General Course Information

Course Name: Anatomy and Physiology	
Department: Science	Grade Level(s): 10-12
Duration/Credits: 1 unit: two semesters	Prerequisites: Biology/Honors Biology
BOE Approval Date: December 2022	Course Code:

Course Description:

Anatomy and Physiology is a course designed to introduce the student to the most amazing machine they will ever own; the human body.
This course is outlined to give them an overview of the eleven body systems including medical history, medical vocabulary and histology.
The course is specifically modeled after and taught in a homogenous manner to courses at major universities and will ultimately introduce them to a plethora of health science careers.
In this class, the anatomy and physiology of the human body is studied utilizing a plethora of laboratory experiences, hands-on activities and kinesthetic techniques.
Examples of the physiology labs include: creating working models of the sliding filament theory, assessing range of motion, learning to take and read EKG's and blood pressure, normal and abnormal heart sounds, blood typing and analyzing a urinalysis.
Examples of anatomical studies include: histology, integumentary, skeletal, muscular, nervous, endocrine, blood, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive.
As a capstone, the students will complete a full dissection of a high-order mammal, example: cat, mink or fetal pig. Dual credit offered.

Course Rationale:

In a world filled with the products of scientific inquiry, scientific literacy is a necessity for everyone in order to use scientific information to make wise choices. Today, the job market demands advanced skills, requiring people to be able to learn new skills, use reason, think creatively, make decisions and solve problems. An understanding of science and the process of science contribute in an essential way to these skills.

Course Objectives:

1. The student will identify human body systems, organs, tissues and cells and analyze how those components contribute to the function of the human body.
2. The student will research the relationships of the body systems to each other,

structurally and functionally.

3. The student will compare and contrast, in writing, the physiological processes of each human body system.
4. The student will use correct terminology to discuss the chemistry, cell structure, and tissues of the human body.
5. The student will use correct terminology to discuss the components and functions of blood, as well as the formation and anatomy of blood cells.
6. The student will Identify and explain the structure and functions of each body system.
7. Explain the role of each body system in maintaining homeostasis.

Standards Alignment:

9-12.LS1.A.2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
For Example: Analyzing the human body and how the different body systems communicate and interact with one another.

9-12.LS1.A.3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
For Example: Analyzing feedback loops to show how the body is always striving to reach homeostasis.

9-12.LS1.A.1 Construct a model of how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
For Example: When discussing the structure and function of muscle tissue, the student must understand how the structure and function of DNA leads to the creation of proteins, which ultimately will create the muscle tissue.

9-12.LS1.C.2 Use a model to demonstrate that cellular respiration is a chemical process whereby the bonds of molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.
For Example: When discussing the function of the respiratory system, the students must first understand the process of the cellular respiration on how the food product plus oxygen ultimately produces the energy currency ATP and the waste product carbon dioxide.

9-12.LS1.C.3 Construct and revise an explanation based on evidence that organic macromolecules are primarily composed of six elements, where carbon, hydrogen, and oxygen atoms may combine with nitrogen, sulfur, and phosphorus to form large carbon-based molecules.
For Example: When discussing the digestive system, the students need to understand the structure and function of each macromolecule in order to understand how and why the human body utilizes each during the full processing