**Introduction to A and P**

**Chapter 1 and Atlas A**

1. **What are Anatomy & Physiology?**
2. **Anatomy**

* Anatomy is the study of the external and internal physical structures of a living

organism and how these structures interact with one another. The origin of

the word comes from a Greek word that "to cut apart." Microscopic anatomy refers structures that must be viewed with a microscope. Macroscopic anatomy refers to structures that can be seen with the naked eye.

**B. Physiology**

* Physiology is the study of the functions and interactions of the components of a

living organism.

**II.** **Scientific Method (Critical Skill Assignment 1)**

* 1. **History**
  2. **Definition**
  3. **Inductive Method and Hypothetico-Deductive Method**
  4. **Experimental Design**
  5. **Facts, Laws, and Theories**

**III.** **Levels of Organization**

* This semester we will organize and examine the body and it’s components on several

different levels.

1. **Atomic level**

* Atoms are the fundamental units of matter are the smallest building blocks of

elements. All atoms have several different components. We will cover atomic structures during our study of chemistry.

1. **Molecular level**

* Molecules are formed when atoms bind together. Some molecules are comprised of

only two atoms but many of the molecules we will study this semester are formed from large collections of atoms. These very large molecules are called macromolecules.

1. **Organelle level**

* Organelles are microscopic structures typically formed from collections of

macromolecules. Different organelles have specialized functions with a cell. Organelles, though critical, are not considered to be alive or living.

1. **Cellular level**

* Cells are the smallest living units of an organism. All cells have a cell membrane and

a cytoplasm.

1. **Tissue level**

* Tissues are complex collections of cells. There are four primary types of tissues in the

body: epithelial tissue, connective tissue, nervous tissue, muscle tissue.

1. **Organ level**

* Organs are composed of several tissues types and serve particular body functions. We

are often familiar with some of the more common organs. For example, the stomach, the brain and the heart.

1. **Organ system level**

* Organ systems are collections of specialized organs with unique, vital functions. Most

anatomy and physiology texts are organized by organ systems.

1. **Organism level**

* Organisms are complete individuals comprised of multiple organ systems.

**III. Homeostasis**

* The tendency of living units to maintain stable internal environments. Homeostasis

means "unchanging" and "standing," and simply means that the internal processes and substances in our body remain stable. As conditions internally, like an increase in body temperature or decrease in blood sugar, the body undergoes homeostatic regulation to adapt to these changes. This homeostatic regulation is crucial to life. Disease or illness occurs when homeostasis isn’t maintained.

1. **Negative Feedback**

* For many internal factors, homeostasis is maintained by negative feedback. Negative

feedback occurs when the body opposes a stimulus that causes an imbalance in the body. For example, when body temperature falls, the body responds in several ways to help reverse the influences of the stressor.

**B. Positive Feedback**

* Positive feedback mechanisms occur when the body enhances or increases a stimulus

that results in an imbalance. These mechanisms move the body farther away from a balance point, for example, when body temperature rises and a fever occurs as a result of infection. Most positive feedback mechanisms are temporary.

**IV. Important Concepts for Studying Anatomy**

1. **Anatomical Position**

* For purposes of comparison, and identification, it is important to have a common

frame of reference when discussing the human body. The anatomical position as a standard reference point used in medicine and biological studies. In standard upright anatomical position, a body is standing with feet flat on the floor, arms down to the sides and palms and eyes are facing forwards.

**B. Body Sections and Planes**

* The internal anatomy of the body can be examined using different types of “sections”

or cuts. Anatomical planes are imaginary flat surfaces that pass through the body. There are several standard types of sections or planes.

1. **Sagittal**

* sections and planes divide the body or specific organs vertically into right and left

portions. A midsagittal section divides the body into equal right and left halves.

**2. Frontal or Coronal**

* sections and planes divide the body into anterior and posterior portions.

**3. Transverse**

* sections and planes divide the body into superior and inferior portions.

**BIOL 2400 Directional Terms in Human Anatomy**

**Please learn the definitions for the following terms found on page 29 in your textbook. There will be questions on these terms on Lecture Exam 1 in a few weeks.**

**Ventral**

**Dorsal**

**Anterior**

**Posterior**

**Cephalic**

**Rostral**

**Caudal**

**Superior**

**Inferior**

**Medial**

**Lateral**

**Proximal**

**Distal**

**Ispilateral**

**Contralateral**

**Superficial**

**Deep**

**BIOL2400 Specific Body Regions**

**Please learn the definitions for the following regions found on page 30 in your textbook. There will be questions on these regions on Lecture Exam 1 in a few weeks.**

**Acromial**

**Axillary**

**Brachial**

**Cubital**

**Antebrachial**

**Carpal**

**Palmar**

**Coxal**

**Patellar**

**Cephalic**

**Facial**

**Cervical**

**Inguinal**

**Femoral**

**Crural**

**Tarsal**

**Pedal**

**Plantar**

**Nuchal**

**Gluteal**

**Calcaneal**