Anatomy and Physiology 1A: Introduction Course Syllabus

What you will learn in this course

Anatomy and Physiology 1A: Introduction

Increase your understanding about the form and function of the human body! Starting with the relationship between anatomy and physiology, you will then learn about cell structure and their processes. Discover the functions and purposes of the skeletal, muscular, nervous, and cardiovascular systems as well as diseases that affect those systems. Becoming familiar with the terminology of the human body is essential to those pursuing health sciences or wanting to gain a greater sense of how the human body works.

Unit 1: Human Body Organization

While Anatomy and Physiology courses are required for students beginning their journeys to a career in a health science, they can also be of great value to others who are simply wanting to improve their own health and wellbeing. Just as it's easier to navigate a foreign country if you understand the language spoken, it's easier to navigate the human body if you understand the terminology related to the forms and functions of this fascinating area of study. If you're lost in Italy, hopefully you have a translation app. If you're lost and trying to figure out how one symptom might be a clue to a larger problem in a patient, this material will help you navigate your way through body systems.

What will you learn in this unit?

- Define and discuss the terms anatomy and physiology and their relationship to one another
- Describe the levels of organization of the human body from simple to complex
- Define and describe the anatomical positions and directional terms used in human anatomy
- Locate and describe the main regions, sections, and cavities of the body

Unit 2: Chemistry of the Body

Remember how we talked about one cell being smaller than a period? It's mind-blowing to think that something so small has so much control over all of our body systems. There are over 200 different types of cells in the body that make up a total of 100 TRILLION cells in one person. Think about it for a minute: that number is the number 1 followed by 14 zeroes!

Let's take a look at how cells are designed to make sure the human body stays healthy and balanced. Understanding cell design and reproduction is key to understanding how each body system works and how they interact to sustain life.

What will you learn in this unit?

- Summarize the relationships among homeostasis, control systems, and feedback loops
- Explain the structure and function of typical cells
- Explain mitosis and meiosis: their similarities and differences
- Describe and discuss how damage to one type of cell and/or tissue may impact the function of other cells and tissues

Unit 3: The Skeletal System

Can you image what it would be like if you didn't have any bones and were only made up of muscle and skin? You wouldn't be able to walk very well, type on the keyboard or, certainly, be able to dance! There are 206 bones in the adult human skeleton. When we are born, we have more than 250 bones in our bodies, and as we grow and develop, some of the smaller bones fuse together to form stronger, longer and less pliable bone. The skeleton is not only what determines the shape and size of an individual, but it allows us to walk upright and perform the activities of daily life.

What will you learn in this unit?

- Describe the structure and function of bones
- Identify the different types of bones
- Differentiate between the axial and appendicular skeleton
- Classify joints and their specific functions
- Summarize common diseases and disorders of the skeletal system

Unit 4: The Muscular System

Sit perfectly still while you look at your computer screen. You might think that none of your muscles are moving, but they are. The diaphragm, the sheet of muscle that rests under your lungs, is contracting and relaxing to facilitate your breathing when you're at rest or in motion. Muscles also perform other functions that you may not have considered; not only does the muscular system move your limbs, it also interacts with other body systems to support vital movements around your body. Let's see what muscles do for you.

What will you learn in this unit?

- Explain the structure and function of muscles and muscle tissue
- Describe the sliding filament theory
- Interpret the names of various muscles based on Latin terms
- Distinguish between a muscle strain and other muscle injuries

Anatomy and Physiology 1A Midterm Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the first four units in this course (Note: You will be able to open this exam only one time.)

Unit 5: The Nervous System

Snap your fingers. Can you imagine that in the time it took you to snap, a nerve impulse could travel the length of a football field? Now, think about an amazingly fast relay race. Your nervous system is like a relay: the baton gets passed from one group of cells to the next to deliver a message with lightning speed. It's not one individual that carries the baton the length of the football field; it's multiple people passing the baton across the length of the impulse to make the movement or sensation happen. Once you examine all the individual parts of the nervous system and how they work together, you'll appreciate how fascinating it is.

What will you learn in this unit?

- Outline the organization and functions of the central and autonomic nervous systems
- Locate and identify the major regions of the brain and describe their functions
- Analyze the basic structure and functions of the cranial nerves, spinal cord, and special sense organs
- Discuss common diseases and disorders of the neurological system

Unit 6: The Integumentary System

The integumentary system is one of the most unappreciated in the body. Most people might guess that the brain, heart, or lungs are the most important organ in the body, but the integumentary system plays a vital role in maintaining homeostasis and protecting all of these other important organs. Let's learn what makes the integumentary system so important.

What will you learn in this unit?

- Analyze the structure and function of the integumentary systems
- Discuss potential alterations in skin integrity
- Demonstrate the knowledge and skill related to performing effective hand hygiene
- Identify and analyze common diseases and disorders of the integumentary system

Unit 7: Essential Knowledge About Blood

Have you ever accidentally cut yourself so badly that your blood started to pool? As horrifying as that experience can be, it's also fascinating to consider exactly what that deep red liquid is. Blood is a tissue that is made up of millions and millions of cells and chemicals that are dissolved within it. Like other body systems, it has multiple intricate parts that work together to perform functions within its own assigned body system and coordinate activities with other body systems. It's the levels of the various components of blood, the path they take to circulate in the body, and their relationship with our heart and lungs that contribute to maintaining homeostasis.

What will you learn in this unit?

- Distinguish between the various types of blood vessels
- Demonstrate knowledge of the composition of blood

- Identify the different ABO compatibilities
- Describe various disorders and diseases of the blood and its components

Unit 8: The Cardiovascular System and The Heart

We've all seen images on television of someone dramatically grabbing their chest and dropping to the ground, presumably having a heart attack. These significant injuries are a result of problems within the heart that are similar to the flickering of electricity in a room or clogged pipes in a sink. As you move through this unit, you will learn about the power grid and the plumbing in the heart, what happens when they are in top condition, and what happens when there is a disruption in service.

What will you learn in this unit?

- Describe the structure and function of the heart and circulatory pathways
- Compare and contrast systemic and pulmonary circulation
- Summarize the path for electrical conduction in the heart
- Discuss common diseases and disorders that affect the cardiovascular system

Anatomy and Physiology 1A Final Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from units five to eight in this course – the last four units. (Note: You will be able to open this exam only one time.)