PART 1: INTRODUCTION TO THE HUMAN BODY
LEARNING OBJECTIVES

A. ANATOMY AND PHYSIOLOGY DEFINED

Define anatomy and physiology.

Explain the interrelationship between structure and function.

B. LEVELS OF STRUCTURAL ORGANIZATION

Describe the body's six levels of structural organization.

List the body's 11 organ systems, their major organs, and general functions.

C. HOMEOSTASIS

Define homeostasis.

Explain the importance of body fluid exchange in homeostasis.

Describe a feedback system's components.

Contrast the operation of negative and positive feedback systems.

Explain the relationship between homeostasis and disease.

D. ANATOMICAL TERMINOLOGY

Describe the orientation of the body in the anatomical position.

Use anatomical terms to identify the major regions of the body.

Define the directional terms used to locate body structures.

Identify the anatomical planes and sections used to describe the body.

body cavities and membranes

Identify the major body cavities, their subdivisions, and the organs they contain.

Describe the serous membranes that line the thoracic and abdominal cavities.

Identify the nine regions and four quadrants of the abdominopelvic cavity.

PART 1: INTRODUCTION TO THE HUMAN BODY
GUIDED NOTES

A. ANATOMY AND PHYSIOLOGY DEFINED

Anatomy – the science of _____

How do we study anatomy? _____

In-class Anatomy Activity. Record your observations here:

_____

_____

_____

Physiology – the science of _____

How do we study physiology? _____

In-class Experiment. Record your data and conclusion here:

1. Resting heart rate: _____ beats / minute

   Heart rate immediately after exercise: _____ beats / minute

2. Which data is your control data? _____

3. Which data is your experimental data? _____

4. What do you conclude about the relationship between physical activity and heart rate? _____

FYI - Table 1.1 in your textbook describes several branches of anatomy and physiology.

The Relationship Between Structure and Function - The _____ of a body part allows it to perform certain _____.

In-class Structure and Function Activity. Record your answers here:

1. Describe the structure of a spoon and a fork. How are they the same? Different?

   _____

   _____

2. Which one is better for liquid food like soup? Why?

   _____

3. Which one is better for eating solid food like steak? Why?

   _____

4. How can understanding the relationship between structure and function help us learn anatomy and physiology?

   _____

B. LEVELS OF STRUCTURAL ORGANIZATION

The levels of structural organization in the human body are chemical, cellular, tissue, organ, system, and organismal.

Assigned learning activity. Draw a diagram illustrating the 6 levels of structural organization. Use Figure 1.1 as a reference.

Assigned learning activity. The human body is divided into 11 systems. Using Table 1.2 and your syllabus, list which body systems we will study in this course.

_____

_____

D. HOMEOSTASIS

Homeostasis is the condition of _____ in the body's _____ environment due to the constant interaction of the body's many _____ processes. In other words, homeostasis keeps body conditions within normal limits.

Homeostasis and Body Fluids

An important aspect of homeostasis is regulating the volume and composition of 2 types of body fluid:

1. Intracellular fluid (ICF) - the fluid within body _____; also called _____
2. Extracellular fluid (ECF) - the fluid outside body _____. Some examples are:
   a) Interstitial fluid - the ECF that fills the spaces between cells of tissues
   b) Blood plasma - ECF within blood vessels
   c) Lymph - ECF within lymphatic vessels
   d) Cerebrospinal fluid (CSF) - ECF around the brain and spinal cord

There is constant interchange of fluids between compartments, which allows the body to transport substances to and from cells:

1. Exchange between cytosol and interstitial fluid occurs across the _____.
2. Exchange between interstitial fluid and blood plasma occurs across _____.

Control of Homeostasis

The body regulates its internal environment using feedback systems.
A **feedback system** is a cycle of events in which the status of a body condition is monitored, evaluated, changed, remonitored, reevaluated, and so on.
The 3 basic components of a feedback system are (1) _____, (2) _____, and (3) _____.

Negative feedback moves the value of the controlled condition back towards its set point. Most of the body's feedback mechanisms are of this type.

Positive feedback moves the value of the controlled condition farther away from its set point. Childbirth and blood clotting are two common examples of this type of feedback.

In-class Feedback Systems Activity. Draw 2 diagrams - 1 for negative and 1 for positive feedback. Use Fig 1.3 and 1.4 as reference:

E. Basic Anatomical Terminology

Exercises 1 and 2 in your lab manual provide you with all the information you need to know to meet the learning objectives for this part of the course.

PART 1: INTRODUCTION TO THE HUMAN BODY PRACTICE TEST

1. Which term describes the study of the functions of body structures?
   A. anatomy
   B. physiology
   C. endocrinology
   D. histology
   E. immunology

2. Which term defines a group of cells that work together to perform a particular function?
   A. tissue
   B. organ
   C. molecules
   D. compounds
   E. organism

3. Which body fluid fills the narrow spaces between cells and tissues and directly affects the proper functioning of cells?
   A. lymph
   B. blood plasma
   C. interstitial fluid
   D. intracellular fluid
   E. vitreous body

4. Which feedback system structure receives output from the control center?
   A. receptor
   B. stimulus
   C. response
   D. effector
   E. efferent pathway

5. Which feedback system structure provides input to the control center?
   A. receptor
   B. muscle
   C. response
   D. effector
   E. efferent pathway

6. A condition NOT regulated by a negative feedback loop would be:
   A. childbirth
   B. body temperature
   C. blood pressure
   D. heart rate
   E. blood sugar

7. The lungs are located in the
   A. cranial cavity.
   B. vertebral cavity.
   C. abdominal cavity.
   D. pericardial cavity.
   E. pleural cavity.

8. Which cavity is located inferior to the abdominal cavity?
   A. vertebral canal
   B. cranial cavity
   C. abdominal cavity
   D. pericardial cavity
   E. pelvic cavity

9. Which cavity contains the heart?
   A. cranial cavity
   B. vertebral cavity
   C. abdominal cavity
   D. pericardial cavity
   E. pleural cavity

10. Which plane divides the body into equal right and left halves?
    A. frontal
    B. midsagittal
    C. transverse
    D. oblique
    E. coronal

11. Which plane divides the body into anterior and posterior portions?
    A. frontal
    B. sagittal
    C. transverse
    D. oblique
    E. midsagittal

12. A transverse plane will cut a body or organ into
    A. anterior and posterior portions.
    B. left and right portions.
    C. superior and inferior portions.
    D. portions separated at an angle to its longitudinal axis.
    E. unequal left and right portions.

13. Which directional term means farther from the midline?
    A. medial
    B. anterior
    C. proximal
    D. deep
    E. lateral

14. Which directional term means farther from the attachment of a limb to the trunk or farther from the origination of a structure?
    A. deep
    B. contralateral
    C. lateral
    D. cephalic
    E. distal

15. Choose the directional term that would make the following sentence correct. The heart is _____ to the liver.
    A. inferior
    B. anterior
    C. contralateral
    D. superior
    E. superficial

16. Choose the directional term that would make the following sentence correct. The sternum is _____ to the heart.
    A. posterior
    B. anterior
    C. inferior
    D. superior
    E. lateral

17. Which of the following organs is not found in the abdominal cavity?
    A. stomach
    B. spleen
    C. liver
    D. gallbladder
    E. diaphragm

18. Which serous membrane covers the viscera within the abdominal cavity, and lines the abdominal wall and the inferior surface of the diaphragm?
    A. pericardium
    B. pleura
    C. mediastinum
    D. dura mater
    E. peritoneum

19. Which of the following anatomical terms refers to the groin?
    A. pelvic
    B. umbilical
    C. sternal
    D. otic
    E. inguinal

20. Which of the following anatomical terms refers to the front of the elbow?
    A. olecranal
    B. antecubital
    C. carpal
    D. digital
    E. antebrachial

21. Which of the following anatomical terms refers to the ear?
    A. otic
    B. orbital
    C. ocular
    D. oral
    E. occipital

22. Which of the following anatomical terms refers to the great toe?
    A. pollex
    B. tarsal
    C. hallux
    D. pedal
    E. carpal

23. Which of the following anatomical terms refers to the thumb?
    A. pollex
    B. tarsal
    C. hallux
    D. volar
    E. carpal

24. What is the name of the outer layer of the serous membrane that surrounds the heart?
    A. diaphragm
    B. visceral pleura
    C. parietal pericardium
    D. visceral pericardium
    E. mediastinum

25. Which of the following describes a body process that is controlled using a positive feedback loop?
    A. increasing body temperature in response to a drop in body temperature
    B. decreasing body temperature in response to elevated body temperature
    C. decreasing blood [glucose] in response to elevated blood [glucose]
    D. increasing strength of uterine contractions in response to cervical stretch
    E. decreasing heart rate in response to elevated blood pressure

26. Which of the following organs contains the control center for the feedback system that regulates blood pressure?
    A. skin
    B. arteries
    C. brain
    D. heart
    E. pituitary gland

27. Which of the following is NOT a common characteristic of a negative feedback system?
    A. regulates conditions in body that remain fairly stable over long periods
    B. important in maintaining homeostasis
    C. involves control centers in the nervous or endocrine systems
    D. stimulates changes that reverse the direction of the stimulus
    E. usually requires an event outside the feedback system to shut it off

28. Which of the following is NOT one of the four basic types of tissues found in the human body?
    A. epithelial tissue
    B. connective tissue
    C. muscular tissue
    D. necrotic tissue
    E. nervous tissue

29. Which of the following correctly list the levels of structural organization in the human body from largest to smallest?
    A. chemical - cellular - tissue - organ - organ system - organism
    B. cellular - chemical - tissue - organ - organ system - organism
    C. organism - organ system - organ - tissue - cellular - chemical
    D. organ - organ system - organism - tissue - cellular - chemical
    E. issue - cellular - organ - organ system - organism - chemical

30. Which of the following structures or regions could you clearly see when you are viewing the anterior side of an individual standing in the standard anatomical position?
    A. shoulder blade
    B. palm of the hand
    C. plantar surface of foot
    D. popliteal region of the knee
    E. gluteal region