

Report : Assessment Cycle Details for : Biological Physical Sciences

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Workspace : Academic Program Assessment and Planning Workspace

Assessment Plan: 2017-2018 Assessment Cycle: Assessment Plan and Assessment Findings

Assessment Plan Template : IU Kokomo Academic Assessment Template

Report Generated : Thursday, May 31, 2018

Measures and Findings

Goal #3: Students will understand the basic principles of the biological sciences OR the physical sciences OR the mathematical sciences OR informatics

✦ Outcome

Outcome for Biology: Students will be able to describe the unifying principles of biology

Component #1: Explain similar/identical features of living systems

Component #2: Explain biodiversity

Component #3: Describe the cellular and molecular basis of genetics

Mapped to:

No Mapping

Measure

BIOL-L105 Abundance and diversity of microorganisms (Component 2)

COURSE LEVEL; DIRECT - EXAM

Details/Description :

Question on the third exam asking students to identify prokaryotes as the most numerous class of organism on Earth.

Acceptable Target :

Success is defined as 70% answered correct.

Implementation Plan (timeline) :

Key/Responsible Personnel :

Supporting Attachments :

Findings

for BIOL-L105 Abundance and diversity of microorganisms (Component 2)

Summary of Findings :

54 or 59 students answered the question correctly.

Acceptable Target Achievement:

Met

Reflections/Notes :

Substantiating Evidence :

Action

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

BIOL-L105 Action plan

No Status Added to BIOL-L105 Action plan

Action details:

Students are having success with Component 2, but struggling with Component 1. Results will be shared with the other BIOL-L105 instructors in order to strengthen the section of the course related to cellular respiration and photosynthesis.

Implementation Plan (timeline):

Key/Responsible

Personnel:

Measures:

Supporting Attachments:

Measure

BIOL-L105 ATP production during Krebs cycle (Component 1)

COURSE LEVEL; DIRECT - EXAM

Details/Description :

Assessed a question on the second exam related to the basic chemical formula for cellular respiration, specifically asking during which part of the cycle ATP is generated. How living things process energy, both cellular respiration and photosynthesis, is the focus of the material on this exam.

Acceptable Target :

The target is 70% correct responses

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for BIOL-L105 ATP production during Krebs cycle (Component 1)

Summary of Findings :

32 out of 61 students (52%) answered the question correctly.

Acceptable Target Achievement:

Not Met

Reflections/Notes :

Increases coverage of basic chemical reactions during the first few weeks of the course may help increase student success during this section of the course.

Substantiating Evidence:

Action

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

BIOL-L105 Action plan

No Status Added to BIOL-L105 Action plan

Action details:

Students are having success with Component 2, but struggling with Component 1. Results will be shared with the other BIOL-L105 instructors in order to strengthen the section of the course related to cellular respiration and photosynthesis.

Implementation Plan (timeline):

Key/Responsible

Personnel:

Measures:

Supporting Attachments:

Measure

BIOL-L105 Constructing phylogenetic trees

COURSE LEVEL; DIRECT - EXAM

Details/Description :

Question on the third exam asking students to construct a phylogenetic tree. The question is based on a group assignment students has done in class.

Acceptable Target :

The question is scored out of 5 points with partial credit possible.

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for BIOL-L105 Constructing phylogenetic trees

Summary of Findings :

The average score for this question was 4.67 out a possible 5 (93%).

Acceptable Target Achievement:

Met

Reflections/Notes :

Students performed well on this question. It is a simple version of the version they did as a group in class, so a more challenging version of the question on the exam might be warranted.

Substantiating Evidence:

Action

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

BIOL-L105 Action plan

No Status Added to BIOL-L105 Action plan

Action details:

Students are having success with Component 2, but struggling with Component 1. Results with be shared with the other BIOL-L105 instructors in order to strengthen the section of the course related to cellular respiration and photosynthesis.

Implementation Plan (timeline):

Key/Responsible

Personnel:

Measures:

Supporting Attachments:

Measure

BIOL-L105 Endosymbiosis theory

COURSE LEVEL; DIRECT - EXAM

Details/Description :

Question on the third exam assessing student understanding of the theory of endosymbiosis, the explanation of the origin of mitochondria and chloroplasts.

Acceptable Target :

Success is defined as 70% correct.

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for BIOL-L105 Endosymbiosis theory

Summary of Findings :

43 of 59 (73%) students answered the question correctly.

Acceptable Target Achievement:

Met

Reflections/Notes :

Substantiating Evidence:

Action

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

BIOL-L105 Action plan

No Status Added to BIOL-L105 Action plan

Action details:

Students are having success with Component 2, but struggling with Component 1. Results will be shared with the other

BIOL-L105 instructors in order to strengthen the section of the course related to cellular respiration and photosynthesis.

Implementation Plan (timeline):

Key/Responsible Personnel:

Measures:

Supporting Attachments:

Measure

BIOL-L105 Relatedness of major biological groups (Component 2)

COURSE LEVEL; DIRECT - EXAM

Details/Description :

A question on the third exam assessing student understanding of the relatedness between the Eukarya, Archaea, and Bacteria.

Acceptable Target :

Success is defined as 70% correct.

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for BIOL-L105 Relatedness of major biological groups (Component 2)

Summary of Findings :

36 out of 59 (61%) students correctly identified Archaea and Eukarya as the most closely related groups.

Acceptable Target Achievement:

Not Met

Reflections/Notes :

The correct answer for this question is counter-intuitive for most students. More detailed explanation of how these relationships are measured might help.

Substantiating Evidence:

Action

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

BIOL-L105 Action plan

No Status Added to BIOL-L105 Action plan

Action details:

Students are having success with Component 2, but struggling with Component 1. Results will be shared with the other BIOL-L105 instructors in order to strengthen the section of the course related to cellular respiration and photosynthesis.

Implementation Plan

(timeline):

Key/Responsible

Personnel:

Measures:

Supporting Attachments:

Measure

BIOL-L105 Role of electron transport during the Krebs cycle (Component 1)

COURSE LEVEL; DIRECT - EXAM

Details/Description :

This was a multiple choice question on the second exam related to the transfer of energy during the electron transport chain stage of cellular respiration. The specific question asked about the physiological consequences of a proton gradient not being formed. Students could select more than 1 answer as 2 answers were correct.

Acceptable Target :

Success was defined as 70% correct

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for BIOL-L105 Role of electron transport during the Krebs cycle (Component 1)

Summary of Findings :

62 out of 63 (98%) students correctly identified the answer describing the direct consequences of the proton gradient not forming. 23 out of 63 (37%) students correctly identified the answer describing where the energy would go if the gradient did not form.

Acceptable Target Achievement:

Reflections/Notes :

Substantiating Evidence:

Action

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

BIOL-L105 Action plan

No Status Added to BIOL-L105 Action plan

Action details:

Students are having success with Component 2, but struggling with Component 1. Results will be shared with the other BIOL-L105 instructors in order to strengthen the section of the course related to cellular respiration and photosynthesis.

Implementation Plan

(timeline):

Key/Responsible

Personnel:

Measures:

Supporting Attachments:

Measure

BIOL-L105 water production during the Krebs cycle (Component 1)

COURSE LEVEL; DIRECT - EXAM

Details/Description :

Assessed a question on the second exam related to the basic chemical formula for cellular respiration, specifically asking during which part of the cycle water is generated as a waste product. How living things process energy, both cellular respiration and photosynthesis, is the focus of the material on this exam.

Acceptable Target :

The target is 70% correct responses.

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for BIOL-L105 water production during the Krebs cycle (Component 1)

Summary of Findings :

31 out of 63 students (49%) answered the question correctly.

Acceptable Target Achievement:

Not Met

Reflections/Notes :

Increases coverage of basic chemical reactions during the first few weeks of the course may help increase student success during this section of the course.

Substantiating Evidence:

Action

in 2016 -2017 Academic year Data or 2016 Calendar year data - Action Plan

BIOL-L105 Action plan

Action details:

Students are having success with Component 2, but struggling with Component 1. Results will be shared with the other BIOL-L105 instructors in order to strengthen the section of the course related to cellular respiration and photosynthesis.

Implementation Plan (timeline):

No Status Added to BIOL-L105 Action plan

Key/Responsible

Personnel:

Measures:

Supporting Attachments:

Outcome for the Physical Sciences: Students will understand phenomena that govern the physical universe

Component #1: Explain the relationship between the structure of substances and their physical properties and reactivity at the molecular and atomic levels

Component #2: Explain the interaction of the forces of nature, such as electromagnetism, gravity, and nuclear forces

Component #3: Explain the unifying principle of plate tectonics and how it relates to the origin of Earth's physical phenomena, including rocks, volcanoes, and earthquakes

Mapped to:

No Mapping

Measure

PHYS-P202 Faraday's law

COURSE LEVEL; DIRECT - EXAM

Details/Description :

Assessed a problem on the final exam that required applying Faraday's law of induction to a conducting loop changing its shape in time. The topic of induction is useful to assess as ideas

throughout the first two thirds of the course come together to analyze electromagnetic induction correctly.

Acceptable Target :

The target was to have half of the students attain a score of 80% or higher on the problem.

Implementation Plan (timeline):

Key/Responsible Personnel:

Supporting Attachments:

Findings

for PHYS-P202 Faraday's law

Summary of Findings :

Class overall: 23 success :: 18 failure

BIPH majors: 3 success :: 3 failure

Acceptable Target Achievement:

Not Met

Reflections/Notes :

Substantiating Evidence:

Measure

PHYS-P221 Equilibrium structures

COURSE LEVEL; DIRECT - EXAM

Details/Description :

Assessed a problem on the final exam addressing equilibrium structures. While most students find the topic challenging (solving a system of equations simultaneously), equilibrium structures receives a significant amount of attention in the course.

Acceptable Target :

The exam is graded with partial credit, a success for the problem is take to be a score of 80% or higher for the problem.

Implementation Plan (timeline):**Key/Responsible Personnel:****Supporting Attachments:*****Findings***

for PHYS-P221 Equilibrium structures

Summary of Findings :

Class overall: 15 success :: 11 failure
BIPHI majors: 2 success :: 1 failure

Acceptable Target Achievement:

Not Met

Reflections/Notes :**Substantiating Evidence:**