THE MARVELWOOD SCHOOL

# CURRICULUM GUIDE

REVISED JULY 2016

THE MARVELWOOD SCHOOL

# CURRICULUM GUIDE

REVISED JULY 2016

## TABLE OF CONTENTS




**THE MARVELWOOD SCHOOL ACADEMIC OFFICE**

Blythe Everett, Academic Dean • blythe.everett@marvelwood.org

Shannon Nelson, Registrar • shannon.nelson@marvelwood.org

Tel: (860) 927-0047 Fax: (860) 927-5325

476 Skiff Mountain Road • PO Box 3001 • Kent, Connecticut 06757

**www.marvelwood.org**

# ACADEMIC POLICY

Marvelwood School's guiding principle regarding a student's curriculum is that the goal should be success in a challenging curriculum. As a college preparatory school, we want our students to present well as they apply to colleges, and college admission officers want to see that students have challenged themselves. In other words, successful completion of a high school education is not and should not be based on completing a minimum of required courses or the lowest possible number of credits. Students must exercise good judgment in selecting a course load that is challenging but will not present an overwhelming obstacle to success.

We believe in accommodating abilities, talents, interests and learning styles as much as possible as students progress through the academic program. Some courses are required for graduation, and there is a sequence we normally follow is some subjects. For example, in mathematics, the progression for most students is Algebra I, then Geometry, then Algebra II, and then Trigonometry or Precalculus. In science most freshmen take Biology I, and most sophomores take Biology II. In history most juniors take U.S. History.

All academic classes at Marvelwood are yearlong courses. Arts and elective courses are offered by the term, but many may be taken for one, two, or three terms. At the start of each term, students are given a window of opportunity to change non-mandatory classes or elective choices with advice from the Academic Dean. Misplacements can be addressed by the Academic Dean at any point during the course of the year, but class changes are typically made during the first weeks of school or at the beginning of a term.

## COURSE LEVELS

Marvelwood's faculty are adept at challenging all students at an appropriate level, and are able to accommodate students of all abilities in mainstream classes. As such, course leveling does not apply at Marvelwood. Honors-level curriculum is offered in 10th, 11th and 12th-grade courses. In this handbook, classes which are or may be offered at the Honors level are indicated with an asterisk (*).

In some other junior and senior courses, honors credit may be awarded to individual students who excel in the classwork; this credit is awarded at the discretion of the instructor and the Academic Dean. Courses in which discretionary Honors credit may be available are indicated with a double asterisk (**).

## REQUIREMENTS FOR GRADUATION

A minimum of twenty-four (24) academic credits is required for graduation. The following are the minimum number of credits required for graduation from Marvelwood:

4 credits in English, grades 9 – 12
4 credits in mathematics, grades 9 – 12, including Geometry and Algebra 2°
3 credits in history, including U.S. History
3 credits in science, including two lab sciences
2 credits in world languages°
3 credits in the arts

Please note that this list comprises the minimum expectations in all areas. The vast majority of our students graduate having earned more than the minimum number of credits and/or completed more than the minimum requirements in each academic area.

Students take six to seven courses each year. Juniors and seniors may elect a supervised study period in place of an elective as long as they are carrying a minimum course load of five year-long academic classes, not including Strategies.

° In some cases of a diagnosed learning difference in language or mathematics, the world language requirement or fourth credit in mathematics may be waived.

# THE ARTS

Art is a universal language that is fundamental to a complete education. Through exploring the arts, students often develop a deeper understanding of the human experience, one that enriches their lives as adults. The arts program at Marvelwood is built on a proud tradition of artistic expression that stretches back to the School's founding. The study of the arts teaches our students analytical and creative thinking, problem solving, project-based learning, collaboration, communication, global perspective, non-traditional assessment, and arts literacy. The Arts Department presents arts exhibitions, instrumental and vocal concerts and recitals, and musicals and plays throughout the year.

Because of the School's proximity to New York City, New Haven, Hartford, and Boston, students have the opportunity to visit major museums and galleries, attend dance and music concerts, musicals, and plays. In addition, the Arts Department offers master classes and workshops with guest artists in all fields.

Arts courses are offered by the term, but many may be taken for one, two or three terms. It is expected that a student who enrolls in an Advanced or Honors arts class will remain in the class for the full year. A minimum of three credits in the arts is required for graduation. Not all courses listed are offered every term or every year.

## THE VISUAL ARTS

**VISUAL ART – All grades**
This course introduces students to the fundamentals of drawing, painting and three-dimensional art. Using innovative studio projects and a rich variety of materials, students explore the elements of art and design. Students will develop a strong understanding of art as a means of communication, making connections between content and form. Each student will keep a sketchbook; assignment will encourage the use of sketchbooks as journals to develop and explore new ideas. This course explores a variety of techniques of drawing, the use of perspective and proportion, and color theory, incorporating multicultural artist exemplars. Students will also complete at least one site-specific collaborative project. The course is designed to encourage self-expression and develop skills for creating problem-solving. In addition to student critiques, an interpretation of relevant works of art is a regular part of class projects. Extra credit is always available by doing artwork of any kind outside of class.

**ADVANCED / AP ART – 11th & 12th grades***
Students with a strong interest in continuing their art education in college, and/or who plan to submit an Advanced Placement (AP) portfolio to the College Board, are encouraged to enroll in Advanced Art. This course is a more traditional and intensive study of art techniques, including the still life, figure drawing, perspective and portraiture. In addition to writing components and weekly critiques with instructor and peers, field trips to sketch in different environments and museum trips are also part of the curriculum for this course. Students interested in pursuing AP credit for this course must formally declare their intention by the end of the fall term, and must complete and submit a portfolio to the College Board in May. The instructor will meet with students individually to discuss development of the breadth and concentration areas for their portfolios; students also receive guidance in the development of digital portfolios for application to art colleges or programs. Prior experience in Art is required, and students must obtain the instructor's permission to enroll.

**PHOTOGRAPHY – All grades**
This class is designed to teach students how to use digital cameras, scanners, imaging software, printers and computers to explore the artistic potential of new imaging technology. Students will learn how to plan and produce digital images that demonstrate an understanding of composition, light, color and visual impact. Hands-on projects include digital painting, digital photography, image capture, image manipulation and graphic design ideas. Students will experiment with digital cameras and many editing tools in both Photoshop and Adobe Illustrator. The intention of these assignments is to approach the tools as a process so that students can learn how they operate and begin to manipulate them towards their own creative ideas. Approaches to scanning and printing will also be taught. The school maintains a photography blog where student work is displayed and critiqued.

**YEARBOOK – 11th & 12th grades**
This course focuses on all aspects of putting together Marvelwood's yearbook, including choosing a theme, setting a meeting project deadlines; taking pictures and manipulating them using computers; layout and editing of pages; and funding the project through solicitation of advertising. Students will become skilled in the use of 35mm cameras and developing equipment, and will learn graphic design using computers. Some knowledge of basic photography is helpful but not required. Most students enroll in this class in the fall and remain for two or three terms to work on all phases of preparing the yearbook.

**CERAMICS – All grades**
Ceramics includes anything made in clay. In addition to sculpting by hand, students learn how to use the potter's wheel and have the option of both motorized and kick wheels. They also learn the limitations of the clay; thick pieces explode in the kiln, flat things tend to curl in drying, thin pieces break very easily when dry, so their designs must take these facts into account. Students are required to make a wind chime, two pieces on the wheel, two pieces by hand, and a fish for the classis mosaic. The students' best pieces are handed in at the end of each term and are graded accordingly. Emphasis is on continually practicing and building skills.

## THE PERFORMING ARTS

**MUSIC – All grades**
This course offers musical guidance for each student based upon his/her own individual musical interests. Students set a goal for the term and work on their musical interests in any form of activity including composition, solo/ensemble performance, learning songs for voice/instrument, and listening. Students also learn basic music theory and other concepts to spur their musical growth. No experience or skill is necessary to enroll, but some type of musical performance or presentation is a required part of the course.

**ADVANCED MUSIC – 10th, 11th & 12th grades***
This intensive course, designed for experienced, dedicated, and highly motivated musicians, will incorporate performance, music theory, ear training, and introductory and intermediate composition. The class may be taken for one or more terms. Enrollment is by approval of the instructor; students may be required to audition to earn a spot in this class.

**THE HISTORY OF JAZZ AND ROCK 'N ROLL – All grades**
This class provides an in-depth look at 20th century popular music. Through extensive listening examples and concert footage, students will gain an appreciation of the struggles and triumphs of the greats of rock and jazz. Students will hear when these art forms began, and will learn the cultural and economic factors that have shaped what rock and jazz are today. Artists include Louis Armstrong, John Coltrane, Miles Davis, The Beatles, Led Zeppelin, Nirvana, and The Red Hot Chili Peppers, among many others.

**SONGWRITING – All grades**
Songwriting is the art of crafting music together with lyrics. In contemporary and popular culture, songs "fuel desire, inspire hope, break hearts, rock worlds, unite people, shake booties, turn blahs into blues, and almost always make us feel good… all in a few minutes" (Gotham Writers Workshop). The course introduces the student to traditional song structure, like the time-tested 8/16 bar phrase and its many variations, and to the challenges of lyric writing. Students study dozens of classic hits as examples of successful songs, regardless of style or genre, and the age-old question each poses: which came first, the words or the music? Working individually or in small groups, students compose and record their original songs on digital formats like *Pro Tools* or *Garage Band*. They will also have the opportunity to perform their songs at Music on the Mountain, the school's open mic show. As a reference, the course uses *Tunesmith, Inside the Art of Songwriting* by Jimmy Webb, multi-Grammy winner and one of the most celebrated composers of our time. Basic proficiency in either piano or guitar is required. Some knowledge of music theory and notation is a plus but is not necessary. Class size is restricted, and grades are based solely on effort and passion for the craft!

**INTRODUCTION TO THEATRE – All grades**
This course surveys the art of the theatre with emphasis on the role of the playwright, director, actor, designer, and producer. It promotes the development of college-level writing, reading, listening and speaking skills.

**HONORS THEATRE – 10th, 11th & 12th grades***
A program of rigorous academic studies for advanced students who want to hone their acting skills through use of critical thinking, research, writing and oral presentation. We begin the year studying theatre in ancient Greece, including the plays *Oedipus Rex* and *Lysistrata*. This class will work on different styles of acting through an examination of plays by Shakespeare, Oscar Wilde, Noel Coward and Lorraine Hansberry.

**ACTING SHAKESPEARE – All grades**
This class is designed for the student who loves or hates Shakespeare, and it makes a perfect complement to the study of Shakespeare in English classes. We begin with hands-on activities to break down the language of Shakespearean texts to make it manageable. Instead of reading a Shakespeare play, students are up on their feet performing it so that they can experience the action which helps to convey the meaning of the language, improving overall understanding. By breaking down these barriers to comprehension and watching different versions of the same play in actual performance, students will find that Shakespeare can be a lot of fun!

# ENGLISH

Four credits in English (one at each grade level) are required for graduation. In general, the English curriculum builds on a sequence of progressive engagement with literature and an increasingly sophisticated command of writing skills. During the four years of English, students are guided toward more rigorous critical and analytic reading through exposure to increasingly complex texts. The aim is to allow students to become more confident in their writing abilities as their familiarity with the writing process deepens.

Summer reading is required at all grade levels.

**ENGLISH 9 – 9th grade**

English 9 builds competency in high school-level critical reading skills as well as paragraph writing, grammar and punctuation. Students will be guided through classroom discussions and inquiries of thematic topics presented in a variety of literature from major genres. Written assignments include persuasive, narrative, expository and descriptive essays as well as journaling and poetry writing. Students complete activities that challenge their writing, analytical and interpretive skills and help to build and strengthen their academic English vocabulary.

Recent core texts and units have included *Romeo and Juliet; Fahrenheit 451; Animal Farm; The Complete Tales and Poems of Edgar Allan Poe;* short stories by Ernest Hemingway*; D'Aulaires' Book of Greek Myths; To Kill a Mockingbird*

**ENGLISH 10 – 10th grade***

The primary objective in English 10 is to firmly ground students in critical reading, writing, and thinking skills. Students are asked to analyze the concepts found in the daily readings through writing assignments and class discussion. Utilizing short stories, novels, plays and poetry, students look critically at the elements of literature. They attempt to master general grammatical skills, while essay development entails proper sentence, individual paragraph, and multiple-paragraph construction. Discussion and writing assignments are taken from the reading assignments and related films.

Recent core texts and units have included *Othello; The Catcher in the Rye; The Rime of the Ancient Mariner; Sir Gawain and the Green Knight; Lord of the Flies; Things Fall Apart; Brave New World; Frankenstein; Persepolis; Ender's Game*

**ENGLISH 11 – 11th grade***

English 11 familiarizes students with major texts from the traditional canon of American literature. Landmark works are studied for their own merits and for their place in American history and culture. In-class presentations develop public speaking skills. Students also learn to make margin notes in their books. Some class time is devoted to vocabulary development and SAT preparation. Organizational skills such as outlining practice and word-processing competence are a high priority.

Recent core tests and units have included *The Crucible; Death of a Salesman; Into the Wild; The Adventures of Huckleberry Finn; The Great Gatsby; Slaughterhouse Five*; poetry by Robert Frost and Maya Angelou; short stories of Edgar Allan Poe and Nathaniel Hawthorne; *Inherit the Wind; Flowers for Algernon; The Glass Menagerie; Of Mice and Men*

**ENGLISH 12 – 12th grade***

English 12 seeks to fine-tune students' critical reading, writing, and thinking skills in preparation for college or other post-high school endeavors. The principal thrust of the senior year, the study of complex works of literature, involves an intense focus on thematic development, imagery and symbolism, and the relationship of the work to a broader social and political context. The course is characterized by a heavy workload in reading and frequent essays in which students critically engage with the themes developed in the readings. Students are expected to actively participate in a discussion-based classroom setting, to take effective notes in class and while reading, and to improve their ability to write at the college level. Some attention is paid to SAT preparation involving vocabulary and reading comprehension practice.

Recent core texts and units have included *Hamlet; Equus; The Elephant Man; The Picture of Dorian Gray; Legends of the Fall; A Farewell to Arms; The Metamorphosis;* short stories of Albert Camus and Ernest Hemingway*; The Norton Anthology of Short Fiction*

# ENGLISH AS A SECOND LANGUAGE (ESL)

English as a Second Language (ESL) courses at Marvelwood are designed to help international students to develop their English skills and become more fluent in the English language. The four basic language skills of listening, speaking, reading and writing are taught through a variety of different methods in small class settings. Students are tested at the beginning of the year and placed in one of three levels. The school administers the SLEP (Second Language English Proficiency) test and is a certified TOEFL testing center, offering the online TOEFL test several times a year. The goal is for students to be able to use English to communicate in academic and social settings, and to provide them with sufficient facility in the language to enable their success in a fully-mainstreamed program.

Summer reading is required of all international students.

**ESL 1 – LOW-INTERMEDIATE PROFICIENCY**

Students at this level have typically been studying English for several years and are beginning to understand the language but can only use it in a limited capacity. In this intensive level, students are enrolled in four ESL classes a day: two English language courses, a US history course, and ESL Biology. These classes focus on reading comprehension, vocabulary development, and building everyday language skills. Literature study includes fables, simple short stories and simplified novels. The writing component focuses on fluency and form. Students are encouraged to express themselves in writing by communicating their thoughts and experiences in journal writing, literature responses and other exercises. Furthermore, conversational practice engages students in lively interactions based on real-life situations.

**ESL 2 – INTERMEDIATE PROFICIENCY**

Students at this level can generally understand the meaning of a commonplace conversation involving fluent speakers, and can make relevant contributions and obtain information from others by asking questions. At this level, students are enrolled in two or three ESL classes a day depending on their need. Literature study involves short stories and novels. Students are introduced to more advanced literary devices such as simile, irony, vivid imagery and metaphors, and complete a variety of writing assignments that focus on paragraph development, writing strong topic sentences, and constructing coherent paragraphs with clear main ideas and supporting details.

**ESL 3 – ADVANCED PROFICIENCY**

Students at the advanced level are nearly ready to be completely mainstreamed but need to fine-tune their reading and writing skills before joining a mainstream English class. Advanced speakers are enrolled in one to two classes at this level, which serves as their English course for the year. Students read and analyze different challenging texts and write articles, reports and critiques. They develop analytical and argumentative strategies to explain and defend their ideas and opinions effectively. Writing activities include comparing and contrasting, describing, and analyzing cause and effect in a polished five-paragraph format. Research paper assignments reinforce guidelines for citing, paraphrasing, quoting and documenting sources.

# HISTORY

Three credits in History, including U.S. History, are required. Most students take four years of history, and some even enroll in two history classes in the senior year. All freshmen are enrolled in World History 1, and, with few exceptions, sophomores are enrolled in World History II. All juniors take U.S. History unless they arrive at Marvelwood with a full year's U.S. History credit from another school. Seniors have several class options if they choose to pursue history in their final year of high school.

**WORLD HISTORY 1 – 9th grade**

This course introduces freshmen to cultures and civilizations that are different from their own. It covers world history from the origins of primitive cultures through early Medieval Europe. A primary goal of this course is to instill appreciation for the diverse world in which we live so that students can develop the cultural awareness needed to get along with all types of people. What culture is, the way it can act to promote prejudice, and the ingredients that go into making a civilization are core concepts. Teaching is pursued in a hands-on manner; drawing artifacts, taking field trips, cooking, looking at visual images, and writing both

imaginative first-person accounts and personal opinions are all methods which are employed in an effort to make distant cultures come alive. Furthermore, studying peoples with distinctive mores, such as the Australian aborigines, ancient Chinese thinkers and medieval peasants, prompts students to make vivid comparisons to their own lives, and to see themselves more clearly. Document-based questioning and the research paper writing process are also introduced. This course is required of 9th graders.

**WORLD HISTORY 2 – 10th, 11th & 12th grades***
This course introduces sophomores to what history is and to the chronological sequencing of events that embody cause and effect. Starting with early Medieval Europe in the 1400's, the course covers the major civilizations in Europe, Africa, Mesoamerica and Asia to the World Wars. The component parts of these civilizations, their vitality and collision with other civilizations are core concepts. Every effort is made to bring these worlds to life. Towards this end, maps, videos, field trips, imaginative writing, opinion writing, music and art history are utilized extensively. Document-based questioning and the research paper writing process are continued in this course. Students are expected to expand their ability to handle abstract concepts and to digest information. This course is required of 10th graders and may be taken as an elective history class in the 11th or 12th grade.

**U.S. HISTORY (*Required*) – 11th grade**
United States history covers events from the discovery of the Americas to the present day. Some of the topics are Colonial America, the Revolutionary War, the Constitution, slavery and the Civil War, Westward Expansion, the Gilded Age, reform movements, and the twentieth century. The goals of the course are to educate students on the history of America and to emphasize the ideas of citizenship, the law, and how these concepts apply to their own lives. Text readings are supplemented by outside primary and secondary sources and the screening of both documentary and feature films. Document-based questioning and the research paper writing process are continued in this course. This course is required of all students by the end of the eleventh grade.

**AP U.S. HISTORY – 11th & 12th grades***
This course covers U.S. History from the discovery of the Americas to the present day but at a much faster pace and in more depth than the Level II course. Class time is also devoted to preparing students to excel at the multiple-choice problems, the document-based questions, and the thematic questions posed on the Advanced Placement exam which all students take in May. At the end of the year students research and write a five-page research paper similar to what will be required in a freshman college class. Permission of the instructor is required for enrollment.

**AP EUROPEAN HISTORY – 12th grade***
This course is designed to prepare students for college history classes. The course surveys European history from 1492 to the present day and covers such topics as the Renaissance, the Wars of Religion, the Enlightenment, the French Revolution, the Napoleonic Era, the Industrial Revolution, the rise of Communism, the establishment of modern nation-states, the Russian Revolution, and both World Wars. The curriculum focuses on reading and writing skills and draws from the text and numerous outside primary and secondary sources. At the end of the year students research and write a five-page research paper similar to what will be required in a freshman college class. Class lectures and debates are supplemented by screenings of both documentary and feature films. Students take the AP exam in May.

**AP ECONOMICS – 11th & 12th grades***
This course is designed to prepare students to take AP exams in both Microeconomics and Macroeconomics. The course gives students a thorough understanding of the principles of economics that apply to the functions of individual decision makers, both consumers and producers, within the economic system. Topics in Microeconomics include opportunity cost and trade-off, supply and demand models, consumer choices, production and costs, and theory of firms. This course also covers market structures such as oligopoly, monopoly and monopolistic competition, and perfect competition. Students also study the analysis of labor markets and the effectiveness of government policies to correct market failures and achieve economic efficiency. Additionally, students learn the principles of macroeconomic behavior of the economy as a whole, especially for a national economy. Topics in Macroeconomics include aggregate supply and aggregate demand, and market equilibrium. The course also covers economic performance and growth, economic challenges, government spending, revenue, public choice, fiscal policy, deficits, debt, money and banking, money creation, the Federal Reserve System, monetary policy, international trade, and financial and economic development. Students are expected to use graphs to analyze economics applications and develop critical thinking skills to understand the fundamental economic concepts.

**COMPARATIVE POLITICS – 11th & 12th grades***
This course is designed to introduce students to the study of world politics. Students are exposed to theoretical concepts that international relations specialists use in analyzing world events. Areas of inquiry include: How do relations between different international entities take place, and on what basis? Is the world a place where countries can cooperate, or must they compete with each other for dominance? Will the nation-state survive in the future? Can the international community work together to protect the environment? This class prepares motivated students for college-level coursework in political science.

**RELIGION – 11th & 12th grades**
Covering both western and non-western religions, this course introduces students to the philosophical ideas underlying religious beliefs and how they have affected the course of history. The curriculum raises questions concerning cosmology, eschatology and ethics. Students are required to read a number of challenging texts and to follow fact-filled lectures utilizing lecture notes. Developing both reading and listening skills is a large component of the course. Extensive classroom discussions allow students to verbalize their thoughts and feelings on a number of meaningful topics. These elements, along with writing the required term papers, are excellent preparation for college-level history classes. The course also instills a deeper understanding of the world's religions and each student's own personal religious beliefs.

**AMERICAN MUSIC HISTORY – 11th & 12th grades**
This course introduces students to a variety of genres of American music in the context of the time period in which each was created. Using audio, video, and reading selections, students examine the cultural and social impact of American music and music-makers. Topics covered include early jazz, blues, gospel, protest music, rock and roll, funk, rap, and hip-hop. Each term culminates in a project in which students discuss the aesthetics and social importance of a particular musical movement or figure. Interested 10th graders may be given permission to take this class in addition to World History 2.

**FOOD STUDIES – 11th & 12th grades**
This course introduces students to the history of food and how this commodity has helped shape culture and societies throughout human history. Students will be required to read the books *Salt* and *Cod* and utilize concepts covered in these books to talk about the significance of other products.

# MATHEMATICS

Four years of mathematics study are required, including Geometry and Algebra 2. Varying levels of ability are accommodated through course levels and consideration of each student's math background and demonstrated skill level when determining appropriate course placement. Various teaching methodologies are used in order to interest the anxious math students as well as challenge those students capable of advanced work at an accelerated pace. Wherever possible, emphasis is placed on everyday use and real-world applications of mathematical concepts. Calculator use is required at all levels. For Algebra 2 classes and beyond, students must use the TI 83+ (and above) graphing calculator.

**MATH TUTORIAL – All grades**
The math tutorial is tailored to the individual needs of the student. The coursework focuses on prealgebra, algebra or geometry, depending on the student's needs, performance in previous math courses, and identified weaknesses. The course incorporates one-on-one or two-on-one instruction and/or review of mathematical concepts and operations that are indispensable for all students. There is an extra fee for this class. More information on the math tutorial program can be found in the "Academic Support Programs" section of this guide.

**PRINCIPLES OF ALGEBRA – 9th & 10th grades**
This is a course designed for students not yet ready to enter the mainstream mathematics course sequence. The class reviews basic math skills such as telling time, counting money, multiplication tables, and working with whole numbers and fractions. Students in this class may move on to Prealgebra, Algebra 1 or a math tutorial.

**PREALGEBRA – 9th grade**
This course is for students not yet ready to take Algebra 1. The curriculum consists of a more intensive review of arithmetic skills than that offered in Algebra 1, with emphasis on fractions and decimals. Once basic math skills are firmly in place, the course moves on to a study of algebraic concepts, such as real numbers and integers, number lines, recognizing constants and variables, and equations and inequalities with one and two variables. At the end of the course, some students may be ready to move on to geometry, but most will continue on to Algebra 1.

**ALGEBRA 1 – 9th & 10th grades**
After a review of basic arithmetic and prealgebra skills, students are introduced to the basic rules of algebra, including recognizing constants and variables, number lines, exponents, equations and inequalities with one and two variables, factoring polynomials, and linear equations and their graphs. The basics of the TI83+ calculator are introduced. Students move on to Geometry the following year.

**GEOMETRY (*Required*) – All grades***
This course covers the essentials of plane and three-dimensional geometry, with level III classes paying more attention to analytical geometry. Topics include points, lines, planes and angles, deductive reasoning, parallel lines and planes, area and perimeter, congruent triangles, quadrilaterals, inequalities, similar polygons, and right triangles. Level III classes pay more attention to formal proofs. At all levels, hands-on learning is encouraged and students explore real-world applications of geometry. From Geometry, students move on to Algebra 2.

**APPLICATIONS OF ALGEBRA – All grades**
This course applies the skills learned in Geometry and the four representations of algebra (graph, table, expression and narrative) to real-life scenarios such as calculating shipping costs, graphing cell division, and using the Pythagorean Theorem to figure out heights of buildings using shadows. Comparing salaries from jobs that pay by commission, comparing cell phone plans, and calculating the time it takes to complete different tasks are some of the types of problems students will explore. We also focus on financial planning, the difference between "good debt" and "bad debt", the benefits and pitfalls of credit cards, interest, insurance, saving and investing.

**ALGEBRA 2 (*Required*) – 10th, 11th & 12th grades***
The course develops students' skills in solving complex algebraic problems. Topics include inequalities, linear and quadratic equations, analytic geometry, and graphing parabolas, circles, ellipses and other geometric shapes. All levels work on polynomials, factoring, and simultaneous equations. To prepare students for Precalculus, the higher-level class introduces advanced topics including logarithmic functions, number theory, functions, coordinate geometry and trigonometry. Advanced use of the TI83+ graphing calculator is part of the coursework at all levels. Depending on their ability and their achievement for the year, students move on to either Trigonometry or Precalculus.

**TRIGONOMETRY – 10th, 11th & 12th grades**
This course is designed for the student who needs to further develop skills in advanced algebra, analytic geometry and trigonometry in preparation for a study of advanced mathematics. Graphing, solving complex equations, and trigonometry are the main topics of study. A year's credit in Algebra 2 is required for enrollment in this course. From Trigonometry, students move on to Precalculus or Calculus.

**PRECALCULUS – 11th & 12th grades***
Precalculus is designed to develop and refine the tools required for the study of calculus. Topics covered include functions and their graphs; polynomial and rational functions; complex numbers; exponential and logarithmic functions; trigonometry; trigonometric functions; and analytic trigonometry. Other topics may include systems of equations and inequalities and analytic geometry. The ability level of students in each class section will determine what is actually covered. Students move on to Calculus, AP Calculus AB or Statistics.

**CALCULUS – 11th & 12th grades***
This course covers most aspects of differential and integral calculus. Topics include limits, derivatives, applications of differentiation, differential equations, integration, applications of integration, and transcendental functions. Applications in business, economics and the sciences are used to reinforce the students' understanding and appreciation of the subject.

**STATISTICS / AP STATISTICS – 12th grade***
This project-based course introduces students to the study of statistics and its use in a wide variety of real-world areas and applications. Course material includes graphing aggregate data, making histograms, creating quartile ranges, probability and statistical inference. During each unit, students will plan and conduct statistical studies and experiments. While project-based, the course covers all topics required for students who are interested in taking the Advanced Placement exam in Statistics in the spring. Students interested in pursuing AP credit for this course must formally declare their intention by the end of the fall term, must take the AP exam, and will be expected to complete additional work and/or to attend supplementary instructional time geared toward more in-depth exploration of the topics in preparation for the exam.

**AP CALCULUS AB – 11th & 12th grades***
This course covers most aspects of differential and integral calculus. Topics include limits, derivatives, applications of differentiation, differential equations, integration, applications of integration, and transcendental functions. Applications in business, economics and the sciences are used to reinforce the students' understanding and appreciation of the subject. The course prepares students for the AP Calculus AB examination in early May, which students must take to earn credit at the AP level. A full credit in Precalculus and permission of the instructor are required for enrollment in this advanced-level class.

**AP CALCULUS BC – 11th & 12th grades***
This course is a continuation of the AP Calculus AB course. Students review the previous material and go on to address more complex topics in calculus, including infinite series, parametric equations, polar equations, integration by parts, partial fractions, and improper integrals. The course prepares students for the AP Calculus BC examination in early May, which students must take to earn credit at the AP level. A full credit in AP Calculus AB and permission of the instructor are required for enrollment.

**COMPUTER SCIENCE: PROGRAMMING – 10th, 11th & 12th grades**
This class introduces students to what it takes to create real-world, working computer programs. It covers three topics in programming: HTML/JavaScript, Visual Basic and Visual C#. HTML/JavaScript is the language of the web. We cover the basics of web page design by examining the Hypertext Markup Language (HTML) used in every single page the students visit while surfing the web. The basics of the HTML and JavaScript languages are covered, empowering students to build their own web sites and giving their pages real programming functionality. The Microsoft Visual Basic development environment introduces the students to the world of Windows-based applications, and Visual C# is one of the top three development environments used in business today. Students build real working Windows programs that include forms, text boxes, drop-down lists, checkboxes and radio buttons. Using these, students build their own web browser and MP3 player, along with other programs. (*Some seniors may be permitted to take this course to fulfill their math requirement for graduation; it may also be taken as an upper-level science class or an elective. Enrollment preference will be given to upperclassmen and to students requiring the course to satisfy graduation requirements.)*

**COMPUTER SCIENCE: DATABASE & APPS DEVELOPMENT – 10th, 11th and 12th grades**
Nowadays, almost everything relies on databases—from online purchases to Google searches. Students are introduced to Microsoft Access and Microsoft SQL Server, undoubtedly one of the preeminent database platforms in use today. They build their own databases and learn about tables, database views, and what it takes to query a database to get results. Using AppInventor, an online tool and device simulator developed at MIT, students build working Android-based apps and can see their work in action. They also learn the fundamentals of iPhone development using Apple's XCode platform Apps developed during this course have included a working xylophone, a working stopwatch, a calculator, a tip calculator, a version of Whack-a-Mole, and a text message interception app. (*Some seniors may be permitted to take this course to fulfill their math requirement for graduation; it may also be taken as an upper-level science class or an elective. Enrollment preference will be given to upperclassmen and to students requiring the course to satisfy graduation requirements.)*

# SCIENCE

Three credits in science, including two lab sciences, are required for graduation. Most students take four years of science, and some even enroll in two science classes in the junior and/or senior year. All freshmen are enrolled in Biology 1, and with few exceptions, all sophomores take Biology 2. From there, all science courses are considered elective in nature, and students may choose classes in their area of interest or which best support their college-preparatory track. A variety of field trips coupled with hands-on activities wherever possible support the department's dedication to experiential, real world-based learning.

**BIOLOGY 1: CELLULAR BIOLOGY – 9th grade**
This course introduces students to the core biological disciplines of cell biology and the structure and function of the major systems of the human body. Topics include cell structure and function, cellular respiration, cell division, and genetics. Students also examine bacteria and viruses. One day a week class work focuses on major health issues faced by today's high school students. Discussions revolve around the social and physical challenges of adolescence and ways to properly address and cope with these life changes and challenges. Topics include social and emotional development, nutrition, substance abuse, sexually transmitted diseases, and maintaining mental and physical health. This class is required of all freshmen.

**BIOLOGY 2: EVOLUTIONARY THEORY AND ORGANISMAL BIOLOGY – 10th grade**
This course focuses on the core biological disciplines of evolutionary theory, taxonomy, the three domains and various kingdoms of life, and animal behavior. Topics include scientific method and measurement; the principles of ecology; population dynamics; biological diversity and conservation; classification; natural selection and evolution; genetic engineering, bioethics; epidemiology and disease-causing pathogens; and the study of all manner of non-human life, including protests, fungi, viruses and bacteria, fish, reptiles, amphibians, birds and mammals. Laboratory activities parallel lecture topics and include fieldwork, microscopy and dissection. This class is considered the continuation of the study of biology begun in Biology 1, and is required of all 10th graders who do not already have a Biology credit from another school.

**HONORS RESEARCH BIOLOGY 2: PROJECT-BASED ORGANISMAL BIOLOGY – 10th grade***

Ecological literacy begins with learning to identify organisms in our own backyards and communities. This field-based course focuses on many of the core biological disciplines associated with traditional Biology 2; however, to more effectively promote field study skills and a connection to the natural world, the material is covered via the completion of major research projects involving bats, birds, insects, amphibians, mammals, trees, and other fauna and flora. Students use keys and field guides to describe organisms encountered during their research, and learn the scientific names of organisms. They learn to use mapping apps suck as Trackitt, ArcGIS Online and Google Earth. Students are expected to spend additional time outside of class to collect data and complete surveys in the field, and are required to keep written and photographic records of their observations and to share them locally and globally. Data generated from coursework is shared with land trusts, conservation commissions and the Department of Energy and Environmental Protection. Evaluations are based on tests, field work, and one or two major poster presentations each term. Students must have access to full versions of Microsoft Excel and PowerPoint on their computers. Permission of the instructor and a desire to be outside *in all seasons* are required.

**CHEMISTRY – 11th & 12th grades****

This course introduces all of the National Science Education Standards for Chemistry. The topics covered are scientific method, laboratory writing, description of matter, chemical formulas and equations, ions, molecules, atomic structure, energy laws, Periodic Table laws, gas laws, the electrical structure of atoms, and bonding. The students learn the scientific vocabulary of chemistry; how to read for exact meaning; and how to classify and organize ideas and communicate them through written assignments, oral presentations and discussions. Relating chemistry to everyday life is a major part of the course content.

**AP CHEMISTRY– 11th & 12th grades***

This is an advanced course intended to prepare students to qualify for university credit in chemistry. The curriculum includes study from a college-level chemistry textbook and targeted practice for the Advanced Placement test using questions and examples from previous exams. Topics include stoichiometry, aqueous reactions, thermochemistry, electronic structure, chemical bonding and thermodynamics, as well as a sampling of advanced research at the cutting edge of current science. Weekly laboratory work includes the electrophoresis of DNA samples as well as computer-based data acquisition and analysis. Enrollment in this course is limited to highly motivated students who have proven their dedication to their studies, and typically requires a recommendation from the previous year's science instructor. Successful completion of upper-level mathematics and/or permission of the instructor may also be required.

**PHYSICS – 11th & 12th grades****

This course is aimed at the student who intends to pursue science at the college level and perhaps a career in science, medicine, or engineering. Topics include the laws of mechanics, heat and thermodynamics, waves and vibrations, light and optics, electricity and magnetism, atomic and nuclear physics. Supplementary topics such as the history of physics in nature and energy are introduced where appropriate. As the mathematical demands of physics study are significant, students should have completed Algebra 2 before enrolling in this course.

**AP PHYSICS I – 10th, 11th & 12th grades***

AP Physics I is the <u>first half</u> of 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; work, energy and power; mechanical waves and sound; and introductory simple circuits. Students take the Physics I Advanced Placement exam in May; those who intend to take the SAT II test in Physics in their junior or senior year should plan to take both AP Physics I and AP Physics II, as content from both courses is required for success on the exam. Students enrolling in this course should have completed Geometry and should be concurrently taking Algebra 2 or a more advanced mathematics course.

**AP PHYSICS II – 11th & 12th grades***

AP Physics II is the <u>second half</u> of an algebra-based, introductory college-level physics course. Students expand their understanding of physics through inquiry-based investigations as they explore topics including fluid statics and dynamics; thermodynamics with kinetic theory; PV diagrams and probability; electrostatics; electrical circuits with capacitors; magnetic fields; electromagnetism; physical and geometric optics; and quantum, atomic, and nuclear physics. Students take the Physics 2 Advanced Placement exam in May; those who intend to take the SAT II test in Physics (seniors in the winter, juniors in the spring) should plan to take both AP Physics I and AP Physics II, as content from both courses is required for success on the exam. Students interested in enrolling in this course must have completed AP Physics I with a final grade of C+ or better, and should have taken or be concurrently taking Precalculus or an equivalent math course.

**HONORS ENVIRONMENTAL SCIENCE – 11th & 12th grades***

Students who have a strong interest in the environment, enjoy working outside, and can work well independently are strong candidates for this course. Students will participate in a series of hands-on field based projects throughout the year. They will also use curriculum established for the Connecticut Envirothon Program as well as participate in training sessions with professional scientists on several Saturdays each term. Students will compete with other students from public and private schools around the

state with respect to their environmental knowledge in May. Projects will incorporate Global Positioning and Geographic Information Systems technology. While Students will meet during an assigned period each day, field work to complete projects may have to be completed in the early mornings, afternoons, late at night and/or on weekends. Students seeking Level III credit for this course must complete a project and present it to a panel of faculty and students for feedback and approval. Students interested in taking the Advanced Placement exam in Environmental Science may do independent work with the support of the instructor. Students in this class are given priority (provided they meet the basic expectations required of an international trip) to travel to Panama during the winter break to study neotropical migratory/resident birds, riffle-dwelling benthic macroinvertebrates, and ecosystems common to Central America. Permission of the instructor is required and space is generally reserved for juniors and seniors only.

**ETHOLOGY – 11th & 12th grades**
This course focuses on the proximate bases and ultimate causes of animal behavior. In other words, why animals behave the way they do! Students will study the works of famous ethologists such as Lorenz, Tinbergen, Von Frish, Goodall and Fossey. They will explore the issues of animal rights and will become more familiar with the specific needs and requirements of field and laboratory research. In additions to studying behavior students will also study about the importance of the flora and fauna in shaping the various habits of animals via the Project Earth series. Finally students will also learn about dog development and behavior via participation in the Home Socialization Program for Guiding Eyes for the Blind.

**ORNITHOLOGY – 11th & 12th grades**
Using a variety of textbooks and a popular birding magazine, students will learn about birds and critical avian issues, and conduct research about birds. More advanced students will have the option to complete the Home Study Course in Bird Biology and/or other Cornell University courses related to the field of ornithology. Students in this class are also be given priority (provided they meet the basic expectations required of an international trip) to travel to Panama on one of the two annual trips to study neotropical migratory birds, resident birds, and ecosystems common to Central America. Students with a passion for ornithology may take this course throughout their Marvelwood careers by engaging in increasing levels of guided independent study with the instructor. (*Students who complete this course successfully and wish to continue their studies at an advanced level may speak with the instructor about the possibility of a second year of ornithological field work at the advanced level.)*

**PSYCHOLOGY – 11th & 12th grades**
This course involves an in-depth look at how we as human beings interact with each other in all aspects of our lives. Topics include social perception and how we work to understand the people around us, social cognition and how we process the world around us, how and why we have intimate relationships, the reasons behind stereotypes, and why we are willing to conform to social pressures. A number of papers are assigned, as well as two major research projects involving the students at Marvelwood. Past projects have examined how we define beauty, how individuals perceive themselves in a social world, and how we are affected by fear.

**ANATOMY & PHYSIOLOGY – 11th & 12th grades**
This course employs a multidisciplinary approach to learning the structure and function of the human body. Students apply their knowledge to real situations, e.g. common athletic injuries, surgeries and current medical discoveries. Dissection of a fetal pig via computer will coincide with each body system studied. Research papers and oral presentations are assigned each term. Students who enter Marvelwood School in the eleventh and twelfth grade without a credit in biology are required to take this course to satisfy the biology requirement.

**COMPUTER SCIENCE: PROGRAMMING – 10th, 11th & 12th grades**
This class introduces students to what it takes to create real-world, working computer programs. It covers three topics in programming: HTML/JavaScript, Visual Basic and Visual C#. HTML/JavaScript is the language of the web. We cover the basics of web page design by examining the Hypertext Markup Language (HTML) used in every single page the students visit while surfing the web. The basics of the HTML and JavaScript languages are covered, empowering students to build their own web sites and giving their pages real programming functionality. The Microsoft Visual Basic development environment introduces the students to the world of Windows-based applications, and Visual C# is one of the top three development environments used in business today. Students build real working Windows programs that include forms, text boxes, drop-down lists, checkboxes and radio buttons. Using these, students build their own web browser and MP3 player, along with other programs. (*This course may be taken as an upper-level science class or an elective; it may also fulfill a year's mathematics requirement for some students. Enrollment preference will be given to upperclassmen and to students requiring the course to satisfy graduation requirements.)*

**COMPUTER SCIENCE: DATABASE & APPS DEVELOPMENT – 10th, 11th and 12th grades**
Nowadays, almost everything relies on databases—from online purchases to Google searches. Students are introduced to Microsoft Access and Microsoft SQL Server, undoubtedly one of the preeminent database platforms in use today. They build their own databases and learn about tables, database views, and what it takes to query a database to get results. Using AppInventor, an online tool and device simulator developed at MIT, students build working Android-based apps and can see

their work in action. They also learn the fundamentals of iPhone development using Apple's XCode platform Apps developed during this course have included a working xylophone, a working stopwatch, a calculator, a tip calculator, a version of Whack-a-Mole, and a text message interception app. *(This course may be taken as an upper-level science class or an elective; it may also fulfill a year's mathematics requirement for some students. Enrollment preference will be given to upperclassmen and to students requiring the course to satisfy graduation requirements.)*

# WORLD LANGUAGES

World language classes build skills in sound patterns and pronunciation, study skills necessary for mastering another language, understanding of another culture, geography and history, and oral and written expression. Two years of world language study is the minimum requirement at Marvelwood School; able students are strongly encouraged to continue beyond the two-year requirement. Two consecutive years of one world language are required, except in very special circumstances as determined by the Academic Dean. Depending on ability and enrollment, class level groupings beyond the second year may vary from one academic year to the next (i.e., Spanish 3 and Spanish 4/5 one year, Spanish 3/4 the next). The world language requirement may be waived for students with a language waiver (obtained as a result of educational testing) or with a documented language-based learning difference.

**SPANISH 1 – All grades**
For many students, this is the first encounter with a foreign language. This course offers a very basic introduction to the Spanish language through as many of the senses and activities as the teacher's imagination will allow. Topics covered are: present tenses of regular and irregular verbs, stem changing verbs, uses of the infinitive, basic sentence structures, articles, days, months, household and city vocabulary, likes and dislikes, time of day, and other useful vocabulary.

**SPANISH 2 – All grades**
Students review items covered in Spanish 1 and continue with a study of the idiomatic use of the present tense, the preterite tense, the imperfect tense, reflexive verbs, idiomatic use of the reflexive, letter writing and story telling. The textbook is supplemented with materials such as films, tapes, music, readers, children's stories, cultural study, and cooking sessions. Memorization of vocabulary continues; there are daily written and oral drills, conversation and comprehension exercises, short reading assignments and compositions. Most students who earn a C or better in Spanish 2 are encouraged to continue their language study with Spanish 3.

**SPANISH 3 – 10th, 11th & 12th grades****
This course offers a complete study of all advanced verb forms. Students are expected to speak, read and write in Spanish. The text is used as a guide and is supplemented with a number of outside sources, such as literature, movies, and current events. Saturday class is entirely dedicated to various contemporary topics, allowing the students to discuss subjects outside the course work in Spanish.

**SPANISH 4/5 – 11th & 12th grades***
This course is entirely dedicated to literature and writing. Students are expected to have a basic mastery of the working of the Spanish language. The curriculum aims to develop literary analysis skills in a foreign language and supplements the literature with a brief review of language usage.

**FRENCH 1 – All grades**
French 1 introduces students to the most basic grammatical structures and vocabulary of the French language. Grammar study focuses primarily on the formation of simple sentences and questions in the present and simple future tenses, using both regular and a few irregular verbs. Other topics include regular, irregular, demonstrative and possessive adjectives; use of stress pronouns; and idiomatic expressions. Vocabulary lists are expanded throughout the term to include time, date and weather; numbers; clothing; colors; geographical names; family members; and over 100 other nouns and adjectives. The culture and geography of France and other French-speaking countries is introduced, and students enjoy several French films during the year. Homework is assigned nightly, and students are tested on their mastery of the material through frequent tests and quizzes as well as a variety of in-class games and exercises.

**FRENCH 2 – All grades**
In French 2, students continue to expand their understanding of and facility with both written and spoken French. The focus is on more complex grammatical constructions including the formulation of the passé compose, comparison of adjectives, use of the partitive article, forming commands, and use and placement of direct object pronouns in both the present and past tenses. A great deal of emphasis is placed on mastery of both irregular verb conjugations and idiomatic expressions. Students are encouraged to communicate in French and to speak and read aloud with proper pronunciation and inflection. Two interactive video series, as well as a variety of French films, allow students to practice listening to, making sense of, and responding to French spoken by native speakers. Vocabulary lists covered in this course include shops and shopkeepers, foods, rooms of the house, and parts of the body. Homework is assigned nightly, and students are tested on their mastery of the material through frequent tests, quizzes and short translation assignments as well as a variety of in-class games and exercises.

**FRENCH 3 – 10th, 11th & 12th grades****
French 3 offers motivated students the opportunity to increase their knowledge of the subtleties of advanced French grammar and constructions. Students work toward mastery of such grammatical units as reflexive verbs; the future, present subjunctive, imperfect and conditional tenses; use of the pronouns "y" and "en"; and formation of the present participle. Reading and writing in French becomes the focus of much of the students' effort. They read a variety of French literature, from children's books to short novels to magazine and newspaper articles. Students transcribe from dictation and are challenged to summarize and answer questions about clips from French films, TV shows, and interactive and educational videos. They may visit French web sites or correspond with pen pals in a number of French-speaking countries. The teacher strives to conduct every class exclusively in French, and to increase students' confidence with expressing themselves in the language. Homework is assigned nightly, and students are tested on their mastery of the material through frequent tests, quizzes and translation assignments as well as a variety of in-class readings, dictations and other exercises.

**FRENCH 4/5 – 11th & 12th grades***
French 4/5 is designed for students who already have an advanced knowledge of the language and can use it to study the history, literature, and art of France. The curriculum emphasizes reading, writing and speaking in French. Students read about, research, and discuss several eras in French history. Analysis and discussion of the art and literature of the period further enhances the historical study. Review of advanced French grammar, including a comprehensive review of all the basic tenses, the compound tenses, the subjunctive, and other more advanced rules and constructions, continues throughout the year.

# OTHER ELECTIVE COURSES

Elective courses are offered by the term, but many may be taken for one, two or three terms. Not all courses listed are offered every term or every year.

**HARRY POTTER & PHILOSOPHY – All grades**
This class explores various philosophical issues through the seven *Harry Potter* novels and eight films. The ideas and works of philosophers such as Socrates, Plato, Aristotle, Confucius, Lao Tzu, Wollstonecraft, and Dewey will be analyzed in the context of the Harry Potter storyline. Students will write a five-paragraph essay each week about their thoughts on the ideas discussed. Students need not be familiar with the novels or the films before they enter the class.

**POPULAR CULTURE & PHILOSOPHY – All grades**
This class explores various philosophical issues through novels, comics, television shows, and movies such as *Troy, The Matrix, Inception, X-Men: Days of Future Past, The Walking Dead, The Dark Knight Rises, Groundhog Day* and *The Office*. The ideas and works of philosophers such as Hobbes, Descartes, Mill, Bentham, Marx, Nietzsche, and Arendt will be analyzed in the context of the various storylines. Students will write a five-paragraph essay each week about their thoughts on the ideas discussed. Students need not be familiar with the various storylines before they enter the class.

**MIDDLE EARTH & PHILOSOPHY – All grades**
This class explores various philosophical issues through *The Hobbit* and *The Lord of the Rings* novels and six films. The ideas and works of philosophers such as Machiavelli, Locke, Hegel, Rousseau, Kant, and Rand will be analyzed in the context of the storyline. Students will write a five-paragraph essay each week about their thoughts on the ideas discussed. Students need not be familiar with the novels or the films before they enter the class.

**LEGO ROBOTICS – All grades**
This class will introduce students to mechanical design, computer programming and robotics, using the LEGO system NXT robotics system. Objectives of this course include the design, building and programming of complex robots. Students will have the opportunity to learn to program their robots using the JAVA programming language. This class supports the Science, Technology, Engineering and Mathematics (STEM) fields in education.

**3D ART – All grades**
In this one-term elective course, students study 3D design utilizing LEGO bricks as the medium with which to create their art. They learn how to design models with a digital design computer program and are given the opportunity to express themselves through real, personal creations. A unit on architectural design allows students to study real architecture and learn how to make a scale model of a specific building such as the Eiffel Tower, the Empire State Building or the Leaning Tower of Pisa.
Once a week, there is a fun "design challenge" activity, and plenty of time is allotted for work on independent projects. Ultimately, the students will gain valuable skills that will enhance their knowledge and understanding of art, architecture and design.

**COMPUTER BASICS – All grades**
Have you ever wondered what makes a computer tick or how the Internet works? Do you need to get better acquainted with Microsoft Word, Excel, email or PowerPoint? Have you ever wondered why Tweets are limited to 140 characters, or how our fascination with computers all began? If so, then this is the class for you! Less technical than Marvelwood's programming classes, Computer Basics provides a comprehensive overview of essential functionality and allows students to experiment with web page editors, image processing software, speech recognition software, and any other types of software they may want to explore.

**INTRODUCTION TO PYTHON PROGRAMMING – All grades**
Python is a versatile programming language that empowers "coders" to do many useful things. It is written to be relatively easy to read and yet still powerful. It is so useful that Google requires all of its programmers to know Python. This term-long elective class familiarizes students with the language and common methods for writing Python programs. By the end of the course, students will feel confident in their ability to use Python to write simple computer programs.

**COMPUTER SCIENCE: PROGRAMMING – All grades**
This class introduces students to what it takes to create real-world, working computer programs. It covers three topics in programming: HTML/JavaScript, Visual Basic and Visual C#. HTML/JavaScript is the language of the web. We cover the basics of web page design by examining the Hypertext Markup Language (HTML) used in every single page the students visit while surfing the web. The basics of the HTML and JavaScript languages are covered, empowering students to build their own web sites and giving their pages real programming functionality. The Microsoft Visual Basic development environment introduces the students to the world of Windows-based applications, and Visual C# is one of the top three development environments used in business today. Students build real working Windows programs that include forms, text boxes, drop-down lists, checkboxes and radio buttons. Using these, students build their own web browser and MP3 player, along with other programs. *(Note: While this class is offered as an elective, enrollment preference is given to upperclassmen pursuing a full year's math or science credit.)*

**COMPUTER SCIENCE: DATABASE & APPS DEVELOPMENT – All grades**
Nowadays, almost everything relies on databases—from online purchases to Google searches. Students are introduced to Microsoft Access and Microsoft SQL Server, undoubtedly one of the preeminent database platforms in use today. They build their own databases and learn about tables, database views, and what it takes to query a database to get results. Using AppInventor, an online tool and device simulator developed at MIT, students build working Android-based apps and can see their work in action. They also learn the fundamentals of iPhone development using Apple's XCode platform Apps developed during this course have included a working xylophone, a working stopwatch, a calculator, a tip calculator, a version of Whack-a-Mole, and a text message interception app. *(Note: While this class is offered as an elective, enrollment preference is given to upperclassmen pursuing a full year's math or science credit.)*

**THE SCIENCE BEHIND *CSI*: AN INTRODUCTION TO FORENSIC SCIENCE – 10th, 11th and 12th grades**
Forensic science involves the application of science to the law, and encompasses various scientific disciplines. Using their knowledge of science and their understanding of the importance of carefully preserving a trail of evidence, students will learn how to collect, document and process evidence used to solve crimes. Such processes include fingerprint analysis, soil analysis, hair and fiber analysis, and blood spatter analysis. By the end of the term, students will have enough knowledge to effectively process a staged crime scene.

**SCIENCE, SOCIETY AND THE ENVIRONMENT – 11th and 12th grades**
Our lives are impacted by decisions being made about significant scientific principles. Often, these debates are based in the political environment, heavily influenced by popular media, sound bytes or slogans rather than rational thinking. The next

generation is going to face major challenges in the areas of energy and the environment, chemicals, food production, arms control. The goal of this class is to debate both sides of an issue, and apply scientific principles, simple logic, and quantitative risk analysis to important questions of public policy and individual welfare. Using a variety of sources, including internet videos and guest lectures, students will gain an understanding of these issues that will enable them to make informed decisions on an array of issues, from global climate change to nuclear proliferation to alternative medicine. The ultimate goal is to educate students so they can enter society as citizens who can think for themselves using evidence-based decision-making, and reach valid conclusions on important problems in society, well beyond the sound bytes and slogans so common today.

**CREATIVE WRITING – All grades**
The goal of the creative writing course is to teach students how to open themselves to the creative process and to their own creative inner voices. Recognizing that each student has a unique learning style, the focus is on different techniques of stimulating creativity. Each student's finished work may be published in the school newspaper.

**SCREENWRITING – All grades**
The course offers an introduction to all phases of writing for movies. Students gain an overview of the history of film and screen a diverse list of American and foreign movies from every decade of the art form's existence.

**RUSSIAN LITERATURE – All grades**
This class introduces students to the study of Russian literature. The works of Tolstoy, Dostoyevsky and Gogol will be discussed throughout the term. Along the way, the students will be introduced to the Russian language. Students are also introduced to interesting facts and anecdotes about Russian history, traditions and culture. Students electing to pursue this course for the full year may earn a world language credit.

**RUSSIAN LANGUAGE – All grades**
This elective provides a basic introduction to the study of the Russian language. After an initial focus on the Russian alphabet, spelling and pronunciation, students develop their basic listening, speaking, reading and writing skills through listening exercises, conversational dialogues, and traditional grammar and vocabulary study. Each week, students meet outside of class for directed conversation with a native speaker. Students are also introduced to interesting facts and anecdotes about Russian history, traditions and culture. Students who take this class for the full year earn a world language credit.

# ACADEMIC SUPPORT PROGRAMS

## THE STRATEGIES PROGRAM

Marvelwood's unique Strategies program provides the support and tools that help students with learning differences experience academic success, increase self-confidence, and acquire strong learning and self-advocacy skills needed in college and beyond. Strategies is a daily one-on-one or small group (2-3 students) tutorial period that supplements Marvelwood's college preparatory curriculum. Placement and scheduling are customized to target the student's individual learning needs. Some students enrolled in the Strategies program work one-on-one with a teacher to complete classwork and reinforce skills and basic concepts that are critical to academic success. Those requiring less intensive support take a customized combination of small-group classes which focus on strengthening their abilities in one or more core areas: language arts, organization, social skills and mathematics. Students may be trained to use the assistive technology available in our Learning Lab, including Dragon Naturally Speaking, Inspiration, Book Share and Voice Dream Reader.

Past academic history, Individualized Education Plans (IEPs), teacher recommendations and in-class observation are tools utilized to customize each student's Strategies placement. The effectiveness of the program is fostered by the strong partnership between Strategies teachers and classroom teachers. Strategies teachers' professional development has provided them with guidelines for determining which remedial tools and practices are most effective for children with learning differences. They are also trained to understand how learning differences manifest themselves in a student's behavior and aptitude. Some faculty have additional training in the Orton-Gillingham, Wilson Language or Lindamood-Bell programs.

The Strategies program is available to any student for an additional fee.

## ASSISTIVE TECHNOLOGY AND THE LEARNING LAB

The Sebring-Vaughn Learning and Language Lab features assistive technology including Kurzweil 3000, a text-to-speech program, Dragon Naturally Speaking, a speech-to-text program, and Report Writer, for assistance with expressive language weaknesses, as well as Recordings for the Blind and Dyslexic CD players for listening to audio books. Students receive training in the use of the programs most suitable to their needs, and are able to access the Learning Lab during their Strategies class periods as well as several evenings each week.

## THE MATH TUTORIAL PROGRAM

Marvelwood's Math Tutorial Program provides students with one-on-one instruction designed to strengthen conceptual knowledge about mathematics and enable them to move forward in the high school curriculum. In addition to teaching new information, Math Tutorial teachers are able to remediate mathematical knowledge gaps. Teachers use a variety of manipulatives, computer technology, graphing calculators and other hands-on activities to make mathematics more visual, concrete and understandable. Math tutorial teachers aim to both improve students' mathematical abilities and build their confidence as mathematical learners by addressing each student's specific needs, learning style and prior experience.

There is an additional fee for this program.