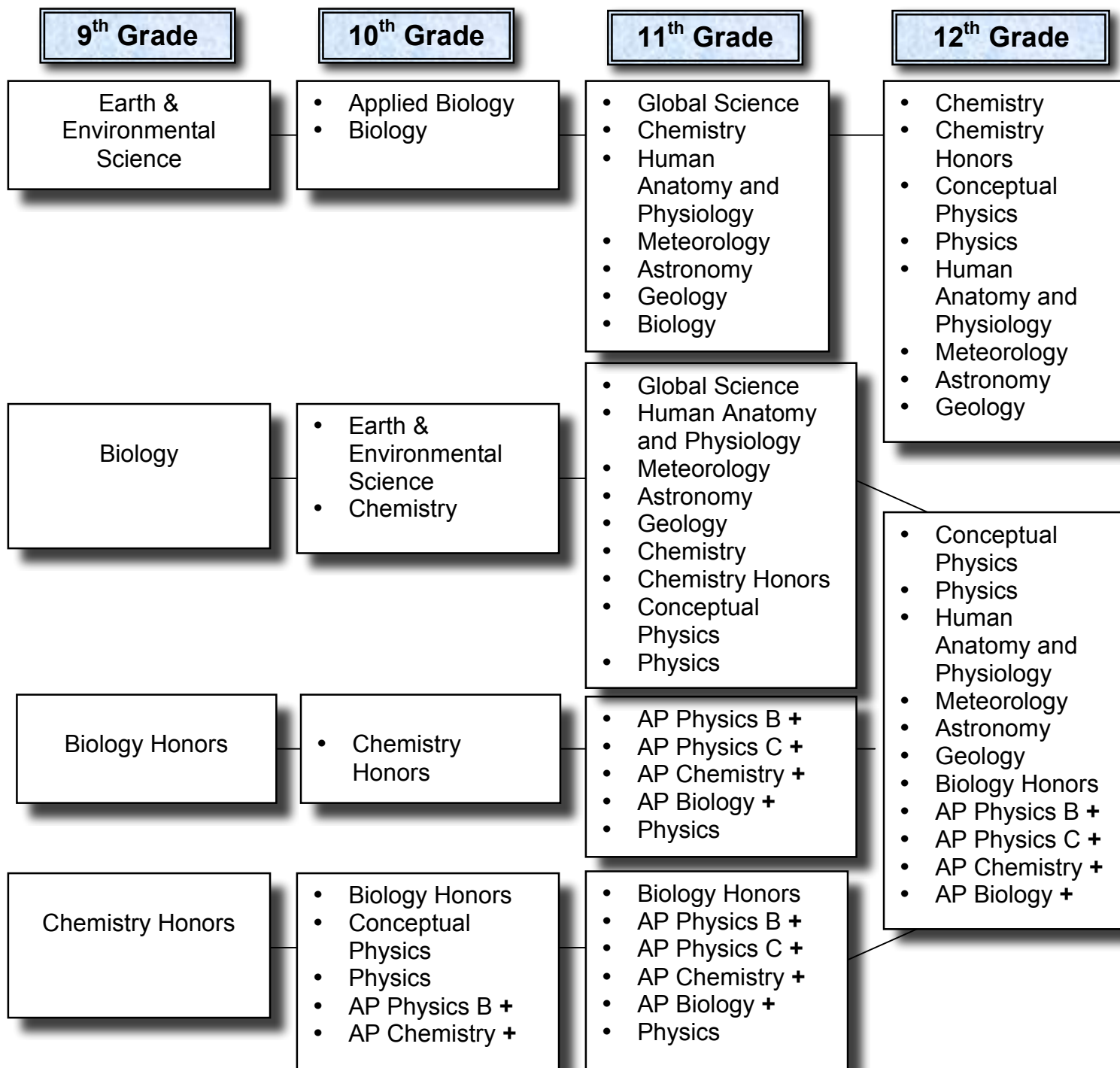


Science Flow Chart



***It is recommended that LHS students take a minimum of 3 years of core science classes (Biology, Chemistry and Physics).**

CTE Course Available: Health Science 1 (Ethics and Medical Terminology) & Health Science II- See College Ready/Concurrent Enrollment Section for further details.

***If students are recommended to take the Earth & Environmental Science and/or Chemistry pathway, they must take a Biology-related course their junior/senior year (AP, Electives, CTE).**

Course Symbol Key: + weighted course, ★ Concurrent Enrollment/College Ready ✓ course is part of a certification program

SCIENCE

Department Chair: Kristy Vanatta

Course Offerings:

Grade 9	<ul style="list-style-type: none"> • Biology • Biology, Honors • Earth & Environ. Science 	<ul style="list-style-type: none"> • Chemistry, Honors • Chemistry, Honors (0 hour)
Grade 10	<ul style="list-style-type: none"> • Biology • Biology, Applied • Biology, Honors • Physics • Conceptual Physics • AP Physics B 	<ul style="list-style-type: none"> • Chemistry • Chemistry, Honors • Chemistry, Honors (0 hour) • AP Chemistry • Earth & Environ. Science
Grade 11	<ul style="list-style-type: none"> • Astronomy • Biology • Biology Honors • Chemistry • AP Chemistry • AP Physics B • AP Physics C • AP Biology 	<ul style="list-style-type: none"> • Chemistry, Honors • Chemistry, Honors (0 hour) • Geology • Global Science • Physics • Conceptual Physics • Meteorology • Human Anatomy & Physiology
Grade 12	<ul style="list-style-type: none"> • Astronomy • Biology Honors • AP Biology • AP Chemistry • AP Physics B • AP Physics C • Chemistry • Chemistry, Honors 	<ul style="list-style-type: none"> • Chemistry, Honors (0 hour) • Human Anatomy & Physiology • Physics • Geology • Global Science • Meteorology • Conceptual Physics

Course Descriptions

80325S1 & 80325S2 Earth & Environmental Science



Credit: 1.0

Grade: 9, 10

Prerequisite: Teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; students may be required to purchase a lab notebook.

Earth/Environmental Science is a high-school-level course in which students will master DCSD Essential Learnings related to earth, atmosphere, oceans, and space. Important science ideas, such as cycles, systems, and energy flow will be applied to the study of topics including geology, weather, astronomy, and natural resources. The relationship between these earth systems and living systems will be explored so that students will be able to make informed decisions regarding the use and care of the resources the earth provides. This course will also emphasize experimental design and research.

80360S1 & 80360S2 Biology, Applied

Credit: 1.0

Grade: 10

Prerequisite: Teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; students may be required to purchase a lab notebook.

This course follows the same Curricular Units and District Essential Learnings as Biology 80350. The course differs in its instructional focus. Applied Biology offers additional teacher support for students who have difficulty with comprehension, communication, and application of concepts. This course is designed to enhance the learning of students by making materials and activities less abstract and more concrete.

80350S1 & 80350S2 Biology



Credit: 1.0

Grade: 9, 10, 11

Prerequisites: Strong science foundation, grade B or higher in 8th grade science *and* teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; students may be required to purchase a lab notebook.

This is a laboratory-based course in which students will master DCSD Essential Learnings related to living organisms, their life processes, and their relationships with each other and the environment. This biology course focuses on critical thinking using scientific method, scientific reasoning based on evidence, communication, and examination of ethical issues/social and historical aspects of biology. Concepts studied may include nature of science, biomolecules, cell processes, genetics, biotechnology, biodiversity and taxonomy, change over time (evolution), homeostasis in organisms, and ecology. This course will challenge students by pursuing a more in-depth curriculum and experimental/ project-based investigation of Biology. This course is designed to enhance the learning of higher-level students by investigating Biology using more sophisticated math, using a faster pace of instruction, and exploring concepts to a more complex level. Please note that this course will require a student who is highly self-disciplined, already exhibits/possesses strong study and organizational skills, is very committed to learning, and has both genuine interest and exceptional ability in science. Students are expected to give significant effort inside and outside of the classroom to succeed.

80356S1 & 80356S2 Biology, Honors



Credit: 1.0

Grade: 9, 10, 11, 12

Prerequisites: Completed or concurrently enrolled in Geometry. A or B in 8th grade science and 8th grade teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; students may be required to purchase a lab notebook.

This course follows the same Curricular Units and District Essential Learnings as Biology 80350. The Honors course differs in its instructional focus. Honors will challenge students beyond the traditional study of Biology by pursuing a more in-depth curriculum and experimental/project-based investigation of Biology. This course is designed to enhance the learning of higher-level students by investigating Biology using more sophisticated math, using a faster pace of instruction, and exploring concepts to a more complex level. Please note that this course will require a student who is very self-disciplined, already exhibits/possesses strong study and organizational skills, is very committed to learning, and has both a genuine interest and exceptional ability in science. Students are expected to give significant effort inside and outside of the classroom to succeed.

80365S1 & 80365S2 AP Biology



Credit: 1.0 +

Grades: 11, 12

Prerequisite: Recommended completion of Biology or Biology Honors, Required successful completion of Chemistry or Chemistry Honors, teacher recommendation and signature required.

Expenses: \$10.00 district fee paid at registration, cost of textbook and cost of AP exam.

AP Biology is designed to be the equivalent of a high-quality college introductory biology course. It will prepare the student for the AP exam scheduled for May of each year. The core topics taught include molecules and cells; heredity and evolution; and organisms and populations. The successful AP Biology student should understand that science is a process, not an accumulation of facts; recognize the unifying themes of biology; and apply biological knowledge and critical thinking to environmental and social concerns. Students will be expected to design and carry out experimental procedures, as well as apply theoretical principles and analyze experimental results. Laboratories may require class work outside of regularly scheduled class time. Computer access (at home) to the internet is essential. Students are expected to take the AP Exam in May.

80375S1 & 80375S2 Chemistry



Credit: 1.0

Grades: 10, 11, 12

Prerequisite: Successful completion of Biology or Honors Biology and teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; students may be required to purchase a lab notebook.

Chemistry covers the broad concepts upon which modern chemistry rests, including the mathematics of science, atomic structure, naming and writing formulas, chemical reactions, stoichiometry, gasses, periodicity, bonding, kinetics and equilibrium, solutions and concentrations, acids and bases, with possible enrichment in: redox, thermochemistry, nuclear chemistry, and organic chemistry/biochemistry. When applicable, chemistry topics will be taught in the context of major Earth and environmental ideas, including earth composition and processes, responsible use of natural resources, energy transfer in Earth systems, and health of ecosystems. Laboratory work is an essential part of the course requiring extensive data analysis.

80385S1 & 80385S2 Chemistry Honors



Credit: 1.0

Grades: 9, 10, 11, 12

Prerequisite: Grade B or better in Algebra I, currently enrolled in Honors Geometry or Algebra II, successful completion of previous science and math classes with grade B or better, and teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; students may be required to purchase lab notebook.

This course is designed for exceptionally qualified and **motivated** students and will prepare them for AP level courses. Honors Chemistry covers the broad concepts upon which modern chemistry rests: mathematics of science, atomic structure, naming and writing formulas, chemical reactions, stoichiometry, gasses, periodicity, bonding, kinetics and equilibrium, solutions and concentrations, and acids and bases. There is possible enrichment in redox, thermochemistry, nuclear chemistry, and organic chemistry/biochemistry. When applicable, chemistry topics will be taught in the context of major Earth and environmental ideas, including earth composition and processes, responsible use of natural resources, energy transfer in Earth systems, and health of ecosystems. Laboratory work, requiring extensive data analysis, is an essential part of the course work, requiring extensive data analysis, is an essential part of the course.

80400S1 & 80400S2 AP Chemistry



Credit: 1.0 +

Grades: 10, 11, 12

Prerequisite: Successful completion of Chemistry or Chemistry Honors, currently enrolled in or passed Algebra II, and teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; cost of AP exam; possible lab book fee.

Comparable to a first year college chemistry course, this course is an in-depth study of the principles and concepts in chemistry. Students are required to demonstrate an understanding of these principles through application in a laboratory situation. Content includes structure and bonding, stoichiometry, thermodynamics, kinetics and quantitative analysis.

LHS students are strongly encouraged to take the AP exam and it is a major focus of the course content and instruction. Students are committed to AP classes for the entire school year and cannot change classes at semester.

80525 Human Anatomy and Physiology



Credit: 0.5

Grades: 11, 12

Prerequisite: Successful completion of Biology or Honors Biology and currently enrolled in or completed Chemistry or Chemistry Honors, teacher recommendation and signature required.

Expenses: \$10.00 District fee paid at registration and **mandatory** \$10.00 lab dissecting fee

Anatomy and Physiology is an advanced, lab-oriented course designed to expose the student to in-depth studies of the structures of the human body, functions of the body systems, and human diseases and disorders. This course aims to develop independent study skills and the ability to analyze, synthesize, and evaluate information. Students who are not college bound will also benefit from this class.

80624S1 & 80424S2 Global Science

Credit: 1.0

Grades: 11, 12

Prerequisite: Successful completion of Earth & Environmental Science and Biology or Applied Biology, as well as teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; students may be required to purchase lab notebook.

This course focuses on energy, economics, resources and the environment. It is designed as an integrated science class combining life, earth and physical sciences with basic chemistry and physics. This is a lab-based course in which students will focus on data and analysis, critical thinking, and utilizing technology to understand and interpret scientific and social challenges of the future.



80430S1 & 80430S2 Physics

Credit: 1.0

Grades: 10, 11, 12

Prerequisite: Currently enrolled in or successful completion of Algebra II, successful completion of Chemistry or Chemistry Honors, and teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; students may be required to purchase lab notebook.

In this lab-based course, students will study the structure and behavior of the physical world and how these ideas relate to human society. Students will study physical principles of dynamics, light, electricity, magnetism, and atomic structure. The emphasis of this course will be on understanding the mathematical relationships that characterize the behavior of the physical world.



80654S1 & 80654S2 AP Physics B

Credit: 1.0 +

Grades: 10, 11, 12

Prerequisite: Successful completion of Algebra II and recommended current enrollment in Trig/Pre Calculus, Successful completion of Chemistry or Chemistry Honors and teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; purchase of textbook; cost of AP exam.

AP Physics B is designed to be the equivalent of the general algebra-based physics course taken during the first year of college. It will provide a systematic introduction to the main principles of physics and emphasizes the development of conceptual understanding and problem-solving ability using algebra and trigonometry. Topics include kinematics, gravity, optics, electricity, magnetism, thermodynamics, and modern physics. LHS students are strongly encouraged to take the AP exam and it is a major focus of the course content and instruction. Students are committed to AP classes for the entire school year and cannot change classes at semester.



80655S1 & 80655S2 AP Physics C Mechanics

Credit: 1.0 +

Grade: 11, 12

Prerequisite: Successful completion of Physics or AP Physics B, successful completion AB or BC Calculus, or currently enrolled in BC Calculus. Teacher recomm. & signature required.

Expenses: \$10.00 District fee paid at registration, textbook, and cost of AP exam.

This course covers the motion of particles, forces, work, energy, collisions, rotation, rolling, torque, angular momentum, gravitation, and oscillations. These topics will be studied at the college freshman, science major level. Calculus will be used extensively. This course is ideally suited for student intending to study science or engineering in college. Students are expected to take the AP Exam in May.



80464S1 & 80464S2 Physics, Conceptual



Credit: 1.0

Grades: 10, 11, 12

Prerequisite: Successful completion of or currently enrolled in Geometry, successful completion of Chemistry or Chemistry Honors and teacher recommendation and signature required.

Expenses: \$10.00 District fee paid at registration

This is a lab-based course for college-bound nonscience majors. Students will study the structure and behavior of the physical world and how these ideas relate to everyday life. Areas of study will be the principles of force, resistance, work and rate in the mechanical and thermal systems. The principals of motion, light, electricity, weather, astronomy, and atomic structure may also be studied. The emphasis will be on developing the concepts of physics.

80600 Astronomy



Credit: 0.5

Grades: 11, 12

Prerequisite: Successful completion of two of the following classes: Biology, Chemistry, Earth and Environmental Science or Global Science, as well as teacher recommendation and signature required.

Expense: \$10 District Science Fee paid at registration; Field trip fees

This lab-based course includes the study of our place within the universe, the structure of our solar system, stars, galaxies, and cosmology. Controversies such as alien life, extinction events and funding of the space program will be explored. Much of the course involves conceptual development of ideas in astronomy, and requires a basic understanding of algebra. One field trip is required.

80575 Geology



Credit: 0.5

Grades: 11, 12

Prerequisite: Successful completion of two of the following classes: Biology, Chemistry, Earth and Environmental Science or Global Science, as well as teacher recommendation and signature required.

Expenses: \$10 District Science Fee paid at registration; Field trip fees

This lab-based course includes the study of the earth, its formation, and the processes that shape it. Major topics include plate tectonics (earthquakes & volcanoes), paleontology, and the history of the earth. Major emphasis is put on learning to identify the common rocks and minerals, common fossils, and the geologic history of Colorado. Topics such as extinction events, mining, and natural disasters are explored. One field trip is required.

80650 Meteorology

Credit: 0.5

Grades: 11, 12

Prerequisite: Successful completion of two of the following classes: Biology, Chemistry, Earth and Environmental Science, as well as teacher recommendation and signature required.

Expenses: \$10.00 District fee paid at registration

This class is an introduction to the study of the atmosphere and the impact weather phenomena and climate have on people in the short and long term. The major outcome of this course is to take advantage of our interest and curiosity about weather and understand the impact people have on the atmospheric environment.