

# Syllabus

## Virginia Health Science 1, Semester B

### Course Overview

This one-semester course is intended as a practical, hands-on guide to help you understand the skills required to achieve success in modern-day careers. This course has 12 lessons organized into three units, plus three Unit Activities. Each lesson contains one or more Lesson Activities.

This course will cover various topics in health science, such as biomolecules, biological and chemical processes, and various diseases.

You will submit the Unit Activity documents to your teacher, and you will grade your work in the Lesson Activities by comparing them with given sample responses. The Unit Activities (submitted to the teacher) and the Lesson Activities (self-checked) are the major components of this course. There are other assessment components, namely the mastery test questions that feature along with the lesson; the pre- and post-test questions that come at the beginning and end of the unit, respectively; and an end-of-semester test. All of these tests are a combination of simple multiple-choice questions and technology enhanced (TE) questions.

### Course Goals

This course will help you meet the following goals:

- Analyze the structure and functions of amino acids, proteins, simple and complex carbohydrates, lipids, biological membranes, DNA, and RNA.
- Discuss vitamins, coenzymes, and cofactors.
- Describe metabolic pathways and processes.
- Examine the seven biological processes of the human body.
- Analyze the chemical reactions that take place in the human body.
- Discuss the pathophysiology of disease and the immune response.

### Prerequisite Skills

Health Science—1B has the following prerequisites:

- basic math knowledge
- ability to visualize and apply creativity and innovation
- familiarity with the writing process and following guidelines

## General Skills

To participate in this course, you should be able to do the following:

- Perform basic operations with word processing software, such as Microsoft Word or Google Docs.
- Perform online research using various search engines and library databases.
- Communicate through email and participate in discussion boards.

*For a complete list of general skills that are required for participation in online courses, refer to the Prerequisites section of the Plato Student Orientation document, found at the beginning of this course.*

## Credit Value

Health Science—1B is a 0.5-credit course.

## Course Materials

- Notebook
- Computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- Microsoft Excel or equivalent
- Microsoft PowerPoint or equivalent

## Course Pacing Guide

This course description and pacing guide is intended to help you stay on schedule with your work. Note that your course instructor may modify the schedule to meet the specific needs of your class.

### Unit 1: Biomolecules

#### Summary

In this unit, you will learn about the structure and functions of amino acids and how they form proteins. You'll also discuss simple and complex carbohydrates, lipids, and lipoproteins. Additionally, in this unit, you will familiarize yourself with the chemistry and structure of DNA and RNA.

| Day              | Activity/Objective  | Type               |
|------------------|---|--------------------|
| 1 day:<br>1      | <b>Syllabus and Plato Student Orientation</b><br><i>Review the Plato Student Orientation and Course Syllabus at the beginning of this course.</i> | Course Orientation |
| 6 days:<br>2–7   | <b>Amino Acids and Proteins</b><br><i>Discuss the structure and functions of amino acids and proteins.</i>  | Lesson             |
| 6 days:<br>8–13  | <b>Simple and Complex Carbohydrates</b><br><i>Explore the structure and chemistry of simple and complex carbohydrates.</i>                        | Lesson             |
| 6 days:<br>14–19 | <b>Lipids and Membranes</b><br><i>Examine the properties and functions of lipids and biological membranes.</i>                                    | Lesson             |
| 6 days:<br>20–25 | <b>DNA and RNA</b><br><i>Discuss the chemistry, structure, and functions of DNA and RNA.</i>  | Lesson             |
| 1 day:<br>26     | <b>Para Jumble</b>  | Game               |
| 4 days:<br>27–30 | <b>Unit Activity/Threaded Discussion—Unit 1</b>   | Unit Activity      |
| 1 day:<br>31     | <b>Posttest—Unit 1</b>  | Assessment         |

## Unit 2: Biological and Chemical Processes

### Summary

In this unit, you will learn about vitamins and cofactors. You'll differentiate between coenzymes and cofactors. You'll learn about carbohydrate, protein, and lipid metabolism. You'll also learn about anabolic and catabolic pathways and the relationship between the digestive process and metabolic pathways. Additionally, you'll learn about the biological and chemical processes of the human body.

| Day              | Activity/Objective  | Type          |
|------------------|---|---------------|
| 5 days:<br>32–36 | <b>Vitamins and Cofactors</b><br><i>Define and differentiate between vitamins and cofactors.</i>                    | Lesson        |
| 5 days:<br>37–41 | <b>Enzymes</b><br><i>Discuss how enzymes control the biochemical processes.</i>                                     | Lesson        |
| 5 days:<br>42–46 | <b>Metabolism</b><br><i>Trace the metabolic pathways and the processes involved in metabolism.</i>                  | Lesson        |
| 5 days:<br>47–51 | <b>Biological Processes</b><br><i>Examine the biological processes that are characteristic of all human beings.</i> | Lesson        |
| 5 days:<br>52–56 | <b>Chemical Reactions</b><br><i>Analyze the chemical reactions that take place in the human body.</i>               | Lesson        |
| 1 day:<br>57     | <b>Thwack-A-Mole</b>  | Game          |
| 4 days:<br>58–61 | <b>Unit Activity/Threaded Discussion—Unit 2</b>   | Unit Activity |
| 1 day:<br>62     | <b>Posttest—Unit 2</b>  | Assessment    |

## Unit 3: Disease

### Summary

In this unit, you will learn about homeostasis. You'll identify various diseases that affect different body systems. You'll learn how the immune system functions. You'll also learn about the four types of tissue and their structure and functions. In addition, you will familiarize yourself with gene mapping and genetic diseases.

| Day              | Activity/Objective  | Type          |
|------------------|---|---------------|
| 7 days:<br>63–69 | <b><i>Disease and Immunity</i></b><br><i>Discuss the pathophysiology of disease and the immune response.</i>        | Lesson        |
| 6 days:<br>70–75 | <b><i>Human Tissues</i></b><br><i>Discuss the functions and diseases of human tissues.</i>                          | Lesson        |
| 7 days:<br>76–82 | <b><i>Genetic Research and Diseases</i></b><br><i>Examine genetic disease and advancements in genetic research.</i> | Lesson        |
| 1 day:<br>83     | <b>Space Jumble</b>   | Game          |
| 4 days:<br>84–87 | <b>Unit Activity/Threaded Discussion—Unit 3</b>   | Unit Activity |
| 1 day:<br>88     | <b>Posttest—Unit 3</b>  | Assessment    |
| 1 day:<br>89     | <b>Semester Review</b>  |               |
| 1 day:<br>90     | <b>End-of-Semester Test</b>   | Assessment    |