

**Upper House
Course Descriptions
2010-2011**

SCIENCE COURSES

**** All students at Millennium High School must complete a Physics course (either Physics I or Physics Elective) before graduation. ****

Advanced Biology is a full year (2 credits) course. In this laboratory-based course, students will investigate advanced topics in biochemistry, classical and molecular genetics, population genetics, evolution, human reproduction, development and physiology, and ecology. The course has a special emphasis on experimental design and implementation, and students will become proficient using tools of today's biology laboratory, including DNA technology and computer modeling. We will investigate biological concepts on a deep level, and students should be prepared to read challenging material independently. At the end of this course, students will be prepared to take the SAT II exam in Biology.

Advanced Chemistry is a full year (2 credits) course. This course is an in-depth study of the chemistry concepts that were introduced in BioChem I & II as well as new topics, including heat, food chemistry, nuclear chemistry, medicine and toxicology, chemical equilibrium, solutions, and environmental chemistry. In this laboratory-based course, students will design their own experiments and create models to investigate and represent phenomenon in their worlds on a molecular level. The course emphasizes problem-solving through critical thinking and mathematical analysis. Students who want to deepen their understanding in this discipline and who were successful in BioChem I and II should enroll. At the end of this course students will be prepared to take the SAT II in Chemistry.

Advanced Geology and Astronomy is a full year (2 credits) course that investigates the interrelationship between geology, meteorology, and astronomy. The geology unit will explore and analyze rocks, minerals, and fossils hands-on as well as the evolution and formation of Earth. In the meteorology unit, we will look at components of weather systems such as temperature, pressure, and humidity, as well as what goes into interpretation and forecasting of weather. The astronomy portion will look at the creation, properties, and cycles of the solar system, stars, galaxies, and the universe. Particular focus will be given to examples found in New York City and specific case studies that occur around the world. At the end of this course, interested students will be prepared to take the Earth Science Regents.

Advanced Physics is a full year (2 credits) course. This course first deepens those ideas presented in either Physics I or Elective Physics and then extends into new and vastly different topic areas. The relationship between matter and energy will be explored through gravitation, electricity & magnetism, wave phenomena, optics and modern atomic physics. The class is heavily lab-based using digital sensors. Students must successfully complete either Physics I or Elective Physics to enroll. At the end of this course students will be prepared for the SAT II in Physics.

Anatomy and Physiology is a full year (2 credits) course. We will study the relationships in structure and function of the major organ systems including: the cardiovascular system, digestive system, respiratory system, skeletal-muscular system, immune system, nervous system, reproductive system, endocrine system and excretory system. There is emphasis on the various mechanisms that are employed by the organ systems to maintain homeostasis. We will compare and contrast the anatomy and physiology of various organisms.

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Regular laboratory experiences, mainly dissections will involve both the investigation of the gross and microscopic structures.

Physics I is a full year (2 credits) course. This course studies the relationships between matter, energy, forces and motion both conceptually and mathematically. Since these relationships describe virtually all of the (physical) events of our everyday lives, we focus on the physics of common experiences. Some major themes include the importance of the point of view of observers, the nature of theory vs. experimental measurements, and the idea of conserved quantities. The specific content focus is mechanics (how forces and energy influence an object's behavior). The class is heavily lab-based using digital sensors and software. This course, taken along with Advanced Physics, will prepare students for the SAT II in Physics.

MATH COURSES

<i>**All students at Millennium High School must complete Algebra II or an equivalent course (PreCalculus or Calculus) before graduation.**</i>
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Algebra II is a full year (2 credits) course. This course focuses on strengthening and developing the algebra skills that are required for PreCalculus and Calculus. This course will begin with a study of basic functions and their graphs. Throughout the year, students will extend their knowledge of functions to other types of functions, including piecewise, polynomial, quadratic, exponential, and logarithmic functions. Heavy emphasis will be placed on understanding how functions behave and how to apply them in real life. Problem-solving skills will be utilized and emphasized through comprehensive word problems and projects. At the end of the course, students will have the option of taking the SAT II Math Level 1 exam. Students who have completed Algebra I, Geometry I, Advanced Geometry, Business Math, and Applied Math will be eligible to take this course.

Advanced Placement (AP) Calculus is a full year (2 credits) course. Students will utilize advanced algebra and geometry skills to explore limits, differentiation, and integration. Students are required to use extensive reasoning and problem solving skills as well as abstract thinking to investigate a variety of practical phenomena. Upon completion of this course, students have the option of taking the AP Calculus exam, but are not be *required* to. If interested in the AP exam, students are expected to prepare outside of class. Students who have successfully completed PreCalculus with an average of 85% or higher or passed the placement test will be eligible to take this course. Interested students will need to submit an application for this course.

Applied Math is a full year (2 credits) course. This class will focus on the application and relevance of mathematics in daily life, especially as it relates to business. Students will learn to apply the knowledge they gain to situations inside and outside the classroom. Students will explore, analyze, and solve mathematical problems hands-on using Algebra and Geometry, and Statistics concepts. The problem solving knowledge and tools developed throughout the course will aid in real world decision making. Students who have taken Geometry, Algebra II, PreCalculus, and Calculus are eligible to take this course.

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PreCalculus is a full year (2 credits) course. During the year, students will apply modeling and problem-solving skills to an in-depth study of quadratic, polynomial, rational, exponential, logarithmic, and periodic functions, sequences and series, conic sections, polar graphing, parametric equations, matrices, and trigonometry. This course prepares students for the Math B Regents and SAT II Math Level 2 exam, though they will not be *required* to take it. Students who have successfully completed Algebra II with an average of 85% or higher and scored 85 or higher on the Math A Regents, or who have passed the placement test will be eligible to take this course.

ENGLISH COURSES

All English courses are full year long and carry 2 credits, effective academic year 2010-2011.

Advanced Placement (AP) English Literature – is a full year (2 credits) course that meets 5 times per week. This intense course will be offered to students who are interested in studying literature with greater depth, detail and individual analysis. Students must apply for acceptance to the course and sign a contract that mandates attendance for the full year. Additionally, students must take the AP English Literature exam at the end of the course.

Advanced Placement (AP) English Language and Composition – is a full year (2 credits) course that meets 5 times per week. This intense course is designed to help students become skilled readers of prose written in a variety of rhetorical contexts and to become skilled writers who compose for a variety of purposes. Both their writing and their reading should make students aware of the interactions among a writer's purposes, audience expectations, and subjects as well as the way generic conventions and the resources of language contribute to effectiveness in writing. Additionally, students must take the AP English Language exam at the end of the course.

American Literature – is a full year (2 credits) course. This course will cover works from a variety of time periods in America, ranging from early American history to the 20th century. The focus of the course will be literature that has come to define America throughout its history. Major texts will include *The Crucible*, *The Adventures of Huckleberry Finn*, *The Great Gatsby*, as well as several shorter texts. Students will practice group work, presentation skills, as well as expository, persuasive, and creative writing.

World Literature – is a full year (2 credits) course that meets 5 times per week. This course will explore works representing significant literature from around the world. The class will study, in depth, a number of different works that illuminate other cultures and ways of life. Essential Questions for this course may include “How are the “voices” of a region captured through literature?” and “What can we learn about other cultures by exploring issues that are specific to a writer’s nationality?” *This course is an expansion of the previously titled ‘Modern World Literature.’*

British Literature – is a full year (2 credits) course that meets 5 times per week. This course will focus on the close reading of classic British texts from the 1400s through the present day in order to explore their significance in various contexts and to improve students' ability to read challenging literature, think critically

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and analytically and write clearly and effectively. *This course is an expansion of the previously titled 'Shakespeare.'*

Dramatic Literature – is a full year (2 credits) course. The course will focus on both the origins of drama (ancient Greek drama) and subsequent periods of drama such as Elizabethan/Shakespearean, as well as modern and contemporary drama. The course will also include texts written for the purpose of social change or participatory theatre. The course includes performance projects, play writing projects, teaching artist projects, and field trips to Broadway or off-Broadway shows. Sample texts include *Oedipus*, *The Glass Menagerie*, and *The Laramie Project*. *This course is an expansion of the previously titled 'Plays for Social Change.'*

Themes in Literature: War & Peace – is a full year (2 credits) course that meets 5 times per week. This course will explore poems and other kinds of literature that deal with the subject of war. Students will focus on three wars in particular—the Trojan War, World War I, and the Vietnam War—but will also have opportunities to look at writing coming from the war zones of our day. A significant amount of class time will be dedicated to student-led discussions, and students will be asked to examine the relationship between language and war in a variety of writing assignments. *This course is an expansion of the previously titled 'War and Literature.'*

HISTORY COURSES

****All Millennium High School students must take one year of American history as well as one semester of government and one semester of economics before graduation.****

Advanced Placement (AP) United States History is a full year (2 credits) course. It is designed as a college-level experience that will prepare students for the Advanced Placement United States History Exam, and participants will be selected based on a formal application process. The course will cover American history from the pre-colonial era through the late 20th century. Students will be expected to write analytical essays and complete a variety of individual and group projects, with a particular emphasis on interpretation of primary documents.

Economics is a semester long (1 credit) course. Students in this course will examine North American events and trends through an economic lens. The course will include an examination of economics from a practical standpoint, along with analysis of case studies in which economic decisions have influenced historical events. Students will also discuss economic opportunity and how such opportunities have varied over time.

U.S. Government is a semester long (1 credit) course. Students in this course will examine the American political tradition, beginning with the formation of our government and the ratification of the U.S. Constitution. Legislation and legal decisions, presidential policies, and historical turning points will be used to evaluate how the function and focus of the federal government has changed over time. Students will also conduct case studies on selected governments from other countries. This course includes a weekly current events component in which students will evaluate modern-day policies and practices.

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U.S. History Survey is a full year (2 credits) course that meets 5 times per week. The course covers America's evolution from colonial times through the current day, and is designed to prepare students for the New York State Regents exam in U.S. History and Government. Students will read and analyze a wide variety of primary sources during a chronological series of independent and collaborative research projects. The course will also feature weekly assessments to measure students' content knowledge and analytical skills.

ELECTIVES

Juniors are required to complete a language study by taking either Spanish III, Spanish IV, Mandarin III, or Mandarin IV as their first elective. All electives meet 4 times per week. Electives may only be used to make up for missing credits during senior year.

Due to scheduling constraints, semester long electives may be conducted as full year courses.

Entrepreneurial Economics: Course description TBD.

Graphic Design is a semester long (1 credit) elective. This class will introduce students to the many uses and applications of Photoshop. Students will have a chance to create many different images as well as learning about the field of graphic design. Students will also do some photography as it applies to specific projects as well as scanning in manually created images and manipulating them.

Mandarin III is a full year (2 credits) course. Mandarin III builds on the grammar and vocabulary acquired in levels I and II. Students will focus on reading, writing, speaking and listening to communicate more effectively in the target language. Level III students will continue to expand their knowledge of characters while working to sustain authentic and practical conversations in the target language. The course is divided into thematic units focusing on topics such as the arts, education, and celebrations. The course will prepare interested students for the Chinese Regents equivalency exams.

Mandarin IV is a full year (2 credits) course. This course is designed to prepare students to take the Chinese Regents equivalency exams, focus on listening, speaking, reading, and writing skills with emphasis on communication. In this class, we will develop communication skills in the use of more advanced Chinese in a wider range of life situations. Use of Chinese in mainland China is the priority in this level. Our goal for this class is for students to hold conversations when traveling to China, living with Chinese families, and asking for their needs to be met locally and globally. Through the course, students will also gain a better understanding of the historical, political, and social aspects of China, and grasp a deeper understanding of the Chinese culture. Prerequisite: Mandarin III or approval based on an interview.

Photography I is a semester long (1 credit) elective. In Photography I students will have a chance to take pictures, develop film and make prints. Students will learn all the technical aspects of taking film photographs as well as the artistic components needed to make their pictures interesting and meaningful. Students will experiment with a variety of photographic genres.

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Physics Elective is a full year (2 credits) elective. This course studies the relationships between matter, energy, forces and motion both conceptually and mathematically, yet it is less mathematical than Physics I. Since these relationships describe virtually all of the (physical) events of our everyday lives, we focus on the physics of common experiences. Some major themes include the importance of the point of view of observers, the nature of theory vs. experimental measurements, and the idea of conserved quantities. The specific content focus is mechanics (how forces and energy influence an object's behavior). The class is heavily lab-based using digital sensors and software. This course, taken along with Advanced Physics, will prepare students for the SAT II in Physics.

Psychology is a semester long (1 credit) elective. This course will explore psychology as a science by examining the basic theories and principles governing human cognition, emotion and behavior. By understanding the role that experimental research has had on this discipline, students will better understand how the human mind processes information, how personalities are formed, what motivates certain actions, and how psychological techniques can be applied to help improve lives. Students will study the work of Freud, Piaget, Jung, Erikson, Maslow, and Kohlberg, and appreciate the major impact the field's giants have had on human behavior and how each has played a distinct role in the advancement and credibility of this science. Essential questions studied include: Why study psychology? Is psychology a science? How does the study of psychology help us to better understand ourselves? Is it possible for humans to alter or change personality? Intelligence? Needs?

Spanish III is a full year (2 credits) Regents preparation course. Assessments will simulate the Regents, i.e., dictation, conversation activities, reading comprehension, writing assignments. Students will work with various tenses beyond the present tense, including preterit, imperfect, future, conditional, and present perfect. The class is conducted in Spanish, and likewise, students are expected to participate in the target language. The class will infuse a combination of language and culture. Students will be assessed through tests, quizzes, participation, homework, and unit projects that will incorporate all skills acquired throughout the unit.

Spanish IV is a full year (2 credits) course. Spanish IV is an advanced language class that integrates literature, culture and the arts in the Spanish-speaking world. Students will be asked to redefine what is real as they explore the canon of Hispanic writers old to new who have tackled that same question. The selection of literature represents different genres from medieval times to the present day. The class is conducted entirely in Spanish, and students should expect extensive reading, writing and speaking in the target language. Prerequisite: Spanish III or approval based on a writing sample and interview.

Yearbook is a full-year (2 credits) elective. Course objectives focus on the planning, design, construction, and publication of Millennium High School's yearbook. Students will develop skills in layout, journalism, and photography. Students will also be trained to use the software program InDesign. Seniors and juniors will actively work in collaborative teams on various task-oriented projects. Following completion of the yearbook, the class will focus on supporting activities for the senior class. Juniors who commit two years to yearbook will be given preference as editors their senior year.

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