

# 1. Molecules & Biochemistry

Content Area: **Science**  
Course(s): **Generic Course**  
Time Period: **Marking Period 1**  
Length: **2 WEEKS**  
Status: **Published**

## Standards

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College Board Essential Knowledge Standards for AP Biology

1D.2

2A.1, 2A.2, 2A.3, 2C.1, 2D.1

3A.1

4A.1, 4B.1, 4C.1

## Goals/Objectives

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Learning Objectives:

**LO 2.6** The student is able to use calculated surface area-to-volume ratios to predict which cell(s) might eliminate wastes or procure nutrients faster by diffusion. [See **SP 2.2**]

**LO 2.7** Students will be able to explain how cell size and shape affect the overall rate of nutrient intake and the rate of waste elimination. [See **SP 6.2**]

**LO 2.8** The student is able to justify the selection of data regarding the types of molecules that an animal, plant or bacterium will take up as necessary building

blocks and excrete as waste products. [See **SP 4.1**]

**LO 2.9** The student is able to represent graphically or model quantitatively the exchange of molecules between an organism and its environment, and the

subsequent use of these molecules to build new molecules that facilitate dynamic homeostasis, growth and reproduction. [See **SP 1.1, 1.4**]

Learning Objectives:

**LO 4.1** The student is able to explain the connection between the sequence and the subcomponents of a biological polymer and its properties. [See **SP 7.1**]

**LO 4.2** The student is able to refine representations and models to explain how the subcomponents of a

biological polymer and their sequence determine the properties of that polymer. [See **SP 1.3**]

**LO 4.3** The student is able to use models to predict and justify that changes in the subcomponents of a biological polymer affect the functionality of the molecule. [See **SP 6.1, 6.4**]

## **Content**

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Chapters: 2-5

- Introduction to the course, developing a controlled experiment.
- Biochemistry
- Chemistry Review
- Properties of Water
- Properties of Organic Molecules
- Macromolecule Structure and Function

## **Skills**

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### **Science Skills Practices for AP Biology**

- use representatives and models to communicate scientific phenomena and solve problems
- use mathematics appropriately
- engage in scientific questioning to extend thinking or to guide investigations
- plan and implement data collection
- perform data analysis and evaluation
- work with scientific explanations and theories
- connect and relate knowledge across various scales, concepts, and representations in and across domains.