

# Anatomy and Physiology II

## Learning Guide: The Heart

**Overview** – The Module on the Heart is the second part in a series that deals with the cardiovascular system. Broadly, we divide the content into two parts:

1. **Anatomy** – We first look at the anatomy and histology of the heart. Select blood vessels will also be identified.
2. **Physiology** – There are three important physiological issues to be discussed:
  - **Cardiac Cycle** – A detailed look at the heart's function, where the electrical pathways, blood pressure issues, blood movement, heart sounds, EKG, and other issues will be integrated together in this important physiological event.
  - **Cardiac Control** – The role of the autonomic nervous system, endocrine system, and effects of a “flight and fight” response in heart regulation.
  - **Heart Energetics** – Using our understanding of Glycolysis and Cellular Respiration as a foundation, we examine how the heart's energy needs are met.

**Review Topics** – A&P I is a foundation for A&P II. If you are not comfortable with the following topics covered in A&P I, review handouts/videos are available. The review topics are

1. **Membranes** – The histology and physiology of the serous membrane in heart function.
2. **Glycolysis and Cellular Respiration** – Using Glycolysis and Cellular Respiration as a springboard, we will explore Beta Oxidation and Heart energetics.

**Getting Started** – Make your approach visual. This module's content can be better approached visually. Copious images support your learning, and the [Image Bank](#) can be helpful to this end.

**Exam** – Besides having a working knowledge of the heart content presented on the outline and handouts, there are some special considerations to consider in preparation for the heart assessment.

- **Illustrations** – There will be some illustrations that look at the heart's anatomy with corresponding functions. Make your study visual.

- **Guided Essay** - The Cardiac Cycle will be your first "Guided Essay." This is one of the most important topics you can master in preparation for clinical studies. Over the years, I have had many instances where students, while in their clinicals, email me and request to come back and sit in on a lecture again—but only for one lecture: the heart. So, learn the Cardiac Cycle well.
- **Heart Regulation** – A [handout](#) (single page) illustrates this process. Depending on the assessment modality, this topic may be presented in one of two ways.
  - **Blackboard Exam** – A large matching that will be based on the illustration and your understanding of it.
  - **In-Class Exam** – You will illustrate this exam. Questions exploring your understanding of it will be present.
- **Heart Energetics** – Using Glycolysis and Cellular Respiration as a springboard, understand how and why fatty acids are the preferred energy source for the heart. The [video](#) will be important for this topic.

**Cardiac Cycle Presentation** - The video presentation on the cardiac cycle is an in-class presentation. I chose to do it this way because it is more dynamic and effective than a desk-top lecture.

**Laboratory** – There is a dissection of the heart. How this is accomplished depends upon the presentation modality. But regardless of the modality, the name and function of things you are responsible for and on the [Heart Dissection List \(for lab\)](#). Many more resources can be located [HERE](#).

#### **Modalities**

- **Online** – If your class is online, a [video dissection](#) is available
- **In-Class** – In-class dissections require you to have safety eyewear. If you do not have safety eyewear, you will not be able to do the lab.

**The First Laboratory Practical** - The First Laboratory Practical will cover the heart and blood vessels. However, please note that everything we discuss in the lab is also discussed in the lecture. So, the lab is an excellent review of lecture content.

**Final Point** – Study hard !! This topic is of great importance.