**Science Course Descriptions**

**Revised: 2017**

**Anatomy and Physiology**

The human anatomy and physiology curriculum is designed to continue student investigations that began in grades K-8. This curriculum is extensively performance and laboratory based. It integrates the study of the structures and functions of the human body, however rather than focusing solely on distinct anatomical and physiological systems (respiratory, nervous, etc.). Areas of study include organization of the body; protection, support and movement; providing internal coordination and regulation; processing and transporting; and reproduction, growth and development. Whenever possible, careers related to medicine, research, health-care and modern medical technology are emphasized throughout the curriculum. Case studies concerning diseases, disorders and ailments (i.e. real-life applications) are also emphasized.

**Biology I**

The Biology curriculum is designed to continue student investigations of the life sciences that began in grades K-8 and provide students the necessary skills to be proficient in biology. This course explores the nature of biology, cellular biology, biochemistry, genetics, evolution, classification, phlogenetics, and ecology. This curriculum includes more abstract concepts such as the interdependence of organisms, the relationship of matter, energy, and organization in living systems, the behavior of organisms, and biological evolution. Students investigate biological concepts through experience in laboratories and field work using the processes of inquiry. *The course does have a state end of course exam. The individual score on this exam will count as 20% of the overall grade for the course.*

**Chemistry**

The Chemistry curriculum is designed to continue student investigations of the physical sciences that began in grades K-8 and provide students the necessary skills to be proficient in chemistry. This curriculum includes more 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.

**Environmental Science**

The Environmental Science curriculum is designed to extend student investigations that began in grades K-8. Environmental Science is designed as an integrated and global approach to science and technology. The concepts in this course focus on the links between living things, their surroundings, and the total environment of the planet. The scientific principles and related technology will assist the student in understanding the relationships between local, national, and global environmental issues. The intent of the course is to help individuals become informed, get involved, and care for one’s self and the environment.

**Physical Science**

The Physical Science curriculum is designed to continue student investigations of the physical sciences that began in grades K-8 and provide students the necessary skills to have a richer knowledge base in physical science. This course is designed as a survey course of chemistry and physics. This curriculum includes the more 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, wave behavior, and basics of electricity and magnetism. Students investigate physical science concepts through experience in laboratories and field work using the processes of inquiry.  *The course does have a state end of course exam. The individual score on this exam will count as 20% of the overall grade for the course.*

**Honors/Gifted Physics**

In this course students will learn the basic motions of the universe and the equations that describe them.  Topics include Newtonian physics, thermal physics and fluid dynamics, waves and optics, electricity and magnetism, and atomic and nuclear physics.  Students will perform experiments and interpret the results of observations, activities which involve the assessment of experimental errors and uncertainties.  Honors physics is a math-based science course. Students will be expected to perform advanced Algebra functions.

**Physics**

The Physics curriculum is designed to continue student investigations of the physical sciences that began in grades K-8 and provide students the necessary skills to be proficient in physics. This curriculum includes more 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.

**AP Chemistry**

Courses with the AP designation conform to the College Board topics for the Advanced Placement curriculum. AP Chemistry covers atomic theory and structure, chemical bonding, nuclear chemistry, gases, liquids, solids, solutions, types of reactions, stoichiometry, equilibrium, kinetics, and thermodynamics.

**AP Biology**

This advanced course conforms to the College Board topics for the AP Biology examination. AP Biology content is the approximate equivalent of a first year introductory college course in biology. The course is organized around five “Big Ideas” as specified in the AP Biology course description published by The College Board. The Big Ideas are as follows: 1) The process of evolution drives the diversity and unity of life; 2) Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis; 3) Living systems store, retrieve, transmit, and respond to information essential to life processes; and 4) Biological systems interact and their interactions possess complex properties.

**AP Environmental Science**
This advanced course conforms to the College Board topics for the AP Environmental Science examination. The AP Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science.  Unlike most other introductory-level college science courses, environmental science is offered from a wide variety of departments, including geology, biology, environmental studies, environmental science, chemistry, and geography.  Through a combination of lab and field work students will explore and investigate the interrelationships of the natural world, identify and analyze environmental problems (both natural and human-made), evaluate the relative risks associated with these problems, and examine alternative solutions for resolving and/or preventing them.

**Zoology**

Modern zoology is the study of all things dealing with animals. As the science has advanced over the decades, modern zoologists study more than just recognition and classification of animals; their attention now includes animal anatomy, physiology, development, histology, ecology, behavior, and evolution. The ‘story’ of animals is told through evolutionary patterns across deep spans of time. Thus, the focus of this course is the recognition of key features of the major body plans that have evolved in animals and how those body plans have changed over time resulting in the diversity of animals that are evident today. In addition to classification and recognition, this course teaches students about the anatomical and physiological characteristics of animals. These characteristics relate to how an animal functions and can help students see the connections uniting particular animal groups. An understanding of form and function allows students to study how animals have evolved over time and to relate animals to their particular role in an ecosystem. Finally, students will develop an understanding that all living things are interconnected. It is the responsibility of humans to ensure that animal populations are managed to preserve species. Students should realize that the worldwide activities of humans can contribute to animal diversity both positively and negatively. It should also be understood that humans are dependent on animal species for advances in medicine, ecosystem maintenance, and food supply.