

Report: Summary of the Assessment Cycle Results in : 2019-2020 Assessment Cycle: Assessment Plan and Assessment Findings

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Workspace: Academic Program Assessment and Planning Workspace

Assessment Plan Template : IU Kokomo Academic Assessment Template [

Report Generated : Tuesday, September 01, 2020

Organizational Area	Summary Results																																											
<p>Indiana University System AMS » Indiana University: Kokomo » Academic Affairs » School of Sciences</p> <p><b>Biological Physical Sciences</b></p>	<p><b>Overall Statistics</b></p> <ul style="list-style-type: none"> <li>● <b>50%</b> (2/4) outcomes were included</li> <li>● <b>100%</b> (2/2) of outcomes included have at least one measure specified</li> <li>● <b>100%</b> (2/2) of outcomes included have measures with findings specified</li> </ul>																																											
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	<p><b>Measure Type/Method</b></p> <table border="0"> <tr><td>Student Artifact</td><td> 2 (25%)</td></tr> <tr><td>Exam</td><td> 6 (75%)</td></tr> <tr><td>Portfolio</td><td>0 (0%)</td></tr> <tr><td>Other</td><td>0 (0%)</td></tr> <tr><td><b>Total Direct</b></td><td><b>8 (100%)</b></td></tr> <tr><td colspan="2"> </td></tr> <tr><td>Survey</td><td>0 (0%)</td></tr> <tr><td>Focus Group</td><td>0 (0%)</td></tr> <tr><td>Interview</td><td>0 (0%)</td></tr> <tr><td>Other</td><td>0 (0%)</td></tr> <tr><td><b>Total Indirect</b></td><td><b>0 (0%)</b></td></tr> <tr><td><b>Unspecified</b></td><td><b>0 (0%)</b></td></tr> </table>	Student Artifact	2 (25%)	Exam	6 (75%)	Portfolio	0 (0%)	Other	0 (0%)	<b>Total Direct</b>	<b>8 (100%)</b>			Survey	0 (0%)	Focus Group	0 (0%)	Interview	0 (0%)	Other	0 (0%)	<b>Total Indirect</b>	<b>0 (0%)</b>	<b>Unspecified</b>	<b>0 (0%)</b>	<p><b>Measure Level</b></p> <table border="0"> <tr><td>Course</td><td> 7 (88%)</td></tr> <tr><td>Program</td><td> 1 (13%)</td></tr> <tr><td>Institution</td><td>0 (0%)</td></tr> <tr><td>Other</td><td>0 (0%)</td></tr> <tr><td>Unspecified</td><td>0 (0%)</td></tr> </table> <p><b>Acceptable Target Achievement</b></p> <table border="0"> <tr><td>Not Met</td><td>0 (0%)</td></tr> <tr><td>Met</td><td> 8 (100%)</td></tr> <tr><td>Exceeded</td><td>0 (0%)</td></tr> <tr><td>Unspecified</td><td>0 (0%)</td></tr> </table>	Course	7 (88%)	Program	1 (13%)	Institution	0 (0%)	Other	0 (0%)	Unspecified	0 (0%)	Not Met	0 (0%)	Met	8 (100%)	Exceeded	0 (0%)	Unspecified	0 (0%)
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Report : Assessment Cycle Details for : Biological Physical Sciences

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Assessment Plan: 2019-2020 Assessment Cycle: Assessment Plan and Assessment Findings

Assessment Plan Template : IU Kokomo Academic Assessment Template

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## 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-L211- Basic Mendelian genetics (Component #3)*

**COURSE LEVEL; DIRECT - STUDENT ARTIFACT**

#### **Details/Description:**

A homework assignment consisting of basic Mendelian genetics problems.

#### **Acceptable Target:**

>70% of the students earning at least 70% of the possible points on the assignment.

#### **Implementation Plan (timeline):**

#### **Key/Responsible Personnel:**

#### **Supporting Attachments:**

#### ***Findings***

*for BIOL-L211- Basic Mendelian genetics (Component #3)*

#### **Summary of Findings:**

50 out of 59 (85%) students earned at least 70% of the possible points on the assignment.

#### **Acceptable Target Achievement:**

Met

#### **Reflections/Notes:**

#### **Substantiating Evidence:**

## ***Measure***

*BIOL-L211- Basics of gene expression (Component #3)*

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**COURSE LEVEL; DIRECT - STUDENT ARTIFACT**

**Details/Description:**

This is a homework assignment looking at basic aspects of gene expression including RNA editing and the lac operon.

**Acceptable Target:**

> 70% of the students earning at least 70% of the possible points on the assignment

**Implementation Plan (timeline):**

**Key/Responsible Personnel:**

**Supporting Attachments:**

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## ***Findings***

*for BIOL-L211- Basics of gene expression (Component #3)*

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**Summary of Findings:**

49 out of 50 (83%) students earned at least 70% of the possible points on the assignment

**Acceptable Target Achievement:**

Met

**Reflections/Notes:**

**Substantiating Evidence:**

## ***Measure***

*BIOL-L364 - DNA replication mechanism (Component #3)*

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**PROGRAM LEVEL; DIRECT - EXAM**

**Details/Description:**

The following question was asked on the second BIOL-L364 exam:

In the space below, draw a diagram of DNA replication. Be sure to include both strands and label all the important parts. Useful things to include/label might be things like DNA polymerase, 5' ends, 3' ends, leading strand, lagging strand, primers, Okazaki fragments, ligase, helicase, gyrase, etc... You can use either prokaryotic or eukaryotic DNA replication.

**Acceptable Target:**

> 70%

**Implementation Plan (timeline):**

**Key/Responsible Personnel:**

**Supporting Attachments:**

### ***Findings***

*for BIOL-L364 - DNA replication mechanism (Component #3)*

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**Summary of Findings:**

Students averaged 85% of the possible points for this question. Only 1 student did not earn at least 70%.

**Acceptable Target Achievement:**

Met

**Reflections/Notes:**

**Substantiating Evidence:**

### ***Measure***

*BIOL-L364 - Genetic mapping (Component #3)*

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**COURSE LEVEL; DIRECT - EXAM**

**Details/Description:**

An exam question was used to test student's understanding of the physical relationships between genes and how Mendelian genetics can help us map them. The question provided a simulated data set and students were asked to map the genes.

**Acceptable Target:**

>70% of the possible points awarded

**Implementation Plan (timeline):**

**Key/Responsible Personnel:**

**Supporting Attachments:**

### ***Findings***

*for BIOL-L364 - Genetic mapping (Component #3)*

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**Summary of Findings:**

Students earned 92% of the points for this question.

**Acceptable Target Achievement:**

Met

**Reflections/Notes:**

Mapping is a significant part of this exam, and homework assignments designed to give them practice with the techniques.

**Substantiating Evidence:**

***Measure***

*BIOL-L364 - Population genetics and selection (Component #3)*

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**COURSE LEVEL; DIRECT - EXAM**

**Details/Description:**

The theory of natural selection is fundamental to biology. This exam question tests student's ability to quantify selection using techniques from population genetics.

**Acceptable Target:**

> 70% of the possible points awarded

**Implementation Plan (timeline):**

**Key/Responsible Personnel:**

**Supporting Attachments:**

***Findings***

*for BIOL-L364 - Population genetics and selection (Component #3)*

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**Summary of Findings:**

Student's averaged 84% of the possible points

**Acceptable Target Achievement:**

Met

**Reflections/Notes:**

**Substantiating Evidence:**

***Measure***

*GEOL-G133 - Plate tectonics Exam 1*

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**COURSE LEVEL; DIRECT - EXAM**

**Details/Description:**

Two exam questions were used asking students to explain plate tectonics.

There were 5 Biological and Physical Science, B.S. majors in the course, ranging from freshman to senior in 2019 compared to 6 during the last assessment year.

**Acceptable Target:**

>70% correct

**Implementation Plan (timeline):**

**Key/Responsible Personnel:**

**Supporting Attachments:**

## ***Findings***

*for GEOL-G133 - Plate tectonics Exam 1*

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**Summary of Findings:**

Question 6: 100% correct (83.7% correct, non-BIPH)

Question 7: 80% correct (67.4% correct, non-BIPH)

**Acceptable Target Achievement:**

Met

**Reflections/Notes:**

The assessment support that Biological and Physical Science B.S. students are successfully achieving the assessed learning outcome.

**Substantiating Evidence:**

## ***Measure***

*GEOL-G133 - Plate tectonics Exam 2*

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**COURSE LEVEL; DIRECT - EXAM**

**Details/Description:**

Two exam questions were used asking students to relate plate tectonics to rocks, volcanoes, and earthquakes.

There were 5 Biological and Physical Science, B.S. majors in the course, ranging from freshman to senior in 2019 compared to 6 during the last assessment year.

**Acceptable Target:**

>70% correct

**Implementation Plan (timeline):**

**Key/Responsible Personnel:**

**Supporting Attachments:**

## ***Findings***

*for GEOL-G133 - Plate tectonics Exam 2*

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**Summary of Findings:**

Question 20: 80% correct (74.4% correct, non-BIPH)

Question 33: 80% correct (76.7% correct, non-BIPH)

**Acceptable Target Achievement:**

Met

**Reflections/Notes:**

The assessment support that Biological and Physical Science B.S. students are successfully achieving the assessed learning outcome.

**Substantiating Evidence:**

**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 - Electromagnetic induction*

**COURSE LEVEL; DIRECT - EXAM**

**Details/Description:**

A question (given below) testing student understanding of electromagnetic induction. A bar magnet is moved rapidly toward a circular coil of wire with 40 turns. The radius of the coil is 3.05 [cm].

- (a) If the north pole of the bar magnet is closest to the coil as the bar magnet moves toward the coil, what is the direction of the induced magnetic field?
- (b) What direction will the induced current flow in the coil of wire to give you the direction for the induced magnetic field is part (a)
- (c) If the average value of  $B\cos(\theta)$  increases from 0.0125 [T] to 0.450 [T] in 0.250 [s], what is the magnitude of the induced EMF?
- (d) If the coil has a resistance of 3.55 ohms, what is the magnitude of the induced current?

**Acceptable Target:**

Earning at least 20 of the 30 possible points

**Implementation Plan (timeline):**

**Key/Responsible Personnel:**

**Supporting Attachments:**

**Findings**

*for PHYS-P202 - Electromagnetic induction*

**Summary of Findings:**

19 students (70%) scored at least 20/30  
8 students completed unsatisfactorily (less than 20 / 30 points)  
7 students made no attempt\*

\*the final exam includes five quantitative problems but students need answer only four

**Acceptable Target Achievement:**

Met

**Reflections/Notes:**

**Substantiating Evidence:**