



ANATOMY AND PHYSIOLOGY 2026-2027

Welcome to Anatomy and Physiology!

Congratulations on your decision to pursue one of the oldest and historically most interesting courses of science! Anatomy and Physiology dates back to 1600 BCE and is STILL one of the cornerstones of a medical education. Anatomy and Physiology has been pursued and taught since the Renaissance and through the years the format and the amount of information being taught has evolved and changed with the demands of the profession. What is being taught today may differ in content significantly from the past, but the hands-on dissection methods used to teach this have not really changed!

Anatomy/Physiology Course Description:

This course will help prepare students for further study in human and veterinary medicine, nursing, physical and occupational therapy, dentistry, biotechnology and related fields at the college level. Structure and function of cells, tissues, organs and systems of the human will be closely examined. Detailed dissection of the cat will be correlated with the study of human anatomy. Students will conduct clinical and physiological laboratory studies in addition to anatomical studies. ***Note: please understand that Anatomy and Physiology is an intensive senior level course designed for students serious in the pursuit of college level science courses.** If you are a mature, advanced junior who knows how to study consistently and want to take Med Careers, you'll be fine. This class is not suitable for students who have not completed 10th grade chemistry already. Completed Chem First!

Actions to take: (maybe be nice and tell friends you know took this class about the summer work)

1.) Email Assignment

One vital part of the class is COMMUNICATION! Your task is to send me an email (and prove you can follow instructions).

Use this email address: dwilson@rcs-k12.us

In the Subject Line: your name and class period. Example: John Wayne – 2nd hour

In the body of the message please let me know anything that you think I should be aware of as your teacher. Do you have any concerns, questions, special needs or learning styles? Please list your previous high school science course work and what upcoming science courses you will be taking in the Fall. This email is my first impression of you, so keep that in mind, please! Prove to me you can follow simple directions and be trusted with dissection tools.

2.) Review of Biology and Chemistry Basics

You are to read sections of Chapters 2 and 3 in the Anatomy & Physiology textbook, which cover prerequisites for this course, chemistry and biology. You should complete the chapter review questions for Chapters 2 and 3 (next page) in a way that adds depth to your understanding. These questions focus on the background knowledge you should already have that will directly apply to concepts in this class. If you have not taken Chemistry or will be taking it next year concurrently with Anatomy, you should still be familiar with the information as it is also covered in Biology and Physical Science. The purpose of this work is to review (or learn) the basics that you should already know before we start class. You need to have an understanding of the selected parts of these chapters, so copying is really useless as it will not help you on the first test or in future units. These questions should be finished by the middle of our second week of school. **You will be tested over this information within the first weeks of school.**

Looking forward to hearing from you and meeting you in person soon.

Mr. Wilson

The following is a list of key content that you should understand at a level that would allow you to teach this to a class of peers. Simple memorization of simple answers to this list is insufficient. These concepts are all explained in your book, so don't just Google them. Putting this into AI to answer/summarize for you is not sufficient. If you can't read your book and write good notes about these with the help of some videos at times, then the year is going to be mighty overwhelming for you.

CHAPTER 2 – CHEMISTRY OF LIFE

PART 1: BASIC CHEMISTRY

Definition of Concepts: Matter and Energy

1. Differentiate between matter and energy and between potential energy and kinetic energy.

Composition of Matter: Atoms and Elements

3. Define chemical element and list the four elements that form the bulk of body matter.
5. Define isotope, and radioisotope.

How Matter Is Combined: Molecules and Mixtures

6. Define molecule and distinguish between a compound and a mixture.
7. Compare solutions, colloids, and suspensions.

Chemical Bonds

9. Differentiate among ionic, covalent, and hydrogen bonds.
10. Compare and contrast polar and nonpolar compounds.

Chemical Reactions

11. Define the three major types of chemical reactions: synthesis, decomposition, and exchange.
12. Explain why chemical reactions in the body are often irreversible.
13. Describe factors that affect chemical reaction rates.

Inorganic Compounds

14. Explain the importance of water and salts to body homeostasis.
15. Define acid and base and explain the concept of pH. In what major way does pH influence the human body?

Organic Compounds

16. Describe and compare the building blocks, general structures, and biological functions of carbohydrates and lipids.
17. Explain the role of dehydration synthesis and hydrolysis in the formation and breakdown of organic molecules.
18. Describe the four levels of protein structure. Explain why protein structure is important for life. Describe enzyme action.
22. Explain the role of ATP.

Chapter 3 – Cellular Basis of Life

Overview of the Cellular Basis of Life

1. Define cell.

The Plasma Membrane: Structure

3. Describe the chemical composition of the plasma membrane and relate it to membrane functions.
4. Compare the structure and function of tight junctions, desmosomes, and gap junctions.

The Plasma Membrane: Membrane Transport

5. Relate plasma membrane structure to active and passive transport mechanisms.
6. Compare and contrast simple diffusion, facilitated diffusion, and osmosis
10. Define membrane potential and explain how the resting membrane potential is established and maintained.

The Plasma Membrane: Cell-Environment Interactions

12. List several roles of membrane receptors and that of voltage-sensitive membrane channel proteins.

The Cytoplasm

15. Discuss the structure and function of parts of the endomembrane system: ribosomes, the endoplasmic reticulum, and the Golgi apparatus, including functional interrelationships among these organelles.

Cell Growth and Reproduction

21. List the phases of the cell life cycle and describe the events of each phase.