

## 2022-2023 Themes in Biology - Pacing Guide

Biology is the scientific study of the natural processes of living things. In this course students will explore and answer **some** of the following questions as they learn about key ideas in biology:

- What are the characteristics of life?
- How do organisms obtain and use energy they need to live and grow?
- How do the structures of organisms enable life's functions?
- How do organisms inherit and express their traits?
- How can there be so many similarities among organisms yet so many different plants, animals, and microorganisms? How does biodiversity affect humans?"
- How do microbes affect organisms?

\* We do not have a reference text for this course. Materials will be provided through Schoology. [ *NOTE: There is a high school biology course available through the Khan Academy at <https://www.khanacademy.org/science/high-school-biology> that you may find helpful. They also offer Biology and AP Biology. ]*

| Quarter   | Thematic Unit  | Biology Topics   | Khan Academy - High School Biology   |
|---|--|--|--|
| <b>1</b>  | What causes pandemics?-<br>Characteristics of and<br>Interactions of organisms                           | The Science of Biology; Characteristics of life, Cells (structure), microorganisms, viruses, immunity, DNA, RNA,           | Characteristics of life, cells   |
| <b>2</b>  | Heredity: Inheritance and<br>Variation of Traits   | Protein Synthesis<br>Cell growth and Division;<br>Genetics; Inheritance patterns; Genetic Engineering;<br>The Human Genome | Reproduction and Cell Division<br>Classical Genetics<br>Molecular Genetics |
| <b>3</b>  | You are what you eat - or<br>are you?<br>Matter and Energy Flow in<br>Organisms<br>Energy and Metabolism | Homeostasis<br>Chemistry of Life; Cellular Respiration, Photosynthesis<br>Enzymes  | Biology Foundations<br>Energy and Transport<br><br>Cells                   |
| <b>4</b>  | Human Body Systems   | Digestive System<br>Circulatory System, Respiratory System   | Human Body Systems   |
| <b>Other option<br/>or as time<br/>permits</b>  | Ecosystems: Interactions,<br>Energy, and Dynamics  | The Biosphere; Ecosystems and Communities;<br>Populations; Humans in the Biosphere   | Ecology  |
| <b>Notes:</b> The thematic units are subject to change. This document will be updated periodically and posted through the specific course listing in Schoology. If you have questions, comments, or concerns, please contact Ms. Jane ( <a href="mailto:jwilson@d49.org">jwilson@d49.org</a> ). |  |  |  |

## FHAP - Themes in Science Courses

FHAP Themes in Science classes are delivered twice per week (Tuesday and Thursday) in a thematic unit-studies format. During class, students will have the opportunity to explore and discover science in an active, collaborative and creative way. In addition to the classroom activities, students are expected to complete related homework assignments due each Tuesday before the week's science classes. Because of the limited time designated to learning via this FHAP science class, parents are encouraged to expand upon their learning\* while at home (beyond the home assignments) in order to consider these courses as full year studies and assign a credit to the transcript.

[\*Connections to the course text are provided on the pacing guide as a possible resource.]

The content of all FHAP science courses will be drawn from key ideas in science that have broad importance within or across multiple science disciplines, including Physical Science, Life Science, and Earth and Space Science. In addition to the science content, the science classes will integrate crosscutting science principles as opportunities arise. Students will engage in science practices to build, deepen, and apply their knowledge of key ideas and crosscutting concepts.

