



## High School Science Course of Study Revisions 2022/2023

Course Name and Number	Course Description
<p><a href="#">PDF Living Earth 2930</a> Grade 9-12 Required One Year 5 credits per semester A-G Requirement: D <a href="#">Revised Course</a></p>	<p>The Living Earth course is based on the CA 3-course model which integrates both Life Science and Earth and Space Science Performance Expectations, the Science and Engineering Practices, the Cross-Cutting Concepts and the CA Environmental Principles and Concepts using the 5 E instructional model. Using evidence from experiments, research, and observations, students will learn how to formulate questions, evaluate and develop claims backed by evidence and reasoning, and develop models to make interpretations and investigate the natural world and the interactions between the biotic and abiotic systems of the earth. Topics will include: Ecosystems Interactions and Energy, History of Earth's Atmosphere: Photosynthesis and Respiration, Evidence of Evolution, Inheritance of Traits, Structure, Function, and Growth (from cells to organisms) and Ecosystem Stability and the Response to Climate Change.</p>
<p><a href="#">PDF Chemistry in the Earth System 2940</a> Grade 9-12 One Year 5 credits per semester A-G Requirement: D <a href="#">Revised Course</a></p>	<p>Chemistry in The Earth System is a laboratory-based college-preparatory course that applies the foundations of chemistry to help students understand the chemical processes that drive the Earth systems. The instructional segments of this course are based on the CA NGSS three course model which integrates some of the Physical Science and Earth and Space Science Performance Expectations, composed of the Disciplinary Core Ideas, Science and Engineering Practices and the Cross-Cutting Concepts. Students will develop critical thinking skills and apply chemistry principles to solve real world problems in preparation for their college and career experience. Topics include Combustion, Heat and Energy in the Earth System, Atoms Elements and Molecules, Chemical Reactions, Chemistry of Climate Change, and Dynamics of Chemical Reactions and Ocean Acidification. Upon completion of the course students will have explored the fundamentals of chemistry and essential roles that these processes play in Earth's solid geosphere, its liquid hydrosphere, and its gaseous atmosphere.</p>
<p><a href="#">PDF Physics of the Universe 2950</a> Grade 9-12 One Year 5 credits per semester A-G Requirement: D <a href="#">Revised Course</a></p>	<p>Physics of the Universe, a course based on the Next Generation Science Standards, explores the way in which physical processes govern the universe. Physics is the study of matter, forces, and their interactions. By using science and engineering practices, evidence from experiments, research, and observations, students will learn how to formulate questions, evaluate claims, use mathematics and computational thinking, and develop models to make interpretations and investigate the natural world.</p>

<p><a href="#">PDF Earth Science II 2390</a>  Grade 11-12  One Year  5 credits per semester  A-G Requirement: D  <a href="#">Revised Course</a></p>	<p>This laboratory course fulfills the physical science requirement for graduation as well as the University of California entrance “D” requirement for a laboratory science or the “F” requirement for electives. The course is intended as an alternative to Chemistry in the Earth, Physics of the Universe, Earth Science I, or General Physical Science. The content includes major ideas selected from astronomy, geology, meteorology, oceanography, and cartography. Topics will be treated in greater depth than in a survey course (such as Earth Science I). Selection of research topics will be based to some extent on student interests. Science attitudes, thinking processes and skills, as well as applications of science and technology to social problems and personal decision making are emphasized.</p>
<p><a href="#">PDF Zoology 2920</a>  Grade 11-12  One Year  5 credits per semester  A-G Requirement: D  <a href="#">Revised Course</a></p>	<p>Zoology is a year-long course that deals with the diversity, characteristics and classification of major groups of both invertebrate and vertebrate animals, including functional systems, adaptations and behavior. The course also deals with geographical distribution of animals, animal evolution, ecological relationships and conservation. Laboratory work will primarily involve modeling activities, observations and interactions with live animals, and observations and dissections of preserved animals.</p> <ol style="list-style-type: none"> <li>1. Students will learn how to design, conduct and report on scientific experiments as they relate to animal behavior.</li> <li>2. Students will describe the classification, levels of organization, and primary characteristics of the different animal groups from single celled precursors to animals (protozoa) to invertebrates to vertebrates.</li> <li>3. Students will describe the relationships between organisms and their environments and understand how adaptations accumulate in organisms through the process of natural selection.</li> <li>4. Students will understand relationships among organisms in an ecosystem and be able to describe trophic levels and read and construct food webs.</li> <li>5. Students will use scientific terminology to describe adaptations within different animal groups.</li> <li>6. Students will be able to articulate understanding to an audience.</li> <li>7. Students will analyze and extract information from credible scientific sources to develop an understanding of current research and debate.</li> </ol>
<p><a href="#">PDF Physiology 2840</a>  Grade 10-12  One Year  5 credits per semester  A-G Requirement: D  <a href="#">Revised Course</a></p>	<p>This is a laboratory course that includes a detailed and comprehensive study of the structure and function of cells, tissues, organs and systems of the human body. It is an advanced biology course designed for college prep students focusing on human anatomy and physiology. The course focuses on understanding the role of the major body systems in maintaining homeostasis as well as how the structure of different cells, tissues, organs relate to their function in the different organ systems of the body. Science attitudes, thinking processes, laboratory and communication skills and technology are incorporated. Personal as well as global health issues are emphasized. Students will also explore diseases and disorders that arise when each system is studied. This course qualifies as a laboratory science in meeting University of California entrance requirements.</p>

	<ol style="list-style-type: none"><li>1. Students will learn how to design, conduct and report on scientific experiments as they relate to the human body and homeostasis.</li><li>2. Students will describe the human body's level of organization from functional units, to organ, to organ system, to organisms.</li><li>3. Students will describe the functions of the main organ systems in the human body, and identify the contribution of each main organ to their respective systems.</li><li>4. Students will use scientific inquiry to gain a better understanding of the structures and functions of the human body.</li><li>5. Students will describe how organ systems work together to maintain homeostasis in the body and how an imbalance in homeostasis results in disease as well as possible treatments and preventions of those diseases.</li><li>6. Students will use medical and biological terminology to describe how the body works.</li><li>7. Students will be able to articulate understanding to an audience.</li><li>8. Students will analyze and extract information from credible scientific sources to develop an understanding of current research and debate.</li></ol>
<p><a href="#">PDF Environmental Science 2360</a> Grade 9-10 One Year 5 credits per semester A-G Requirement: G <a href="#">Revised Course</a></p>	<p>Environmental Science is the study of how humans affect and are in turn affected by their environment. It is the study of an ongoing relationship of how we interact with the earth and how the earth in turn responds to use. In Environmental Science we consider how our actions collectively and individually affect the environment. This introductory course provides a foundation based in earth science and builds on this to highlight the ways in which the earth adapts to a diversity of life forms. This course is designed to provide students with a solid foundation in scientific methodologies, laboratory skills/procedures, and biological and physical science topics. The course will be delivered using both traditional and project based formats. During the course students will identify and analyze problems within the natural world, analyze data sets, and develop and design solutions and ideas for preventing, reducing, or solving the identified problems.</p>