

# **Course Student Learning Outcomes Assessment**

**BIOL 214 Plant Diversity and Evolution**

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## **General Information (Course Student Learning Outcomes Assessment)**

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# Standing Requirements

## 📖 Course Description

Principles and processes of evolution leading to biodiversity. Survey of the Bacteria Archaea and the Eukarya domain emphasizing the kingdoms Protista Fungi and Plantae with a detailed view of the evolutionary adaptations of the anatomy physiology and life cycles of these organisms. Field trips required.

## 📖 Course Student Learning Outcomes

### BIOL 214 Plant Diversity and Evolution Outcome Set

#### Outcome

##### Outcome

##### Mapping

##### Outcome 1

Demonstrate a coherent understanding of the relationship between plant diversity, form and function, habitat, and life style.

**Institutional Student Learning Outcomes:** Act 3, Communicate 1, Learn 1, Think 1, Think 2, Think 3

##### Outcome 2

Demonstrate a fundamental comprehension of the process of evolution and its relationship to biodiversity.

**Institutional Student Learning Outcomes:** Act 3, Communicate 1, Learn 1, Think 1, Think 2, Think 3

##### Outcome 3

Conduct laboratory investigations according to given experimental procedure, collect and analyze resulting experimental data, and formulate valid conclusions based on the results.

**Institutional Student Learning Outcomes:** Communicate 1, Learn 1, Think 1, Think 3

## 2014-2015 Assessment Cycle

### Measurements

#### Outcomes and Measures

### BIOL 214 Plant Diversity and Evolution Outcome Set

#### Outcome

##### Outcome 1

Demonstrate a coherent understanding of the relationship between plant diversity, form and function, habitat, and life style.

▼ **Measure:** Means of assessment 214  
Course level; Direct - Exam

**Description of Measurement Tool:** Multiple choice questions will be embedded into various exams.

**Criteria for Success: Individual & Collective Student Criterion:** Expected 70% success rate.

**Cycle of Assessment:** Fall 2015

**Who is Responsible for Assessment Activity?:** Biology faculty currently teaching the course.

##### Outcome 2

Demonstrate a fundamental comprehension of the process of evolution and its relationship to biodiversity.

▼ **Measure:** Means of assessment 214  
Course level; Direct - Exam

**Description of Measurement Tool:** Multiple choice questions embedded into various lecture exams.

**Criteria for Success: Individual & Collective Student Criterion:** Expected 70% success rate.

**Cycle of Assessment:** Fall 2016

**Who is Responsible for Assessment Activity?:** Biology faculty currently teaching the course.

##### Outcome 3

Conduct laboratory investigations according to given experimental procedure, collect and analyze resulting experimental data, and formulate valid conclusions based on the results.

▼ **Measure:** Means of assessment 214  
Course level; Direct - Other

**Description of Measurement Tool:** Students are to conduct an experiment following the scientific method and prepare a short write-up complete with a question, hypothesis, data analysis, and conclusions.

**Criteria for Success: Individual & Collective Student Criterion:** The following rubric will be used:

- 6 pts – All 6 sections correctly done.
- 5 pts – 5 sections done correctly, 1 section not done correctly.
- 4 pts – 4 sections done correctly, 2 sections done incorrectly.
- 3 pts – 3 sections done correctly, 3 sections done incorrectly.
- 2 pts – 2 sections done correctly, 4 sections done incorrectly.
- 1 pt – 1 section done correctly, 5 sections done incorrectly.
- 0 pts – None of the sections are done correctly.

80% of the students are expected to receive either full credit or 5 of the 6 points.

**Cycle of Assessment:** Fall 2014

**Who is Responsible for Assessment Activity?:** Biology faculty currently teaching the course.

 Findings

## Finding per Measure

## BIOL 214 Plant Diversity and Evolution Outcome Set

## Outcome

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**Cycle of Assessment:** Fall 2015

**Who is Responsible for Assessment Activity?:** Biology faculty currently teaching the course.

**Findings** for Means of assessment 214

*No Findings Added*

## Outcome 2

Demonstrate a fundamental comprehension of the process of evolution and its relationship to biodiversity.

▼ **Measure:** Means of assessment 214  
Course level; Direct - Exam

**Description of Measurement Tool:** Multiple choice questions embedded into various lecture exams.

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**Cycle of Assessment:** Fall 2016

**Who is Responsible for Assessment Activity?:** Biology faculty currently teaching the course.

**Findings** for Means of assessment 214

*No Findings Added*

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**Cycle of Assessment:** Fall 2014

**Who is Responsible for Assessment Activity?:** Biology faculty currently teaching the course.

**Findings** for Means of assessment 214

**Summary of Findings:** 16/28 students in the class participated in the assignment. 12/16 received the full 6 points on the assignment and the other four students received 5 points for the assignment.

**Results:** Criteria for Success Achievement Status: Met

**Analysis of Findings:** At this level, a Biology major's class, I would expect all or mostly all of the students to get full credit. 100% of the students fell within the expected results.

**Recommendations:**

**Overall Recommendations**

*No text specified*

 **Plans of Action**

 **Status Reports**

## 2013-2014 Assessment Cycle

### Measurements

#### Outcomes and Measures

### BIOL 214 Plant Diversity and Evolution Outcome Set

#### Outcome

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## Finding per Measure

## BIOL 214 Plant Diversity and Evolution Outcome Set

## Outcome

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**Findings** for Means of assessment 214

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**Findings** for Means of assessment 214

**Summary of Findings:** 1. \_\_\_\_\_ and \_\_\_\_\_ generate variation, while \_\_\_\_\_ result(s) in an adaptation to the environment. A) Genetic drift, natural selection, mutations. B) Mutations, sexual recombination, natural selection . C) Overproduction of young, mutations, sexual recombination. D) Natural selection, mutations, sexual recombination E) Sexual recombination, natural selection, overproduction of young.

21/26 correct (80.8%)

2. How might an evolutionary biologist explain why a species of birds has evolved a larger beak size? A) Large beak size occurred as a result of mutation in each member of the population. B) The ancestors of this bird species encountered a tree with larger than average sized seeds. They needed to develop larger beaks in order to eat the larger seeds, and over time, they adapted to meet this need. C) Some members of the ancestral population had larger beaks than others. If larger beak size was advantageous, they would be more likely to survive and reproduce. As such, large beaked birds increased in frequency relative to small beaked birds. D) The ancestors of this bird species encountered a tree with larger than average sized seeds. They discovered that by stretching their beaks, the beaks would get longer, and this increase was passed on to their offspring. Over time, the bird beaks became larger. E) None of the above.

19/26 correct (73.1%)

3. A major evolutionary trend among plants is A) a reduction in the size of the gametophyte and an increase in the size of the sporophyte. B) a reduction in the size of the sporophyte and an increase in the size of the gametophyte. C) an increase in the size of both the sporophyte and the gametophyte. D) a decrease in the size of both the sporophyte and the gametophyte. E) the sporophyte nor the gametophyte have evolved in plants and are basically the same size for all plant types.

15/28 correct (53.6%)

**Results:** Criteria for Success Achievement Status: Met

**Analysis of Findings:** The first two questions seemed to be understood by the students as their successful answers showed. Question #3 had the students apply what they had learned from multiple sections of the course to answer this successfully. Application questions usually have lower success rates than straight knowledge questions.

**Recommendations:** I will continue to use these questions for another round and re-assess.

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**Recommendations:**

### Overall Recommendations

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### Plans of Action

### Status Reports

## 2012-2013 Assessment Cycle

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 **Measurements**

 **Findings**

 **Plans of Action**

 **Status Reports**