



## Life Sciences Course Descriptions

Course	Prerequisites	Time Demands Outside of Class Per Week	Brief Description
<b>Biology</b>	<i>None</i>	20-30 min of homework per week	This introductory course surveys aspects of biology including cells, genetics, evolution, and ecology. Students will focus on learning science and engineering practices and thinking like scientists as they explore the miracles of life.
<b>Marine Biology</b>	<i>Preferably a passing grade in Biology and Chemistry</i>	30 min of homework per week	Marine Biology is a science elective for juniors and seniors who have passed high school Biology and are interested in learning more about ocean ecosystems and species. Topics include marine invertebrates, fish, sharks, marine mammals, and current environmental issues, and you will be asked to work with living and preserved organisms when conducting experiments throughout the year.
<b>Human Biology</b>	<i>Preferably a passing grade in Biology and Chemistry</i>	20-30 min of homework per week	This course is for juniors and seniors who are interested in learning in-depth about how the body systems function beyond what they have previously learned in other life science courses. Systems studied will include the skeletal, muscular, circulatory, respiratory, nervous, endocrine, immune, digestive, and reproductive systems. This course emphasizes hands-on laboratories including dissections, projects, and guest lectures.



## Physical Science Course Descriptions

Course	Prerequisites	Time Demands Outside of Class Per Week	Brief Description
<b>Chemistry</b>	<i>Algebra I with "C" or better &amp; passing grade in Biology or department recommendation</i>	30 min of homework per week	This Next Generation Science Standards-based course will expose students to different aspects of how matter behaves. An emphasis will be placed on students thinking as scientists by looking for patterns, changes in energy and matter, and cause and effect relationships in nature as well as students working as scientists by designing experiments, analyzing data, and creating models to explain various phenomena. One important goal of the course is to make the relevance of chemistry impossible to miss. It is everywhere all the time!
<b>Physics</b>	<i>Completion of Algebra I with "C" or better &amp; passing grade in Biology or department recommendation</i>		This is a one-year survey course addressing the fundamental principles of physics including the study of time, space, matter, and energy. Specific topics include mechanics, waves, thermodynamics, and electromagnetic forces. The inquiry-based approach used in this course offers a hands-on laboratory experience.
<b>Astronomy</b>	<i>Completion of Biology and Chemistry (must be a senior)</i>	30-60 min of outside work per week	This course will show students the vast immensity of the Universe and leave them inspired and in awe of the majesty and emptiness of space. In this course we undertake a journey starting at the near observable astronomy we can see and end at the edges of time and space. During this journey, we will learn about some of the more bizarre but essential evolutionary processes in the life of a star and how the abundance of life on Earth is nothing short of a miracle. We will investigate through inquiry-based labs. Many of these will include an observational component. Using night observations on campus and computer simulations, students will be able to identify many stellar objects such as constellations, comets, and meteor showers. After this class, the tiny points of light we see in the night sky will never be the same.



## Advanced Placement Course Descriptions

Course	Prerequisites	Time Demands Outside of Class Per Week	Brief Description
<b>AP Biology</b>	<i>Completion of Biology and Chemistry- preferably with a B or higher.</i>	4-8 hours of homework/reading per week	This course is equivalent to introductory college Biology. Emphasis is on developing students' ability to express and interrelate biological concepts. The College Board AP labs further develop analytical and critical thinking skills. Extensive laboratory activities, reviews, essays, and multiple-choice type examinations prepare students for the national AP Biology examination, which all students are expected to take. College credit may be given for successful completion of the national exam.
<b>AP Chemistry</b>	<i>Chemistry with "B" or higher and concurrent enrollment in Pre-Calculus.</i>	5-6 hours of work per week	This course is taught as a second-year chemistry course due to the quantity and difficulty of the material. Topics that involve qualitative material will be quickly reviewed whereas those involving calculations will be studied in detail. Emphasis is given to problem-solving and critical thinking regarding chemical systems. Extensive laboratory activities, reviews, and practice examinations prepare students for the national AP Chemistry examination which all students are expected to take. College credit may be given for successful completion of the national exam.
<b>AP Environmental Science</b>	<i>"B" or better in both Biology and Chemistry</i>	4-6 hours or so depending on reading proficiency	This introductory college-level course surveys several pressing relevant environmental issues including human population growth, meeting the energy and food needs for society, resource management, pollution, and climate change. Students will use class time to engage in discussions, conduct labs, conduct field investigations, and work on group projects in order to apply their understanding of the content. Since the College Board dictates this broad course outline, the course will move quickly. As a result, the course is designed using a "Flipped Learning Model". This means students will acquire basic content knowledge before class at home in order to maximize class time for applications and clarification of the content they studied. Students will be expected to read large amounts of text and put in 4-6 hours of work per week outside of class. It is highly likely this will be one of the most relevant courses they will ever take.



## Advanced Placement Course Descriptions (*continued*)

Course	Prerequisites	Time Demands Outside of Class Per Week	Brief Description
<b>AP Physics 1</b>	<i>Algebra II with a "B" or higher AND recommended concurrent enrollment in Pre-Calculus or Finite Math &amp; Trigonometry</i>	<i>Average 3-5 hours of work outside of class per week.</i>	AP Physics 1 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of physics through classroom study, in-class activity, and hands-on, inquiry-based laboratory work as they explore concepts like systems, fields, force interactions, change, conservation, and waves.
<b>AP Physics C</b>	<i>AP Physics 1 with a "B" or higher and AP Calculus AB with a "B" or higher</i>	<i>Average 3-5 hours of work outside of class per week.</i>	AP Physics C is a Calculus-based course that duplicates the introductory mechanics and electricity and magnetism course sequence taken by physical science and engineering majors in college. Topics include dynamics, energy, momentum, rotational dynamics, gravitation electro and magnetostatics, electrodynamics, circuits, fields and electromagnetism. There is a substantial laboratory component and differential and integral calculus is used throughout. Students are prepared for both the Mechanics and Electricity and Magnetism AP Physics C Exams.