

DOER Fellowship Renewable Assignments



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Crosswords Assignment

This assignment is for use with *OpenStax Biology*, located at <https://openstax.org/details/books/biology>.

For teacher: This assignment is designed for use with each chapter as you progress through the semester OR as a stand-alone assignment for final exam review.

For students: Choose from the chapters studied to create a crossword puzzle. For maximum points, follow the rubric below to complete the assignment. The biological terms should have been used in the classroom lectures. Use one main word vertically and all other terms across (horizontally) in such a way that the horizontal words will include one letter of the vertical (main) word. The main word should represent the theme of the crossword puzzle. The descriptions for the terms should be original.

This assignment should be uploaded into D2L for originality checking.

	Excellent	Acceptable	Poor	Points accumulated
Grammar	No mistakes (3 pts)	2 or fewer mistakes (2 pts)	3 or more mistakes (0 pts)	
Number of words used to create the puzzle	10-15 (3 pts)	6-9 (2 pts)	3-5 (1 pt)	
Description of biological terms used	Accurate definition of the term (3 pts)	1-3 definitions are inaccurate (2 pts)	More than 3 definitions are inaccurate (1 pt)	
Topic covered by one puzzle	Only 1 chapter (3 pts)	2 chapters (2 pts)	3 or more chapters (1 pt)	
Number of words of at least 5 letters used in the puzzle	5 or more (3 pts)	3-4 (2 pts)	1-2 (1 pt)	
Reusable	The whole puzzle without modifications (3 pts)	Only 3-4 words and their descriptions can be used (2 pts)	Only 1 or 2 words and their descriptions can be used (1 pt)	
Total points	Max 18	Mid 12	Min 5	

Crosswords Example

Chapter 1 Definitions:

- _____ is the study of living organisms and their interactions with one another and their environments.
- _____ is knowledge that covers general truths or the operation of general laws, especially when acquired and tested by the scientific method.
- The _____ is a method of research with defined steps that include experiments and careful observation.
- A _____ is a suggested explanation for an event, which can be tested.
- A _____ is a tested and confirmed explanation for observations or phenomena.
- Fields of science related to the physical world and its phenomena and processes are considered _____.
- _____ is a form of logical thinking that uses related observations to arrive at a general conclusion.
- _____ is a form of logical thinking that uses a general principle or law to forecast specific results.
- A _____ is any part of the experiment that can vary or change during the experiment.
- A _____ contains every feature of the experimental group except it is not given the manipulation that is hypothesized about.
- _____ is the ability of an organism to maintain constant internal conditions.
- The _____ is the smallest and most fundamental unit of matter, and it consists of a nucleus surrounded by electrons.
- A _____ is a chemical structure consisting of at least two atoms held together by one or more chemical bonds.
- _____ are individual living entities.
- _____ is the process of gradual change during which new species arise from older species.

Example definitions adapted from *OpenStax Biology* ([OpenStax, Biology. OpenStax CNX. Sep 13, 2017 http://cnx.org/contents/185cbf87-c72e-48f5-b51e-f14f21b5eabd@10.118](http://cnx.org/contents/185cbf87-c72e-48f5-b51e-f14f21b5eabd@10.118)).

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	Excellent	Acceptable	Poor	Points accumulated
Grammar	No mistakes (3 pts)	2 or fewer mistakes (2 pts)	3 or more mistakes (0 pts)	3
Number of words used to create the puzzle	10-15 (3 pts)	6-9 (2 pts)	3-5 (1 pt)	3
Description of biological terms used	Accurate definition of the term (3 pts)	1-3 definitions are inaccurate (2 pts)	More than 3 definitions are inaccurate (1 pt)	3
Topic covered by one puzzle	Only 1 chapter (3 pts)	2 chapters (2 pts)	3 or more chapters (1 pt)	3
Number of words of at least 5 letters used in the puzzle	5 or more (3 pts)	3-4 (2 pts)	1-2 (1 pt)	3
Reusable	The whole puzzle without modifications (3 pts)	Only 3-4 words and their descriptions can be used (2 pts)	Only 1 or 2 words and their descriptions can be used (1 pt)	3
Total points	Max 18	Mid 12	Min 5	18

Let's Talk Biology Assignment

This assignment is for use with OpenStax Biology, located at <https://openstax.org/details/books/biology>.

For teacher: This assignment is designed for use with each chapter as you progress through the semester OR as a stand-alone assignment for final exam review.

For students: In this assignment, choose a chapter we covered in the textbook. Write a poem, song, anecdote, essay, or other creative writing inspired from the topics we covered in the textbook and lectures. To create your work and for maximum credit, use the rubric below.

This assignment should be uploaded into D2L for originality checking.

	Excellent	Acceptable	Poor	Points accumulated
Grammar	Well written, no grammar or spelling mistakes (3 pts)	Some mistakes (no more than 2) (2 pts)	Major grammar or spelling mistakes (more than 2) (1 pts)	
Length	More than 100 words (3 pts)	50-99 words (2 pts)	20-49 words (1 pt)	
Topic covered	1 chapter (3 pts)	2 chapters (2 pts)	More than 2 chapters (1 pt)	
Number of scientific terminology used	4 or more (3 pts)	2-3 (2 pts)	1 (1 pt)	
Reusable	The whole work without modifications (3 pts)	Only fragments can be used (2 pts)	Cannot be used (0 pt)	
Total points	Max 15	Mid 10	Min 4	

Let's Talk Biology Example

In this essay, I will explain how to find the answer to Gibbs free energy change problems. To determine whether a reaction is spontaneous or not, a person will use the value of delta G. The original equation and the formula required is $\Delta G = \Delta H - T\Delta S$. In this equation, Δ stands for Delta or the change. Also in this case, delta G stands for the change in Gibbs free energy. On the other hand, H in delta H stands for the change in enthalpy or energy. However, the S in delta S stands for the change in entropy or disorder. Finally, the T in the equation stands for the temperature in degrees Kelvin.

	Excellent	Acceptable	Poor	Points accumulated
Grammar	Well written, no grammar or spelling mistakes (3 pts)	Some mistakes (no more than 2) (2 pts)	Major grammar or spelling mistakes (more than 2) (1 pts)	3
Length	More than 100 words (3 pts)	50-99 words (2 pts)	20-49 words (1 pt)	3
Topic covered	1 chapter (3 pts)	2 chapters (2 pts)	More than 2 chapters (1 pt)	3
Number of scientific terminology used	4 or more (3 pts)	2-3 (2 pts)	1 (1 pt)	3
Reusable	The whole work without modifications (3 pts)	Only fragments can be used (2 pts)	Cannot be used (0 pt)	3
Total points	Max 15	Mid 10	Min 4	15

Quizzes Assignment

This assignment is for use with OpenStax Biology, located at <https://openstax.org/details/books/biology>.

For teacher: This assignment is designed for use with each chapter as you progress through the semester OR as a stand-alone assignment for final exam review.

For students: In this assignment, choose 1 chapter we covered in the textbook. Create quiz questions that might be used for the exams based on that chapter. For maximum points, follow the rubric below.

This assignment should be uploaded into D2L for originality checking.

	Excellent	Acceptable	Poor	Points accumulated
Grammar	No mistakes (3 pts)	2 or fewer mistakes (2 pts)	3 or more mistakes (0 pts)	
Number of questions made	15 or more (3 pts)	10-14 (2 pts)	Fewer than 10 (1 pt)	
Type of questions made	5 or more multiple choice (3 pts)	3-4 multiple choice (2 pts)	1-2 multiple choice (1 pt)	
Topic covered by all questions	1 chapter (3 pts)	2 chapters (2 pts)	3 or more chapters (1 pt)	
Reusable	All questions without modifications (3 pts)	Only 3-4 questions can be used without modifications (2 pts)	1-2 questions can be used (1 pt)	
Total points	Max 15	Mid 10	Min 4	

Example Quiz Questions from OpenStax Book

1. The first forms of life on Earth were _____.
 - a. Plants
 - b. *Microorganisms
 - c. Birds
 - d. Dinosaurs
2. A suggested and testable explanation for an event is called a _____.
 - a. *Hypothesis
 - b. Variable
 - c. Theory
 - d. Control
3. Which of the following sciences is not considered a natural science?
 - a. Biology
 - b. Astronomy
 - c. Physics
 - d. *Computer science
4. The type of logical thinking that uses related observations to arrive at a general conclusion is called _____.
 - a. Deductive reasoning
 - b. The scientific method
 - c. Hypothesis-based science
 - d. *Inductive reasoning
5. The process of _____ helps to ensure that a scientist's research is original, significant, logical, and thorough.
 - a. Publication
 - b. Public speaking
 - c. *Peer review
 - d. The scientific method
6. A person notices that her houseplants that are regularly exposed to music seem to grow more quickly than those in rooms with no music. As a result, she determines that plants grow better when exposed to music. This example most closely resembles which type of reasoning?
 - a. *Inductive reasoning
 - b. Deductive reasoning
 - c. Neither, because no hypothesis was made
 - d. Both inductive and deductive reasoning
7. The smallest unit of biological structure that meets the functional requirements of "living" is the _____.
 - a. Organ
 - b. Organelle
 - c. *Cell
 - d. Macromolecule
8. Viruses are not considered living because they _____.
 - a. *Are not made of cells
 - b. Lack cell nuclei
 - c. Do not contain DNA or RNA
 - d. Cannot reproduce

9. The presence of a membrane-enclosed nucleus is a characteristic of _____.
a. Prokaryotic cells
b. *Eukaryotic cells
c. Living organisms
d. Bacteria
10. A group of individuals of the same species living in the same area is called a(n) _____.
a. Family
b. Community
c. *Population
d. Ecosystem
11. Which of the following sequences represents the hierarchy of biological organization from the most inclusive to the least complex level?
a. Organelle, tissue, biosphere, ecosystem, population
b. Organ, organism, tissue, organelle, molecule
c. Organism, community, biosphere, molecule, tissue, organ
d. *Biosphere, ecosystem, community, population, organism
12. Where on a phylogenetic tree would you expect to find the organism that had evolved most recently?
a. At the base
b. Within the branches
c. At the nodes
d. *At the branch tips
13. Which of the following statements is false?
a. Tissues exist within organs which exist within organ systems.
b. *Communities exist within populations which exist within ecosystems.
c. Organelles exist within cells which exist within tissues.
d. Communities exist within ecosystems which exist in the biosphere.
14. True or false? Paleontology is the study of animals.
a. True
b. *False
15. True or false? Evolutionary relationships can be shown via a phylogenetic tree.
a. *True
b. False

Example quiz questions adapted from *OpenStax Biology* ([OpenStax, Biology. OpenStax CNX. Sep 13, 2017
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Type of questions made	5 or more multiple choice (3 pts)	3-4 multiple choice (2 pts)	1-2 multiple choice (1 pt)	3
Topic covered by all questions	1 chapter (3 pts)	2 chapters (2 pts)	3 or more chapters (1 pt)	3
Reusable	All questions without modifications (3 pts)	Only 3-4 questions can be used without modifications (2 pts)	1-2 questions can be used (1 pt)	3
Total points	Max 15	Mid 10	Min 4	15

References

OpenStax, Biology. OpenStax CNX. Sep 13, 2017

<http://cnx.org/contents/185cbf87-c72e-48f5-b51e-f14f21b5eabd@10.118>. Retrieved from:
<https://openstax.org/details/books/biology>