

Anatomy and Physiology I

Learning Guide: Glycolysis and Cellular Respiration

Overview – This module provides a detailed look at the metabolic processes of Glycolysis and Cellular Respiration for ATP production. It aims to give students an appreciation for the importance of these metabolic pathways. Your understanding of these processes serves as a foundation for several future modules in A&P I and A&P II.

Learning Objectives

- Describe how energy enters the environment and becomes available to living things.
- Describe the difference between oxidation and reduction reactions and phosphorylation events.
- Give examples of coenzymes and how they function
- Describe the process of Glycolysis.
- Describe the processes involved in the Transition Stage and the Krebs' Cycle.
- Explain how the electron transport chain generates ATP.
- Calculate ATP production on a per-glucose basis.

Getting Started – Glycolysis and cellular respiration may look challenging, but they are not. The student will discern a logical progression of events that lead to ATP production by looking at the processes thoughtfully. The key to mastering this topic is to examine each step in sequence. You will find that each step leads into subsequent steps logically and predictably. If you do not understand a particular step, review it again before going on. You will find that in the videos, I will go over the processes repetitively. By the end, you should have a pretty good grasp of the pathways under discussion.

Exam – The exam will employ various questions, most of which are drawn from a bank of questions provided online. Use these questions to help guide you in a step-by-step mastery of the material. The assessments will vary on the exam modality:

- **In-Class Exam** – The exam in class has two parts. In part #1, you will illustrate the “Stick Figure” illustration of the processes. After part #1 is done and handed in, you will do part #2. Part #2 is a typical exam format with varying questions that span the scope of discussion.

- **Blackboard Exam** - You will see many images of these processes on your exam. You may also be asked to identify what is occurring at each step.

Final Point – Glycolysis and cellular respiration can be intimidating topics at first glance. But the flip side is that for most students, they are a grade booster! So, take a deep breath and jump in! It can be a lot of “fun.”