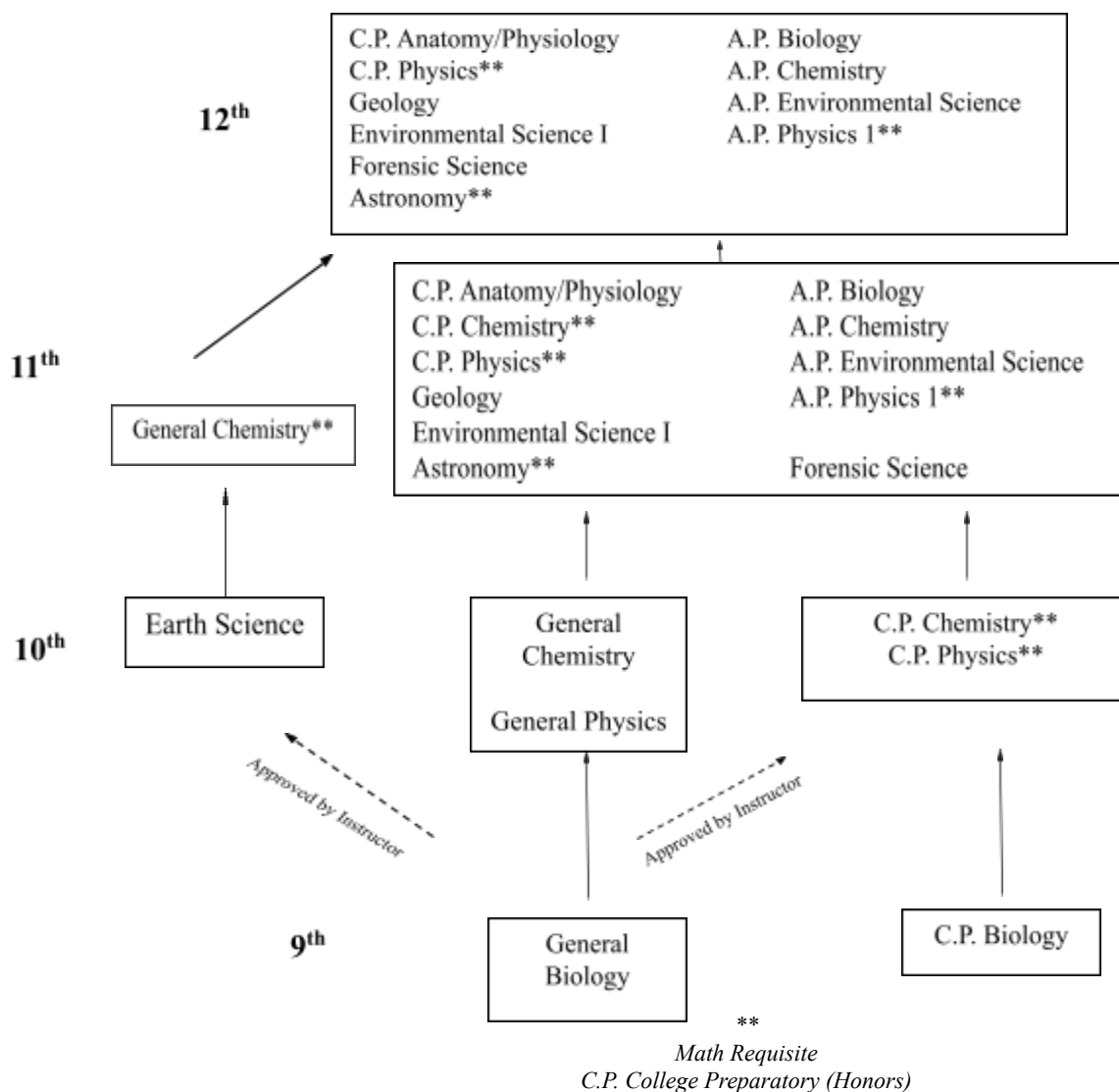


Science



College bound students: Please note that at least 1 year of Physics or Chemistry is required by most colleges/universities. Some universities require both Chemistry and Physics. Be sure to check the requirements of the college(s) you intend to attend.

SCIENCE CONTENT STANDARDS

Mountain Range High School and the Adams 12 Five Star School District have adopted the Next Generation Science Standards. The full list of standards may be referenced at

[HTTPS://WWW.NEXTGENSCIENCE.ORG/OVERVIEW-DCI](https://www.nextgenscience.org/overview-dci)

9th GRADE COURSES



Biology

9th Grade

1.0 credit

This year-long course surveys ecology, cellular and biochemical processes, genetics, evolution and natural selection. Activities presented emphasize the development of science skills, experimental design, collection and analysis of data, reporting and communicating results and the use of technology. Dissections may be performed.



C.P. (Honors) Biology

9th Grade

1.0 credit

This year-long, college-prep course covers ecology, cellular and biochemical processes, genetics, evolution and natural selection. This course studies this content in greater breadth and depth than General Biology. Additionally, this course includes an emphasis on the mathematical and chemical basis for biological concepts. Dissections will be performed.

Counseling Notes:

Enrollment in this course is dependent upon teacher recommendation.

This course is the year-long substitute for Biology for college-bound students who plan to pursue careers in science or science-related areas. It is also appropriate for students with strong interest and ability in literacy and science.

10th, 11th AND 12th GRADE COURSES



Chemistry

10th, 11th

1.0 credit

This year-long course studies matter, its structure, properties and composition, and the changes it undergoes. Chemistry encourages development of analytical and problem solving skills through labs and activities, class discussions, literacy activities, lecture and individual practice. Laboratory work and group activities provide a basis for introducing and reinforcing conceptual understanding of chemical concepts. Students must actively and constructively participate in group activities and guided practice on a daily basis. Student will be charged a \$10 fee for this course. **Prerequisite: Completion of or concurrent enrollment in Math I.**



C.P. (Honors) Chemistry

10th

1.0 credit

This year-long, college-prep course consists of an in-depth study through classroom lecture and laboratory experiences that will explore the structure, composition, properties and changes of matter. The emphasis of this course is on the theory and mathematical application of chemical principles. Laboratory work provides a basis for introducing and reinforcing conceptual understanding of chemical concepts. Student will be charged a \$10 fee for this course. **Prerequisite: Requires concurrent enrollment in Integrated Math II or higher.**

Counseling Notes:

College bound students are encouraged to take this course. It is also appropriate for students with strong interest and ability in math and science.

Students may **NOT** receive credit for Chemistry after earning credit for C.P. Chemistry.



C.P. (Honors) Physics

10th, 11th, and 12th grade

1.0 credit

The students in this year-long, college-prep course will explore and apply physical laws through both lecture and laboratory experiences. This course is intended to prepare students for college level or A.P. Physics. Recommended for strong math students or students interested in engineering, medicine, science, or mathematically-related fields. Students may take A.P. Physics as an alternative to C.P. Physics. **Prerequisites: Successful completion of or concurrent enrollment in Trigonometry (Math Analysis of Pre-Calculus).**

Counseling Notes:

___ Students entering Trigonometry with low scores in previous math classes may find the math required in this class overly challenging.



Physics I

10th

1.0 credit

Physics courses involve the study of the forces and laws of nature affecting matter, such as motion, momentum, and the relationships between matter and energy. The study of physics includes examination of sound, light, and magnetic and electric phenomena. This is an introductory algebra based physics course where students will explore the behavior of the natural world through hands-on projects, computer simulations, experiments and competitions. **Prerequisite: Requires concurrent enrollment in Integrated Math I or higher.**



Earth Science

10th

1.0 credit

Students in this class will take an in-depth look at Earth's features and systems. We will examine the studies of geology, meteorology, and astronomy. This class will focus on labs, activities and research projects. The following topics will be covered: maps, rocks and minerals, the Earth's interior, historical geology, natural hazards (volcanos, earthquakes, flooding and mass movements), Earth's surface processes (weathering, erosion, mountains, glaciers, rivers, volcanoes, ect), plate tectonics, meteorology (weather patterns, climatology and forecasting) and astronomy (solar system, stars and the universe).

Counseling Notes:

This course is often taken by students (mostly sophomores) who wish to postpone their recommended chemistry course an extra year to advance their understanding in mathematics prior to taking chemistry.

This course is not recommended for seniors. Seniors might consider other courses such as geology or environmental science.



A.P. Biology

11th and 12th Grade

1.0 Credit

(Level II Credit Weight)

This year-long course is equivalent to a first year college biology course. In this course students will explore biochemistry, cytology, bioenergetics, molecular genetics, heredity, evolution, ecology, taxonomy and anatomy. Due to the depth and scope of these topics, students must have good reading, organizational and comprehension skills for success. As a college-level course, A.P. Biology also includes a laboratory component. Dissections will be performed. This course is designed to prepare students for the A.P. Biology Examination. **Prerequisites: Successful completion of Biology or C.P. Biology, as well as C.P. Chemistry.**

Counseling Notes:

- Course fee of \$96.00 for the A.P. Examination.

All students taking A.P. Biology will be required to attempt the Advanced Placement Examination in order to receive the weighted credit for this course.

- An AP open house night will be hosted in the spring for all students who are registering for AP courses. Teachers will cover class expectations for parents/guardians and students during this time. The parent/guardian and student are required to sign a digital AP contract to enroll in this course. This course requires a teacher recommendation from the current teacher of the same content (if applicable). The teacher's name who is recommending you for the course is required on the AP contract.



A.P. Chemistry

11th and 12th Grade

2.0 Credit

(Level II Credit Weight)

The A.P. Chemistry course is designed to be the equivalent of a first-year college general chemistry course. The course will examine a wide variety of topics including atomic theory, chemical bonding, states of matter, kinetic molecular theory, solutions, chemical reactions, stoichiometry, equilibrium, kinetics, thermodynamics and electrochemistry. This course requires a strong mathematical background and is highly conceptual in nature. **Prerequisites: Successful completion of C.P. Chemistry and C.P. Math 3**

Counseling Notes:

- Course fee of \$96.00 for the A.P. Examination.

All students taking A.P. Chemistry will be required to attempt the Advanced Placement Examination in order to receive the weighted credit for this course.

- An AP open house night will be hosted in the spring for all students who are registering for AP courses. Teachers will cover class expectations for parents/guardians and students during this time. The parent/guardian and student are required to sign a digital AP contract to enroll in this course. This course requires a teacher recommendation from the current teacher of the same content (if applicable). The teacher's name who is recommending you for the course is required on the AP contract.



A.P. Environmental Science

11th and 12th Grade

1.0 credit

(Level II Credit Weight)

The A.P. Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science. This course will examine a wide variety of disciplines including geology, biology, environmental studies, chemistry and geography. Students will utilize scientific principles, concepts and methodologies to understand the interrelationships of the natural world; to identify and analyze environmental problems, both natural and man-made; to evaluate the relative risks associated with these problems and to examine alternative solutions for resolving or preventing them. This course is designed to prepare students for the A.P. Environmental Science Examination.

Counseling Notes:

- Course fee of \$96.00 for the A.P. Examination.

All students taking A.P. Environmental Science will be required to attempt the Advanced Placement Examination in order to receive the weighted credit for this course.

- An AP open house night will be hosted in the spring for all students who are registering for AP courses. Teachers will cover class expectations for parents/guardians and students during this time. The parent/guardian and student are required to sign a digital AP contract to enroll in this course. This course requires a teacher recommendation from the current teacher of the same content (if applicable). The teacher's name who is recommending you for the course is required on the AP contract.

A.P. Physics

11th and 12th grade 

1.0 Credit

(Level II Credit Weight)

This year-long, calculus-based course is equivalent to a first year college physics course. While the topics covered are similar to the C.P. Physics course, the topics are covered more thoroughly and rapidly. Topics covered include motion, forces, energy, momentum, rotation, oscillation, and gravitation. The course is designed to prepare students for the A.P. Physics Examination C – Mechanics Exam. **Prerequisites: Successful completion of or concurrent enrollment in A.P. Calculus.**

Counseling Notes:

Students may take A.P. Physics without taking C.P. Physics.

- Course fee of \$96.00 for the A.P. Examination

All students taking A.P. Physics will be required to attempt the Advanced Placement Examination in order to receive the weighted credit for this course.

- An AP open house night will be hosted in the spring for all students who are registering for AP courses. Teachers will cover class expectations for parents/guardians and students during this time. The parent/guardian and student are required to sign a digital AP contract to enroll in this course. This course requires a teacher recommendation from the current teacher of the same content (if applicable). The teacher's name who is recommending you for the course is required on the AP contract.



Astronomy

11th and 12th Grade

1.0 credit

The Astronomy course offers students the opportunity to study the solar system, stars, galaxies, and interstellar bodies. Our astronomy course is a math and physics based examination of astronomy topics. These courses introduce and use astronomical instruments and typically explore theories regarding the origin and evolution of the universe, space, and time. Students in this year-long course will explore how scientists measure remote objects, process and interpret data, and support or deny scientific theories with respect to distant objects in the solar system and beyond. Topics covered include objects in the solar system (planets, moons, the sun), objects outside of the solar system (galaxies, quasars, black holes), the motion of celestial objects as well as size and scale, and finally human observation and exploration of space. **Prerequisites: Successful completion of two years of high school science and completion of or concurrent enrollment in Integrated Math III or C.P. Integrated Math III.**

Counseling Notes:

This is an appropriate course for students preparing to take CP or AP Physics in subsequent years.

- Students entering Math III with low scores in previous math classes may find the math required in this class overly challenging.



C.P. (Honors) Anatomy and Physiology

11th and 12th grade

1.0 credit

The students in this year-long, college-prep course will explore human anatomy and physiology with emphasis on terminology, metabolic processes, homeostasis, the complementary nature of structure and function and clinical application. Mammalian dissections, as well as a variety of projects are required. Intended for students with an interest in biology or who want to pursue careers in medicine, genetics or health fields. Optional field trip to Lutheran hospital may be included at student cost.

Prerequisites: Successful completion of Biology or C.P. Biology, as well as Chemistry or C.P. Chemistry.



Environmental Science I

11th and 12th Grade

1.0 credit

The students in this year-long course will take an in-depth look at fundamental ecological principles and how humans impact the ecosystems around them. This course will also study the geology of Colorado, investigate climate and examine various career options such as geology, oceanography and ecology available to a student interested in science. This course is recommended for students interested in biology, ecology or environmental sciences. **Prerequisites: Successful completion of two years of high school science.**



Forensic Science

11th and 12th Grade

1.0 credit

This rigorous year-long course focuses on many scientific and non-scientific disciplines. This active laboratory based class includes aspects of chemistry, anatomy, genetics, physics, medicine, anthropology, math, sociology, law and communication. Coursework focuses on case studies, teamwork and cooperative learning to study a variety of topics central to forensic science. **This course is often taught in conjunction with the Criminal Justice course offered by the Social Studies department. Prerequisites: Successful completion of two years of high school science.**



Geology

11th and 12th grade

1.0 credit

Students in this year-long course will study the Earth, its atmosphere and the processes that shape and change it. In particular, this course will focus on the Earth's origin and structure, minerals/rocks, volcanoes, earthquakes, plate tectonics, historical geology, physical geology and paleontology. This course is recommended for students interested in earth science. **Prerequisites: Successful completion of two years of high school science.**