

# Anatomy and Physiology I

## Learning Guide: Nervous System

**Overview** – The last major thrust of Anatomy and Physiology I is the nervous system. In this unit, select topics that cover aspects of nervous tissue, the spinal cord, and the autonomic nervous system will be covered. We start by classifying the components of the nervous system, followed by the classification of cells and tissues of particular importance. After other structural issues are covered, the spinal cord anatomy is examined. In this context, we will also take a close look at spinal reflexes. Lastly, the autonomic nervous system is looked at in some detail.

### Learning Objectives

- Classify the components of the nervous system both structurally and functionally
- Compare and contrast the anatomical and physiological characteristics of neuroglia and the neuron
- Identify the structural and functional components of the spinal cord.
- Compare and contrast nerve tracks and spinal nerves.
- Compare and contrast the different structural and functional elements of both spinal grey matter and white matter.
- Describe the basic reflex arc.
- Describe and possibly illustrate the tendon and stretch reflexes.
- Identify the dermatomes of the body and their importance in medicine.
- Describe the organization of the autonomic nervous system
- Compare and contrast preganglionic and postganglionic neurons in sympathetic and parasympathetic nervous systems relative to the viscera they innervate.
- Describe how the sympathetic and parasympathetic nervous systems work together in maintaining homeostasis during times of rest and times of stress
- Describe how a "whole-body response" can be generated and maintained during a "fight and flight response."

**Getting Started** – The topics in the nervous system make this a large unit. Start by studying and learning the nervous system's introductory information and the nervous system cell structures and functions. This will be followed by an examination of the spinal cord and the autonomic nervous system. For both, there

are essential handouts that will provide you will a visual appreciation of the topics discussed.

**Exam** – The exam is a fairly typical exam employing a variety of question types. There is the possibility of an illustration or two. A guided short answer on the production and flow of cerebrospinal fluid is included.

Please also recall that grades associated with the last unit are not droppable. This grade counts, so you will want to be mindful of this as you begin.

**Final Point** – As this is a relatively large unit, so starting promptly is essential. The physiology is interesting and provides important underpinnings for future topics in physiology.