

SCIENCE COURSES

Section: SCl017		Anatomy and Physiology
Grade: 11-12	All Year	Course offered at: CDO IRHS
Prerequisites: <i>Two years of science, including Biology, and current science teacher approval required</i>		
This course presents information about both the body's structure (anatomy) and its functions (physiology). The course focuses on the bones and muscles, and an understanding of how they work together. In addition, students will study the various body systems in depth. Dissection of muscles and organs is a required component with no exceptions allowed. Fee applied to students taking this as a fourth science course.		

Section: SCl034		Astronomy I – Planetary Science
Grade: 11-12	All Year	Course offered at: IRHS
Prerequisites: <i>Completion of two years of science classes and current science teacher approval required</i>		
This is a survey course that includes such topics as: earth science, planets, nebula, constellations, star formation and death, exoplanets, Big Bang Theory, galactic formation, worm holes, black holes, deep space science, and quasars, combined with the history, techniques, and tools of astronomy. There is a strong focus on lab design/implementation, projects, and research throughout the course.		

Section: SCl001		Biology
Grade: 9-10	All Year	Course offered at: AHS CDO IRHS
Prerequisites: <i>None</i>		
This course is the study of living organisms. The topics covered include the diversity of life, ecology, evolution, cellular biology, and genetics. Labs reinforce and expand on these topics as well as providing experience with inquiry learning.		

Section: SCl016		Honors Biology
Grade: 9	All Year	Course offered at: CDO IRHS
Prerequisites: <i>Algebra I</i>		
This biology course is designed for college-bound students. The concepts covered include organic molecules, cell structure and division, photosynthesis and cellular respiration, Mendelian and molecular genetics, introductory biotechnology, evolution, and ecology. Topics will be covered more in-depth and at an accelerated pace compared to Biology SCl001, and students will be responsible for more independent work. Techniques of experimental design and problem solving will be emphasized. This course carries a weighted grade.		

Section: SCl018		AP Biology
Grade: 11-12	All Year	Course offered at: AHS IRHS
Prerequisites: <i>Grade of A/B in Chemistry and Biology and teacher recommendation</i>		
<p>This course is the equivalent of a college-level biology course. The subject matter, pacing, and laboratory studies will be those specified by the College Board. The curriculum is framed around four big ideas connected to evolution, biodiversity, heredity, and the relationships between biological systems. This is a second year biology course and will move swiftly and in-depth. Considerable study outside of class time will be required for success. One of its major aims is to prepare students for success on the AP exam. This course carries a weighted grade. Fee applied to students taking this as a fourth science course.</p>		

Section: CTS137/JTS137		Bioscience I
Grade: 10-12	All Year	Course offered at: CDO IRHS
Prerequisites: <i>Biology</i>		
<p>The Bioscience course is a lab-intensive course designed to give you the necessary technical skills that could ultimately lead to an exciting career in Bioscience, one of the fastest growing industries in the United States as well as in Tucson. In this course, you will have the opportunity to: identify plant natural products that act as potential antibiotics, learn aseptic techniques, isolate, and identify bacteria using different staining techniques, analyze DNA and protein using gel electrophoresis, genetically engineer bacteria that glow in the dark, extract enzymes (catalysts) from plants that are involved in creating biofuels, and determine if foods in the grocery store come from genetically engineered crops. Throughout the course, you will develop collaboration and problem-solving skills that you will need for future employment. Students can enroll in Bioscience II upon successful completion of this course. Students enrolled in this class can be dual enrolled with MCB 101 at the University of Arizona with three transferable elective credits. This course qualifies as the first year of the Bioscience sequence.</p>		Fee required

Section: CTS139/JTS139		Bioscience II
Grade: 11-12	All Year	Course offered at: CDO IRHS
Prerequisites: <i>Bioscience I</i>		
<p>Under the guidance of the Bioscience instructor and local experts, students will extend their experiences using techniques learned in Bioscience I. In this course, students will design, execute, and interpret molecular and cellular laboratory experiments. Research topics will include, but not be limited to, molecular cloning of prokaryotic and eukaryotic organisms, DNA bar coding of local organisms in the southwest, designing, and creating biosensors that can detect biomolecules, and plant tissue culture. As part of the course, students will develop an independent research project in an area of Bioscience. Students will learn how to identify, access, and retrieve scientific literature relevant to their chosen project. Based on their literature search and research proposal, they will design and implement a scientific research project under the guidance of the instructor and qualified scientist. Students will conduct the research either at CDO or IRHS in a newly designed research laboratory or at a research facility off-campus. At the end of the year, students will make a poster presentation of their research at a regional science fair as well as possibly other national competitions. Throughout the year, students will be exposed to local scientific experts as guest speakers, have the opportunity to visit bioscience research facilities in Southwestern Arizona, and explore future career opportunities. Students enrolled in this class can be dual enrolled with MCB 102 at the University of Arizona with three transferable elective credits. This course qualifies as the second year of the Bioscience sequence.</p>		Fee required

Section: CTS136/JTS136		Bioscience III	
Grade: 12	All Year	Course offered at: CDO IRHS	
Prerequisites: <i>Bioscience II</i>			
<p>Under the guidance of the Bioscience Instructor and local experts, students will extend their experience using the technical skills and research techniques gained from Bioscience I and Bioscience II. In this course, the emphasis will be on more advanced DNA, RNA, and protein techniques not covered in the other two classes. Research topics will include, but not be limited to, testing for the PTC tasting genotype found in the human population, DNA modification and its involvement in epigenetics, creation of phenotype modifications using RNA interference, and purification of amylase using different chromatography procedures. Students, as part of this class, will continue conducting independent research either on a project started in Bioscience II or a new project initiated in this class. This research will be conducted either at CDO or IRHS in a newly designed research laboratory or at a research facility off-campus. As in Bioscience II, students will make a poster presentation of their research at a regional science fair as well as possibly other national competitions. Throughout the year, students will be exposed to scientific experts as guest speakers and have the opportunity to explore possible career opportunities in the Bioscience Industry. This course qualifies as the third year of the Bioscience sequence.</p>			Fee required

Section: SClo03		Chemistry	
Grade: 10-12	All Year	Course offered at: AHS CDO IRHS	
Prerequisites: <i>Concurrent enrollment in Algebra II preferred; current science teacher approval required</i>			
<p>This course covers topics such as atomic structure, chemical reactions, stoichiometry, gas laws, bonding, and acid-base chemistry. Considerable time is spent executing analytical labs with accuracy being an essential component of success. Fee applied to students taking this as a fourth science course.</p>			

Section: SClo14		Honors Chemistry	
Grade: 11	All Year	Course offered at: IRHS	
Prerequisites: <i>Concurrent enrollment in Pre-Calculus or above; successful completion of Physics or Honors Physics; teacher recommendation required</i>			
<p>This course covers all of the content of general chemistry but at a far more rigorous and demanding level. It is designed to provide a smooth transition to AP Chemistry as a senior. Students are asked to learn a considerable amount of material on their own, and they must have the time and desire to complete homework that is not merely routine skill practice. This course carries a weighted grade.</p>			

Section: SCl019		AP Chemistry
Grade: 10-12	All Year	Course offered at: AHS CDO IRHS
Prerequisites: <i>Grade of A/B in Biology and Geometry; concurrent enrollment in Algebra II or above; current science teacher approval required; at AHS, Chemistry must be taken as a prerequisite</i>		
<p>This course is designed to match the depth and breadth of a first year college chemistry course. The subject matter, pacing, and laboratory studies will be those specified by the College Board. The course covers many topics in chemistry, including atomic theory, stoichiometry, gas laws, valence bond theory, thermodynamics, qualitative analysis schemes, and others. One of its major aims is to prepare students for success on the AP exam. This course combines Honors Chemistry and AP Chemistry into a one-year, two-credit course at CDO. This course carries a weighted grade. Fee applied to students taking this as a fourth science course.</p>		

Section: SCl030		Earth & Space Science
Grade: 10-12	All Year	Course offered at: CDO
Prerequisites: <i>Biology</i>		
<p>This course is a multidisciplinary approach to studying Earth as a dynamic system. It involves studying the processes and interactions among the atmosphere, hydrosphere, biosphere, geosphere, and outer space. It includes topics such as the forces that shape our planet, rocks and minerals, plate tectonics, climate, and Earth resources. Fee applied to students taking this as a fourth science course.</p>		

Section: SCl031		Environmental Science
Grade: 9-12	All Year	Course offered at: AHS CDO IRHS
Prerequisites: <i>Current science teacher approval required</i>		
<p>This course is about the relationship between humans and planet Earth. It is an integrated class incorporating topics in Biology, Earth Science, Chemistry, Math, History, Philosophy, Sociology and Law. This course allows students to understand the interrelationships of the natural world, analyze environmental problems, evaluate risks, and examine alternative solutions. Fee applied to students taking this as a fourth science course.</p>		

Section: SCl020		AP Environmental Science
Grade: 11-12	All Year	Course offered at: AHS
Prerequisites: <i>Biology and a Physical Science (Physics, Chemistry, Environmental Science or Earth/Geoscience) and current science teacher approval required</i>		
<p>This course is designed to be the equivalent of a college-level semester course in Environmental Science. The subject matter, pacing, and laboratory studies will be those specified by the College Board. Topics explored in this lab science course are land and water use, pollution, global climate change, energy resources, and extinction. One of its major aims is to prepare students for success on the AP exam. This course carries a weighted grade. Fee applied to students taking this as a fourth science course.</p>		

Section: SClo06		Forensics
Grade: 10-12	All Year	Course offered at: AHS (Semester) CDO IRHS
Prerequisites: <i>Biology, Physics, Chemistry or instructor approval</i>		
This course introduces students to the many modern disciplines of Forensic Science, the science of solving a crime. The course focuses on analyzing physical evidence found at crime scenes using the basic processes and principles of the scientific method. Fee applied to students taking this as a fourth science course.		

Section: SClo07		Geosciences
Grade: 9-12	All Year	Course offered at: AHS
Prerequisites: <i>None</i>		
How has technology shaped our theories about the origin of Earth and its continents? How do we study Earth's environment in the time before humans? Can technology save us from natural disasters? Why are some of the most dangerous parts of Earth also the most populated? These questions and others will be explored in this lab science course designed to challenge students with topics in astronomy, geology, volcanology, and seismology.		

Section: SClo10		Oceanography
Grade: 10-12	Semester	Course offered at: AHS
Prerequisites: <i>At least one credit of high school science</i>		
This lab science course includes the physical, chemical, geological, and biological factors of the ocean (marine life, currents, tides, pressure, salinity, and ocean floor topography). Current ocean research, including discoveries being made on the deep sea floor, will be explored.		

Section: SClo11		Conceptual Physics
Grade: 10-12	All Year	Course offered at: IRHS
Prerequisites: <i>Successful completion of Biology</i>		
This course seeks to help students understand the physics concepts of kinematics, mechanics, energy, electricity, magnetism, wave phenomena, and optics, particularly as these concepts apply to everyday situations. This course is designed for students who may not have the mathematics skills required for General or Honors Physics. Students will be provided with the extra mathematics support needed to both understand the course concepts and improve their mathematics skills.		

Section: SClo12		Physics
Grade: 9-12	All Year	Course offered at: AHS CDO IRHS
Prerequisites: <i>Grade of "C" or better in Algebra I and current science teacher approval required</i>		
This course covers the concepts of kinematics, mechanics, energy, electricity and magnetism, wave phenomena, and optics. Using hands-on experiments and demonstrations, this course exposes students to concepts of physics that are applicable to the everyday world.		

Section: SCl015		Honors Physics
Grade: 10-12	All Year	Course offered at: CDO IRHS
Prerequisites: <i>Grade of A/B in Geometry and concurrent enrollment in Algebra II or higher and current science teacher approval required</i>		
This course is an in-depth study of kinematics, mechanics, energy, wave phenomena, optics, electricity and magnetism; all of which requires high-level math skills. A significant portion of this course includes designing and implementing experiments and interpreting results. This course carries a weighted grade.		

Section: SCl022		AP Physics I
Grade: 10-12	All Year	Course offered at: AHS
Prerequisites: <i>Concurrent enrollment in (or completion of) Algebra II and current science teacher approval required</i>		
This course is designed to be the equivalent of the first semester of algebra-based physics at the college level. The subject matter, pacing, and laboratory studies will be those specified by the College Board. Topics covered include mechanics, work and energy, power, and mechanical waves. One of its major aims is to prepare students for success on the AP exam. This course carries a weighted grade. Fee applied to students taking this as a fourth science course.		

Section: SCl023		AP Physics C: Mechanics
Grade: 11-12	All Year	Course offered at: CDO IRHS
Prerequisites: <i>Concurrent enrollment in (or completion of) Calculus and current science teacher approval required</i>		
This course is designed to be the equivalent of the first semester of introductory physics with calculus at the college level. The subject matter, pacing, and laboratory studies will be those specified by the College Board. Topics covered include force, motion, vectors, work and energy, momentum, and gravity. One of its major aims is to prepare students for success on the AP exam. This course carries a weighted grade. Fee applied to students taking this as a fourth science course.		