

## **Course Description**

### **PAS1803 | Clinical Anatomy and Physiology | 2.00 credits**

This course is designed for students accepted into the Physician Assistant Program. The course will review basic Anatomy and Physiology principles, while integrating important clinical concepts. Students will learn to transition from Anatomy and Physiology to Pathophysiology. Prerequisites: BSC2085, BSC2085L, BSC2086, BSC2086L, CHM1045, CHM1045L, CHM1046, CHM1046L, MCB2010, MCB2010L

### **Course Competencies:**

**Competency 1:** The student will be able to develop a vocabulary of appropriate terminology to effectively communicate information related to anatomic and physiologic mechanisms. by:

1. Listing the levels of organization in the human body and the characteristics of each
2. Describing the major characteristics of human life
3. Explaining how anatomy and physiology are related
4. Providing examples of metabolism (anabolic and catabolic processes)
5. Explaining the parts of a homeostatic mechanism and explain how they function together
6. Using the terms that describe relative positions, body sections, and body regions properly

**Competency 2:** The student will be able to recognize the anatomical structures and explain the physiological functions of body systems by:

1. Explaining how cells differ from one another
2. Explaining how the structure of a cell membrane makes possible its functions
3. Explaining how substances move into and out of cells
4. Explaining how two differentiated cell types can have the same genetic information, but different appearances and functions
5. Listing the four major tissue types and indicating a function of each type
6. Comparing and contrasting the ground substance, cells, and fibers in different types of connective tissue
7. Distinguishing among the four major types of membranes

**Competency 3:** The student will recognize and explain the principles of homeostasis and the use of feedback loops to control physiological systems in the human body by:

1. Recognizing that knowledge of normal physiology is necessary for understanding pathophysiology
2. Defining the fluid compartments
3. Explaining how solutes distribute in the body
4. Contrasting reflex and local homeostatic control
5. Explaining positive and negative feedback
6. Describing how ion channels are gated

**Competency 4:** The student will apply anatomical and physiological concepts learned about the Integumentary System and apply it to a clinical scenario by:

1. Describing the functions of the skin
2. Describing the structure of the layers of the skin
3. Summarizing the factors that determine skin color
4. Explaining how the skin helps regulate body temperature
5. Evaluating a patient case based on anatomical and physiological concepts learned

**Competency 5:** The student will apply anatomical and physiological concepts learned about the skeletal system and apply it to a clinical scenario by:

1. Describing the macroscopic and microscopic structure of a long bone and explaining how they develop and grow
2. Classifying joints according to the type of tissue binding bones together
3. Comparing and contrasting the characteristics of skeletal, cardiac and smooth muscle
4. Explaining how skeletal muscles produce movements at joints and identifying several types of joint movements
5. Evaluating a patient case based on anatomical and physiological concepts learned

**Competency 6:** The student will apply anatomical and physiological concepts learned about the respiratory system and apply it to a clinical scenario by:

1. Identifying the general functions of the respiratory system
2. Explaining the mechanisms of inspiration and expiration
3. Explaining how air and blood exchange gases
4. Describing the function of pulmonary function tests
5. Evaluating a patient case based on anatomical and physiological concepts learned

**Competency 7:** The student will apply anatomical and physiological concepts learned about the cardiovascular system and apply it to a clinical scenario by:

1. Discussing the functions of the organs of the cardiovascular system
2. Identifying the parts of a normal ECG pattern and discussing the significance of this pattern.
3. Explaining the cardiac cycle and associated heart sounds
4. Defining and calculating the ejection fraction of the heart
5. Explaining EDV, ESV, stroke volume and cardiac output
6. Explaining how blood pressure is produced and controlled
7. Evaluating a patient case based on anatomical and physiological concepts learned

**Competency 8:** The student will apply anatomical and physiological concepts learned about the digestive system and apply it to a clinical scenario by:

1. Describing the general functions of the digestive system
2. Explaining how the contents of the alimentary canal are mixed and moved
3. Explaining how the products of digestion are absorbed
4. Explaining the mechanisms of digestion and absorption and identify where they occur in the gastrointestinal tract
5. Evaluating a patient case based on anatomical and physiological concepts learned

**Competency 9:** The student will apply anatomical and physiological concepts learned about the nervous system and apply it to a clinical scenario by:

1. Distinguishing between the two types of cells that compose the nervous tissue
2. Describing the general structure and function of a neuron
3. Explaining how differences in structure and function are used to classify neurons
4. Comparing impulse conduction in myelinated and unmyelinated neurons
5. Describing the general ways in which the nervous system processes information
6. Evaluating a patient case based on anatomical and physiological concepts learned

**Competency 10:** The student will apply anatomical and physiological concepts learned about the endocrine system and apply it to a clinical scenario by:

1. Describing the secretions of the endocrine system
2. Distinguishing between endocrine and exocrine glands
3. Discussing how negative feedback mechanisms regulate hormonal secretions
4. Describing the functions of the hormones that endocrine glands secrete
5. Evaluating a patient case based on anatomical and physiological concepts learned

**Competency 11:** The student will apply anatomical and physiological concepts learned about the urinary system and apply it to a clinical scenario by:

1. Describing the homeostatic functions of the kidneys
2. Tracing the pathway of blood through the major vessels in a kidney
3. Explaining the factors that affect the rate of glomerular filtration and how this rate is regulated
4. Explaining the renin angiotensin aldosterone system and the conditions that activate it
5. Evaluating a patient case based on anatomical and physiological concepts learned

**Competency 12:** The student will apply anatomical and physiological concepts learned about the reproductive system and apply it to a clinical scenario by:

1. Describing the general function of each part of the male and female reproductive system
2. Explaining how hormones control the activities of the female reproductive organs and the development of female secondary sex characteristics
3. Explaining how hormones control the activities of the male reproductive organs and the development of male secondary sex characteristics
4. Describing the major events of the reproductive cycle
5. Describing several methods of birth control, including the relative effectiveness of each method
6. Evaluating a patient case based on anatomical and physiological concepts learned

**Learning Outcomes:**

- Communicate effectively using listening, speaking, reading, and writing skills
- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information