 12th Grade)**

In the introduction of text written by Paul G Hewitt, he states: "You know you can't enjoy a game unless you know its rules; whether it's a ball game, a computer game, or simply a party game. Likewise, you can't fully appreciate your surroundings until you understand the rules of nature. Physics is the study of these rules, which show how everything in nature is beautifully connected. So the main reason to study physics is to enhance the way you see the physical world. You'll see the mathematical structure of physics in frequent equations, but more than being recipes for computation, you'll see the equations as guides to thinking." With that as context, the principal areas of study that will be explored are: Mechanics, Properties of Matter, Heat, Sound, Electricity and Magnetism, Light, Atomic and Nuclear Physics, and Relativity. Rather than content mastery, a cursory treatment of topics will be employed.

**AP Physics 1: Algebra based (11th or 12th Grade; Prerequisites: 90+ in Geometry or Instructor Approval; co-requisite Algebra II)**

AP Physics 1 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of Physics through inquiry-based investigations as they explore topics such as Newtonian Mechanics (including rotational motion; work, energy, power; and mechanical waves and sound; and introductory, simple circuits. AP Physics 1 is designed to enable you to develop the ability to reason about physical phenomena using important scientific process skills such as explaining causal relationships, applying and justifying the use of mathematical routines, designing experiments, analyzing data and making connections across multiple topics within the course. This course is equivalent to the first semester of a typical college level, algebra-based physics course.

### **Applied Engineering (10th - 12th Grade)**

This is a course to learn and apply the principles of engineering to solve real-world problems. Students will learn about the various fields engineering, principles of engineering such as how the engineering design process works, how engineering combines the disciplines of math and science, and how design and modeling can be used to turn an idea into reality. Engineering challenges that develop creative problem-solving skills while working in a design team environment will provide engaging learning opportunities. Additionally, students learn the basics of 3D CAD software to explore rapid prototyping and manufacturing engineering technologies.

Students will have the opportunity to gain valuable leadership and meaningful exposure to all phases of the engineering process. The Applied Engineering course has the flexibility to be taken for up to 3 years as an increasing role of leadership and responsibility given to students as they complete increasingly involved assignments.

### **Land Management (10th - 12th Grade)**

Land Management is an elective course that will explore many of the factors that are associated with responsible land management. Employing MSA's 1600 acre campus, students will study owner and user needs and desires to develop and implement plans for improved utilization and enjoyment. The course will also emphasize stewardship of the land, focusing on sustainable uses and practices. Land Management is an interdisciplinary course bringing together a range of topics that will include, but are not limited to: cartography, forestry, preservation, land development, and law. It is recommended that prospective students also have a keen interest in Design/Build, Applied Engineering, and/or Environmental Science. Students will learn and be assessed through projects, research papers, class discussions, and hands-on field work. Please note that roughly half of the course will be spent in a classroom environment and the other half outdoors in the field. Required equipment includes work boots, gloves, and eye protection. Work pants and jacket are also highly recommended.

### **Environmental Science (10th- 12th Grade)**

Environmental Science is an elective course designed to help students understand how humans relate to, affect, and are dependent upon our natural environment. The course places emphasis on topics with local and global impact. Topics covered fall under the following broad headings: earth systems and resources, the living world, populations, land and water use, energy resources and consumption, pollution, and global change. Through lab activities, projects, research papers, and class discussions, students will be asked to tackle environmental questions with the understanding that environmental science is an interdisciplinary field within the sciences, and cannot be studied without consideration of economic and social factors. Students will also be requested to examine their environment with a scientific mindset,

considering all possible interpretations of observed phenomena and collected data with curiosity and skepticism. Those considering enrollment in Environmental Science are encouraged to speak with the instructor beforehand to gain a thorough understanding of course scope and requirements.

### **AP Biology (Prerequisites: Chemistry and 90+ in Biology or Instructor Approval)**

This AP Biology course is designed to be similar to an introductory level college course about the science of our living world. This class incorporates topics that span four big ideas: the process of evolution, how organisms utilize free energy, the transfer of information essential to life processes, and how biological systems interact. For each of these topics, students will develop an in-depth understanding of what the concept is, its function on different levels, and its impact on life and society. AP Biology has an extensive lab component, comprising at least 25% of the class time. The lab work provides hands-on experience for understanding the material, develops good problem solving skills, promotes critical thinking, and applies each topic to everyday life situations. This course will help students develop a conceptual framework for modern biology and an appreciation of science as a process.

### **AP Chemistry (Prerequisites: 90+ in Chemistry, Algebra II and Instructor Approval)**

The Advanced Placement Chemistry course is designed to be the equivalent to an introductory college level chemistry course. The course is based around six big ideas: the structure of matter, bonding and intermolecular forces, chemical reactions, kinetics, thermodynamics, and chemical equilibrium. There is an extensive laboratory component with a focus on student-guided labs. Students will also work on basic science practices such as asking questions, making predictions, analyzing and evaluating data, and applying mathematical solutions to problems.

### **DE BIO 145 Human Anatomy and Physiology for the Health Sciences**

#### **PVCC BIO 145 (4 credit hours for the year)**

Introduces human anatomy and physiology primarily to those planning to pursue a degree in nursing. Covers basic chemical concepts, cellular physiology, as well as the anatomy and physiology of human organ systems. We will study the structure, function, and disorders of the major systems of the body and understand the relationship between anatomy, physiology, and pathology. We will use and define medical terms relating to the body systems covered during the semester, and we will solve solve problems relating to clinical conditions using physiological concepts. Co-curricular lab requirement.

## **SPECIAL PROGRAMS**

### **Study Skills**

The Study Skills class is provided for qualified students. The class meets daily throughout the year, and the maximum class size is four students. This is an intensive, individualized approach to basic academic needs such as organization, time management, prioritization, goal setting, accountability, note taking, research writing, test preparation, and self-advocacy. Students receive a grade for this class as they do in any other class. There are also specific materials required. Admission to this class is not by simple request due to the limited class size. Space is

granted on the basis of need, after the Admission and Study Skills committees have reviewed documentation and spoken to parents and teachers. Students can also be admitted to the program during the course of the school year when referred by teachers, parents, or even self-referral, if the process of eligibility is satisfied. If a student is admitted to the Study Skills class, a list of strengths, weaknesses, and necessary accommodations for classroom and/or testing is given to all classroom teachers. A student typically spends one school year in the Study Skills class and then has the ability to matriculate into the regular program without direct support. All students dismissed from the Study Skills program have an exit report given to the next year's teachers that list any accommodations that may best support continued success.

### **DE Principles of Psychology / Abnormal Psychology**

#### **PVCC PSY 200 and PSY 215 (3 credit hours per semester)**

In the first semester (PSY 200), we survey the basic concepts of psychology. Covers the scientific study of behavior, behavioral research methods and analysis, and theoretical interpretations. Includes topics such as: physiological mechanisms, sensation/perception, motivation, learning, personality, psychopathology, therapy, and social psychology. In the second semester (PSY 215), we study the historical views and current perspectives of abnormal behavior. Emphasizes major diagnostic categories and criteria, individual and social factors of maladaptive behavior, and types of therapy. Includes methods of clinical assessment and research strategies.

### **DE Introduction to Business / Entrepreneurship**

#### **PVCC BUS 101 and BUS 116 (3 credit hours per semester)**

In the first semester (BUS 101), this course presents a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential elements of business organization, finance, marketing, production, and risk and human resource management. In the second semester (BUS 116), the course presents the various steps considered necessary when going into business. Includes areas such as product-service analysis, market research evaluation, setting up books, ways to finance startup, operations of the business, development of business plans, buyouts versus starting from scratch, and franchising. Uses problems and cases to demonstrate implementation of these techniques.