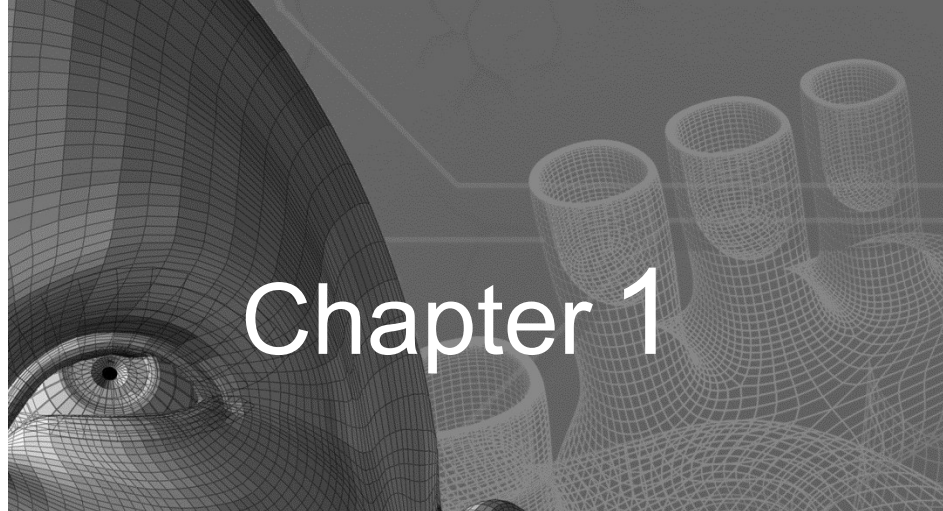




# Introduction to the Structural Units

## OVERVIEW

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This chapter is an introduction to the study of the structure (anatomy) and function (physiology) of the body.

### Anatomy and Physiology

#### Branches of Anatomy.

Branches of anatomy subdivide the field and include gross, microscopic, developmental, comparative, and systematic anatomy.

Lecture on the different methods people use to study the body. In this textbook the body is studied using the systematic method; in the study of pathology, microscopic anatomy is studied.

Have students examine their cheek cells using a microscope and, if possible, a phase-contrast microscope.

Materials needed: flat toothpicks, microscope slides, coverslip and microscope, pen and paper. Students will:

Step 1: Take a flat toothpick and gently scrape the inside of the mouth.

Step 2: Smear the saliva specimen on a flat microscope slide and cover the specimen with a coverslip.

Step 3: Examine the slide under the microscope. Draw what they see.

Step 4: Examine the slide under the phase-contrast microscope. Draw what they see.

Step 5: Wash hands and dispose of the material.

Question: "What were the major differences between what you saw using each microscope?" Pair and share information with classmates.

Internet search words: phase-contrast microscope.

### Anatomic Terminology

Lecture on the use of correct terminology as it refers to the body and is used by all health care professionals.

Terms that relate to body direction include anterior/posterior, cranial/caudal, superior/inferior, medial/lateral, proximal/distal, and superficial/deep.

Use overhead projections to demonstrate how the terms are used as opposites.

Demonstrate the areas on class members.

Have the students think-pair-share this experience.

Body planes include sagittal, coronal, ventral, and transverse.

Lecture on how these terms are used as reference points in the body.

Show overhead projections of body planes.

Websites can assist in understanding directional terms and body planes.

Terminology of body cavities, regions, and quadrants serves as reference points in health care:

Dorsal: cranial and spinal cavities

Ventral: thoracic and abdominopelvic cavities

Use an anatomical model to demonstrate the areas discussed. Show the nine regions of the abdominopelvic cavity and its four quadrants on a PowerPoint slide or overhead.

## Anatomical Position.

Demonstrate the anatomical position using a class member; stress this as the reference point for all anatomical descriptions.

## Life Functions

Life functions are the necessary activities that allow living organs to grow and function. Lecture on how the body functions to sustain life.

Body processes include metabolism and homeostasis.

Lecture on metabolism and homeostasis, and the importance of keeping the body in balance to ensure regular body functions.

Have the students keep a 2-hour log for an assigned time period, then pair and share what occurred in the time period that may have affected their homeostasis.

## Review and Class Activities

1. Why is it so important to know anatomical terminology?
2. **Medical Highlights—Biotechnology and Nanotechnology:** Group project—Students will search the Internet for the uses of biotechnology in medicine and the use of nanotechnology in medical devices. Have students respond to the question: “What is the long-term goal of the National Institute of Health regarding nanoparticles?”
3. **Homeostasis:** Think-pair-share—What happens when the temperature falls outside? How does the body adjust?
4. **Metric system:** Using a variety of measuring cups, demonstrate the comparison between household measurements and the metric system. Prepare a list of measurements, such as milliliters, grams, liters. Have students investigate and write down equivalents from their own household items.

## Answers to Chapter Quiz

The quiz can be found at the end of the chapter in this manual.

1. Physiology—all other terms are types of anatomy.
2. Coronal—all other terms are directional.
3. Medial—all other terms relate to the surface of the body.
4. Heart—all other terms relate to the abdominopelvic cavity of the body.
5. Caudal—all other terms refer to sections or planes of the body.
6. Thoracic—all other terms relate to the nine regions of the abdominal area.
7. Growth—all other terms are processes of digestion.
8. Physiology—all other terms relate to special life functions.
9. Nose—all other terms relate to the organs in the orbital cavity.
10. Homeostasis—all other terms relate to the process of metabolism.

## Chapter Quiz

Name \_\_\_\_\_ Date \_\_\_\_\_ Instructor \_\_\_\_\_

Circle the word or words that do not belong to each group.

1. Microscopic, systematic, comparative, physiology
2. Anterior, superior, coronal, cranial
3. Medial, superficial, deep, external
4. Heart, gallbladder, pancreas, spleen
5. Coronal, sagittal, caudal, transverse
6. Hypogastric, thoracic, umbilical, epigastric
7. Ingestion, growth, synthesis, assimilation
8. Movement, transport, physiology, excretion
9. Eyes, nose, optic nerve, tear ducts
10. Metabolism, anabolism, catabolism, homeostasis