



Biodiversity 6th-12th Standards Correlation **Indiana Academic Standards for Science (2016)**

6th Grade

Standard
6.LS.1 Investigate and describe how homeostasis is maintained as living things seek out their basic needs of food, water, shelter, space, and air.
6.LS.3 Describe specific relationships (predator/prey, consumer/producer, parasite/host) and symbiotic relationships between organisms. Construct an explanation that predicts why patterns of interactions develop between organisms in an ecosystem.
6.LS.4 Investigate and use data to explain how changes in biotic and abiotic components in a given habitat can be beneficial or detrimental to native plants and animals.
6.LS.5 Research invasive species and discuss their impact on ecosystems.

7th Grade

Standard
7.ESS.7 Describe the positive and negative environmental impacts of obtaining and utilizing various renewable and nonrenewable energy resources in Indiana. Determine which energy resources are the most beneficial and efficient.

8th Grade

Standard
8.ESS.3 Research how human consumption of finite natural resources (i.e. coal, oil, natural gas, and clean water) and human activities have had an impact on the environment (i.e. causes of air, water, soil, light, and noise pollution).
8.LS.5 Explain how factors affecting natural selection (competition, genetic variations, environmental changes, and overproduction) increase or decrease a species' ability to survive and reproduce.
8.LS.9 Examine traits of individuals within a species that may give them an advantage or disadvantage to survive and reproduce in stable or changing environment.

9th-10th Grade Biology

Standard
B.3.2 Design, evaluate, and refine a model which shows how human activities and natural phenomena can change the flow of matter and energy in an ecosystem and how those changes impact the environment and biodiversity of populations in ecosystems of different scales, as well as, how these human impacts can be reduced.
B.3.3 Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, and identify the impact of changing conditions or introducing non-native species into that ecosystem.
B.5.5 Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.



11th-12th Environmental Science

Standard

Env.2.3 Recognize and explain that the amount of life any environment can support is limited by the available energy, water, oxygen, nutrients and minerals, and by the ability of ecosystems to recycle organic materials from the remains of dead organisms.
Env.5.5 Identify the indirect and direct threats to biodiversity (e.g. habitat loss and destruction, invasion by exotic species, commercial over fishing and hunting, pollution, climate change, and bioaccumulation and biomagnification of toxins).
Env.5.6 Identify and explain the three levels of biodiversity: genetic, species, and ecosystem.
Env.6.4 Explain how the carrying capacity of an ecosystem may change as availability of resources changes.

Indiana Environmental Literacy Guidelines for up to Grade 12

<u>Questioning, Analysis, and Interpretation</u>	<u>Knowledge of Environment Processes and Systems</u>	<u>Skills for Understanding and Addressing Environmental Issues</u>	<u>Personal and Community Action</u>
Develop, modify, clarify, and explain questions about important environmental issues, and describe why and how they arrived at those questions.	Describe the value of ecosystems from both natural and human perspectives; e.g., food, shelter, flood control, water purification, etc.	Ask questions, offer alternative explanations, and defend interpretations of environmental issues.	Articulate their personal beliefs regarding their relationship to the environment and how they arrived there by citing personal experiences, alternative viewpoints, and the research of scientifically-relevant sources.
Use evidence and logic in developing the explanations about students' original hypotheses: use statistics and be able to distinguish between cause and effect.	Evaluate the importance of biodiversity.	Evaluate whether action is warranted in specific situations, taking into consideration the following factors: existing information about the issue and proposed solutions, uncertainty around an issue, scale of the issue; social, economic, and ecological consequences, environmental laws and rules; risks involved and alternatives to citizen action.	Write a comprehensive and feasible plan of action based on personal goals of stewardship for an economically and ecologically sustainable environment, and take informed and effective action that will contribute to the resolution of somewhat complex and controversial local and global environmental issues.

Program Synopsis

In Biodiversity, students will use critical thinking skills correlated to Bloom's Taxonomy. Students will create, evaluate, analyze, apply, understand, and remember knowledge by participating in group discussions centered around trail exploration and ecosystem studies that focuses on varying diversity within a habitat and impacts on ecosystems. Trail activities are hands-on and inquiry based.