Science					
Course Title	**Course #**	**Term**	**Grade(s)**	**Prerequisite(s)**	**Major Topics**
Biology	26.0120000	Y	9	None	This curriculum includes abstract concepts such as the interdependence of organisms, the relationship of matter, energy, and organization in living systems, and biological evolution. Students investigate biological concepts through experience in laboratories and field work using the processes of inquiry. Major concepts and skills include: classification, the characteristics of science, structure and function of the six kingdoms, matter-energy relationships, DNA/RNA, homeostasis, Heredity, ecosystems, and biological evolution.
Biology Honors	26.0120040	Y	9	Teacher Recommendation	This curriculum includes abstract concepts such as the interdependence of organisms, the relationship of matter, energy, and organization in living systems, and biological evolution. Students investigate biological concepts through experience in laboratories and field work using the processes of inquiry. Major concepts and skills include: classification, the characteristics of science, structure and function of the six kingdoms, matter-energy relationships, DNA/RNA, homeostasis, Heredity, ecosystems, and biological evolution. There is a heavier focus on understanding concepts and data analysis in preparation for advanced sciences.
Physical Science	40.0110000	Y	10	None	This course is designed as a survey course of chemistry and physics. This curriculum includes the abstract concepts such as the conceptualization of the structure of atoms, motion and forces, and the conservation of energy and matter, the action/reaction principle, and wave behavior. Students investigate physical science concepts through experience in laboratories and field work using the processes of inquiry. Major concepts and skills include: classifications of matter, atomic theory/configuration, periodicity, bonding/nomenclature, chemical reactions, Law of conservation of matter, solutions, acid/base chemistry, phase changes, Laws of motion and forces, energy transformation, electrical/magnetic forces, and wave properties.
Physical Science Honors	40.0110040	Y	10	Teacher Recommendation	This course is designed as a survey course of chemistry and physics. This curriculum includes the abstract concepts such as the conceptualization of the structure of atoms, motion and forces, and the conservation of energy and matter, the action/reaction principle, and wave behavior. Students investigate physical science concepts through experience in laboratories and field work using the processes of inquiry. Major concepts and skills include: classifications of matter, atomic theory/configuration, periodicity, bonding/nomenclature, chemical reactions, Law of conservation of matter, solutions, acid/base chemistry, phase changes, Laws of motion and forces, energy transformation, electrical/magnetic forces, and wave properties. There is a heavier focus on understanding concepts and data analysis in preparation for advanced sciences.

Chemistry	40.0510000	Y	11	Teacher Recommendation	This curriculum includes abstract concepts such as the structure of atoms, structure and properties of matter, and the conservation and interaction of energy and matter. Students investigate chemistry concepts through experience in laboratories and field work using the processes of inquiry. Major concepts and skills include: classifications of matter, atomic theory/configuration, periodicity, bonding/nomenclature, chemical reactions, Law of conservation of matter, empirical/molecular formulae, stoichiometry, kinetic molecular theory/phase changes, gas laws, solutions/concentrations, acid/base chemistry.
Honors Chemistry	40.0510040	Y	10-11	Teacher Recommendation	This curriculum includes abstract concepts such as the structure of atoms, structure and properties of matter, and the conservation and interaction of energy and matter. Students investigate chemistry concepts through experience in laboratories and field work using the processes of inquiry. Major concepts and skills include: classifications of matter, atomic theory/configuration, periodicity, bonding/nomenclature, chemical reactions, Law of conservation of matter, empirical/molecular formulae, stoichiometry, kinetic molecular theory/phase changes, gas laws, solutions/concentrations, acid/base chemistry. There is a heavier focus on understanding concepts and data analysis in preparation for advanced sciences.
Physics	40.0810000	Y	11-12	Teacher Recommendation	This curriculum includes abstract concepts such as interactions of matter and energy, velocity, acceleration, force, energy, momentum, and charge. Students investigate physics concepts through experience in laboratories and field work using the processes of inquiry. Major concepts and skills include kinematics, energy and its transformations, Electricity, magnetism, wave properties.
Human Anatomy & Physiology Honors	26.0730040	Y	12	Biology & Chemistry	The sciences of anatomy and physiology are the foundation for understanding the structures and functions of the human body. Students will investigate how the body constantly regulates its internal environment and how the various individual systems that compose the human body cooperate with one another to maintain the health of the body as a whole. Areas of study include the organization of the body, protection, support and movement, providing internal coordination and regulation, processing and transporting, and reproduction, growth, and development. Students will also establish a basic vocabulary that allows them to speak about the body in a way that is understood by scientists and health care professionals alike.
Environmental Science	26.0611000	Y	11-12	Biology & Physical Science/Chemistry	Environmental science is an interdisciplinary course of how nature works and how things in nature are interconnected. The following themes are central to the study of environmental science: sustainability; natural resources; natural resource degradation; solutions to environmental problems; tradeoffs in finding acceptable solutions; the importance of individual actions in implementing solutions; and sound science. Areas of study include the interconnection of all life, the flow of energy and cycling of matter, the stability and change in an ecosystem, conservation and resource allocation, and the evaluation of human activity and technology on the environment.

Earth Systems	40.0640000	Y	11-12	Biology & Physical Science/Chemistry	This course develops the explanations of phenomena fundamental to the sciences of geology and physical geography, including the early history of the Earth, plate tectonics, landform evolution, the Earth's geologic record, weather and climate, and the history of life on Earth. Instruction should focus on inquiry and development of scientific explanations, rather than mere descriptions of phenomena. Case studies, laboratory exercises, maps, and data analysis should be integrated into units. Special attention should be paid to topics of current interest (e.g., recent earthquakes, tsunamis, global warming, price of resources) and to potential careers in the geosciences. Major Concepts/Skills: Earth origin, composition, and structure, Plate tectonics and the rock cycle, Landscape evolution, Geologic hazards, Sedimentary environments, Geologic time and correlation, Earth and life history, Life-environment relationships, Hydrologic cycle, Insolation and global heat distribution, Weather and climate, Matter/energy cycles, Mineral and fossil fuel resources.

AP Biology	26.0140000	Y	10-12	Biology & Chemistry or are taking Chemistry concurrently with AP Biology.	Students should have successfully completed Biology and Chemistry or are taking Chemistry concurrently with AP Biology. The course is based on four Big Ideas, which encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about living organisms and biological systems. The following are Big Ideas: • The process of evolution explains the diversity and unity of life. • Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis. • Living systems store, retrieve, transmit, and respond to information essential to life processes. • Biological systems interact, and these systems and their interactions possess complex properties. Twenty-five percent of instructional time is devoted to hands-on laboratory work with an emphasis on inquiry-based investigations. Investigations require students to ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress.
AP Chemistry	40.0530000	Y	11-12	General Chemistry & Algebra II	The key concepts and related content that define the AP Chemistry course and exam are organized around underlying principles called the Big Ideas. They encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about the particulate nature of matter underlying the observations students make about the physical world. The following are Big Ideas: • The chemical elements are the building blocks of matter, which can be understood in terms of the arrangements of atoms. • Chemical and physical properties of materials can be explained by the structure and the arrangement of atoms, ions, or molecules and the forces between them. • Changes in matter involve the rearrangement and/or reorganization of atoms and/or the transfer of electrons. • Rates of chemical reactions are determined by details of the molecular collisions. • The laws of thermodynamics describe the essential role of energy and explain and predict the direction of changes in matter. • Bonds or attractions that can be formed can be broken. These two processes are in constant competition, sensitive to initial conditions and external forces or changes. Twenty-five percent of instructional time is devoted to inquiry-based laboratory investigations. Students ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress.

AP Environmental Science	26.0620000	Y	10-12	Teacher Recommendation	The AP Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science, through which students engage with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or preventing them. Environmental Science is interdisciplinary, embracing topics from geology, biology, environmental studies, environmental science, chemistry, and geography. Environmental science is interdisciplinary; it embraces a wide variety of topics from different areas of study. There are several unifying themes that cut across topics. The following are course themes: • Energy conversions underlie all ecological processes. • The Earth itself is one interconnected system. • Humans alter natural systems. • Environmental problems have a cultural and social context. • Human survival depends on developing practices that will achieve sustainable systems. Twenty-five percent of instructional time is devoted to inquiry-based laboratory investigations. Students ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress
AP Physics I	40.0831000	Y	11-12	Geometry & be concurrently taking Algebra II or an equivalent course.	AP Physics 1 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of Physics through inquiry-based investigations as they explore topics such as Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory, simple circuits. Students explore principles of Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory, simple circuits. The course is based on six Big Ideas, which encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about the physical world. The following are Big Ideas: • Objects and systems have properties such as mass and charge. Systems may have internal structure. • Fields existing in space can be used to explain interactions. • The interactions of an object with other objects can be described by forces. • Interactions between systems can result in changes in those systems. • Changes that occur as a result of interactions are constrained by conservation laws. • Waves can transfer energy and momentum from one location to another without the permanent transfer of mass and serve as a mathematical model for the description of other phenomena.

AP Physics C: Mechanics	40.0841011	Y	12	Calculus	AP Physics C: Mechanics is equivalent to a one-semester, calculus based, college-level physics course, especially appropriate for students planning to specialize or major in physical science or engineering. The course explores topics such as kinematics; Newton's laws of motion; work, energy and power; systems of particles and linear momentum; circular motion and rotation; and oscillations and gravitation. Introductory differential and integral calculus is used throughout the course. The AP Physics C: Mechanics course applies both differential and integral calculus and provides instruction in each of the following six content areas: • Kinematics • Newton's laws of motion • Work, energy and power • Systems of particles and linear momentum • Circular motion and rotation • Oscillations and gravitation AP Physics C: Mechanics should include a hands-on laboratory component comparable to a semester-long introductory college level physics laboratory. Students should spend a minimum of 20 percent of instructional time engaged in hands-on laboratory work. Students ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress. Each student should complete a lab notebook or portfolio of lab reports.
AP Physics C: Electricity	40.0842012	Y	12	AP Physics C: Mechanics	AP Physics C: Electricity and Magnetism is a one-semester, calculus-based, college-level physics course, especially appropriate for students planning to specialize or major in physical science or engineering. The course explores topics such as electrostatics; conductors, capacitors, and dielectrics; electric circuits; magnetic fields; and electromagnetism. Introductory differential and integral calculus is used throughout the course.
AP Research	26.0660000	Y	None	11-12	In this full-year course, students will utilize research and inquiry methodology to develop, manage, and conduct an in-depth study or investigation of an area of their own interest, culminating in a 4,000-5,000 word paper. Students will then present (using appropriate media), and defend the research design, approach, and findings. The AP score is determined from the research paper and presentation.