

# 6. Ecology

Content Area: **Science**  
Course(s): **Generic Course**  
Time Period: **Marking Period 4**  
Length: **3 weeks**  
Status: **Published**

## Standards

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AP Biology Essential Knowledge Standards:

1C.1, 1C.3

2A.1, 2A.2, 2A.3, 2C.1, 2C.2, 2D.1 , 2D.3, 2D.4, 2E.3

3E.1

4A.5, 4A.6, 4B.3, 4B.4, 4C.3, 4C.4

## Goals/Objectives

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Learning Objectives:

**LO 2.22** The student is able to refine scientific models and questions about the effect of complex biotic and abiotic interactions on all biological systems, from cells and organisms to populations, communities and ecosystems. [See **SP 1.3, 3.2**]

**LO 2.23** The student is able to design a plan for collecting data to show that all biological systems (cells, organisms, populations, communities and ecosystems) are affected by complex biotic and abiotic interactions. [See **SP 4.2, 7.2**]

**LO 2.24** The student is able to analyze data to identify possible patterns and relationships between a biotic or abiotic factor and a biological system (cells, organisms, populations, communities or ecosystems). [See **SP 5.1**]

**LO 2.28** The student is able to use representations or models to analyze quantitatively and qualitatively the effects of disruptions to dynamic homeostasis in biological systems. [See **SP 1.4**]

**LO 4.11** The student is able to justify the selection of the kind of data needed to answer scientific questions about the interaction of populations within communities. [See **SP 1.4, 4.1**]

**LO 4.12** The student is able to apply mathematical routines to quantities that describe communities composed of populations of organisms that interact in complex ways. [See **SP 2.2**]

**LO 4.13** The student is able to predict the effects of a change in the community's populations on the community. [See **SP 6.4**]

**LO 4.25** The student is able to use evidence to justify a claim that a variety of phenotypic responses to a single environmental factor can result from different genotypes within the population. [See **SP 6.1**]

**LO 4.26** The student is able to use theories and models to make scientific claims and/or predictions about the effects of variation within populations on survival and fitness. [See **SP 6.4**]

**LO 3.40** The student is able to analyze data that indicate how organisms exchange information in response to internal changes and external cues, and which can change behavior. [See **SP 5.1**]

**LO 3.41** The student is able to create a representation that describes how organisms exchange information in response to internal changes and external cues, and which can result in changes in behavior. [See **SP 1.1**]

**LO 3.42** The student is able to describe how organisms exchange information in response to internal changes or environmental cues. [See **SP 7.1**]

**LO 4.19** The student is able to use data analysis to refine observations and measurements regarding the effect of population interactions on patterns of species distribution and abundance. [See **SP 5.2**]

**LO 4.14** The student is able to apply mathematical routines to quantities that describe interactions among living systems and their environment, which result in the movement of matter and energy. [See **SP 2.2**]

**LO 4.15** The student is able to use visual representations to analyze situations or solve problems qualitatively to illustrate how interactions among living systems and with their environment result in the movement of matter and energy. [See **SP 1.4**]

**LO 4.16** The student is able to predict the effects of a change of matter or energy availability on communities. [See **SP 6.4**]

**LO 4.20** The student is able to explain how the distribution of ecosystems changes over time by identifying large-scale events that have resulted in these changes in the past. [See **SP 6.3**]

**LO 4.21** The student is able to predict consequences of human actions on both local and global ecosystems. [See **SP 6.4**]

**LO 4.27** The student is able to make scientific claims and predictions about how species diversity within an ecosystem influences ecosystem stability. [See **SP 6.4**]

## **Content**

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CH 50,51,52,53,54,55

- Behavior Population Dynamics Community Interactions Ecosystem Structure Conservation Biology

### Human Impact

- Ecological interactions: biotic vs abiotic
- Behavioral ecology-natural selection involvement
- Population dynamics- growth & its regulations
- Communities & Ecosystems energy levels & flows, cycles, symbiosis impact on evolution
- Human influences positive & negative

## **Skills**

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

- use representations 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.