Course Student Learning Outcomes Assessment

BIOL 139 Health Microbiology

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General Information (Course Student Learning Outcomes Assessment)

Standing Requirements

Course Description

Presents practical and theoretical aspects of medical microbiology to meet the needs of those in allied health professions. Provides basic knowledge of the microbial world by covering diversity structure metabolic and genetic characteristics cultivation and control. Emphasis is placed on human-microbe interactions especially infectious diseases. Laboratory deals with identification growth and control of microorganisms. Field trips may be required for this course. Prior completion of Biology 109 or 149 recommended.

Course Student Learning Outcomes

BIOL 139 Health Microbiology Outcome Set

Outcome

Outcome	Mapping
Outcome 1 Demonstrate a coherent (cohesive) understanding of human-microbe interactions, the medical impact of these interactions, and the commercial applications.	**Institutional Student Learning Outcomes:** Act 1, Act 2, Act 3, Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Learn 3, Think 1, Think 2, Think 3
Outcome 2 Employ (Apply) the principles of the scientific method to both laboratory and conventional investigations.	**Institutional Student Learning Outcomes:** Act 1, Act 2, Act 3, Communicate 1, Communicate 2, Communicate 3, Learn 1, Learn 2, Learn 3, Think 1, Think 2
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:** Act 3, Communicate 1, Communicate 3, Learn 3, Think 1, Think 2

2014-2015 Assessment Cycle

Measurements

Outcomes and Measures

BIOL 139 Health Microbiology Outcome Set

Outcome

Outcome 1

Demonstrate a coherent (cohesive) understanding of human-microbe interactions, the medical impact of these interactions, and the commercial applications.

Measure: Means of assessment 139
Course level; Direct - Exam

Description of Measurement Tool: Students were asked an open-ended, essay-style question on both their first exam and their final exam, and their responses were recorded. The question was worded the same on both exams: Discuss the diversity of microorganisms and their role in the biosphere.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2016

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

Outcome 2

Employ (Apply) the principles of the scientific method to both laboratory and conventional investigations.

Measure: Means of assessment 139
Course level; Direct - Exam

Description of Measurement Tool: Students were asked an open-ended, essay-style question on both their first exam and their final exam, and their responses were recorded. The question was worded the same on both exams: How are the principles of the scientific method critical to both laboratory and conventional investigations?

Criteria for Success: Individual & Collective Student Criterion: A rubric used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2014

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 139
Course level; Direct - Exam

Description of Measurement Tool: Students' laboratory investigational skills were evaluated through the correct identification of two unknown bacterial species (unknown to the student).

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

A. Goal: Required test results interpreted correctly
~ Excellent performance: All tests interpreted correctly
~ Satisfactory performance: Most tests interpreted correctly
~ Unsatisfactory performance: More than two tests not interpreted correctly

B. Goal: Elements of report provide necessary support for conclusion
~ Excellent performance: Unflawed
~ Satisfactory performance: Minor flaw
~ Unsatisfactory performance: Several small or a major flaw

C. Goal: Logical progression from hypothesis to conclusion
~ Excellent performance: Unflawed- provides solid and convincing evidence for the conclusion
~ Satisfactory performance: Minor flaw- the evidence for conclusion may be missing a minor element or contain a minor mistake
~ Unsatisfactory performance: Major flaw- evidence for conclusion is lacking or contains major flaws

Cycle of Assessment: Fall 2015

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

Findings

Finding per Measure

BIOL 139 Health Microbiology Outcome Set

Outcome

Outcome 1

Demonstrate a coherent (cohesive) understanding of human-microbe interactions, the medical impact of these interactions, and the commercial applications.

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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 139

No Findings Added

Outcome 2

Employ (Apply) the principles of the scientific method to both laboratory and conventional investigations.

Measure: Means of assessment 139
Course level; Direct - Exam

Description of Measurement Tool: Students were asked an open-ended, essay-style question on both their first exam and their final exam, and their responses were recorded. The question was worded the same on both exams: How are the principles of the scientific method critical to both laboratory and conventional investigations?

Criteria for Success: Individual & Collective Student Criterion: A rubric used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2014

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

Findings for Means of assessment 139

No Findings Added

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 139
Course level; Direct - Exam

Description of Measurement Tool: Students' laboratory investigational skills were evaluated through the correct identification of two unknown bacterial species (unknown to the student).

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

A. Goal: Required test results interpreted correctly
~ Excellent performance: All tests interpreted correctly
~ Satisfactory performance: Most tests interpreted correctly
~ Unsatisfactory performance: More than two tests not interpreted correctly

B. Goal: Elements of report provide necessary support for conclusion
~ Excellent performance: Unflawed
~ Satisfactory performance: Minor flaw
~ Unsatisfactory performance: Several small or a major flaw

C. Goal: Logical progression from hypothesis to conclusion
~ Excellent performance: Unflawed- provides solid and convincing evidence for the conclusion
~ Satisfactory performance: Minor flaw- the evidence for conclusion may be missing a minor element or contain a minor mistake
~ Unsatisfactory performance: Major flaw- evidence for conclusion is lacking or contains major flaws

Cycle of Assessment: Fall 2015

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

Findings for Means of assessment 139

Summary of Findings: Total of 21 students were analyzed for their knowledge of microbiology unknown

A. 19 students had excellent performance.
B. 2 students had satisfactory performance.

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: A. 19 students had excellent, 2 had satisfactory and no unsatisfactory performance.

B. 19 students provides solid and convincing evidence of their knowledge of microbiology unknown.

C. 2 students conclusion presented that indicates it may be missing a minor element or contain a minor mistake of their knowledge of microbiology unknown.

Recommendations: No recommendations at this time.

Overall Recommendations

No text specified

Plans of Action

Status Reports

2013-2014 Assessment Cycle

Measurements

Outcomes and Measures

BIOL 139 Health Microbiology Outcome Set

Outcome

Outcome 1

Demonstrate a coherent (cohesive) understanding of human-microbe interactions, the medical impact of these interactions, and the commercial applications.

Measure: Means of assessment 139
Course level; Direct - Exam

Description of Measurement Tool: Students were asked an open-ended, essay-style question on both their first exam and their final exam, and their responses were recorded. The question was worded the same on both exams: Discuss the diversity of microorganisms and their role in the biosphere.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2016

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

Outcome 2

Employ (Apply) the principles of the scientific method to both laboratory and conventional investigations.

Measure: Means of assessment 139
Course level; Direct - Exam

Description of Measurement Tool: Students were asked an open-ended, essay-style question on both their first exam and their final exam, and their responses were recorded. The question was worded the same on both exams: How are the principles of the scientific method critical to both laboratory and conventional investigations?

Criteria for Success: Individual & Collective Student Criterion: A rubric used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2014

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 139
Course level; Direct - Exam

Description of Measurement Tool: Students' laboratory investigational skills were evaluated through the correct identification of two unknown bacterial species (unknown to the student).

Criteria for Success: Individual & Collective Student Criterion: A rubric used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2015

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

Findings

Finding per Measure

BIOL 139 Health Microbiology Outcome Set

Outcome

Outcome 1

Demonstrate a coherent (cohesive) understanding of human-microbe interactions, the medical impact of these interactions, and the commercial applications.

Measure: Means of assessment 139
Course level; Direct - Exam

Description of Measurement Tool: Students were asked an open-ended, essay-style question on both their first exam and their final exam, and their responses were recorded. The question was worded the same on both exams: Discuss the diversity of microorganisms and their role in the biosphere.

Criteria for Success: Individual & Collective Student Criterion: A rubric was used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2016

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

Findings for Means of assessment 139

Summary of Findings: 13/24 (54%) students demonstrated a coherent (cohesive) understanding of microorganisms and their role in the biosphere at the beginning of the term.

16/24 (67%) students demonstrated a coherent (cohesive) understanding of microorganisms and their role in the biosphere at the end of the term.

Results: Criteria for Success Achievement Status: Not Met

Analysis of Findings: Of the 24 students analyzed, many have an understanding of the role of microorganisms in the biosphere, as demonstrated by the increase in the number of students who answered accurately over the course of the term. However, the students did not meet the expectation that greater than 70% of the students will be scored as successfully meeting the expectations.

Recommendations: For the future, this question should be asked of the students, but should be asked for credit. About 10% of the students did not answer this particular question at all, likely because it was extra credit. This likely skewed the results. Additionally, after the students are required to attempt an answer, I will reevaluate if the target is being met or not.

Outcome 2

Employ (Apply) the principles of the scientific method to both laboratory and conventional investigations.

Measure: Means of assessment 139
Course level; Direct - Exam

Description of Measurement Tool: Students were asked an open-ended, essay-style question on both their first exam and their final exam, and their responses were recorded. The question was worded the same on both exams: How are the principles of the scientific method critical to both laboratory and conventional investigations?

Criteria for Success: Individual & Collective Student Criterion: A rubric used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2014

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

Findings for Means of assessment 139

Summary of Findings: 9/24 (38%) students demonstrated a coherent (cohesive) understanding of the principles of the scientific method at the beginning of the term.

15/24 (63%) students demonstrated a coherent (cohesive) understanding of the principles of the scientific method at the end of the term.

Results: Criteria for Success Achievement Status: Not Met

Analysis of Findings: Of the 24 students analyzed, many of the students understand the role of microorganisms in the biosphere, as demonstrated by the increase in the number of students who answered accurately over the course of the term. However, the students did not meet the expectation that greater than 70% of the students will be scored as successfully meeting the expectations.

Recommendations: For the future, this question should be asked of the students, but should be asked for credit. About 10% of the students did not answer this particular question at all, likely because it was extra credit. This likely skewed the results. Additionally, after the students are required to attempt an answer, I will reevaluate if the target is being met or not.

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 139
Course level; Direct - Exam

Description of Measurement Tool: Students' laboratory investigational skills were evaluated through the correct identification of two unknown bacterial species (unknown to the student).

Criteria for Success: Individual & Collective Student Criterion: A rubric used to score unknown reports. The expectation is that greater than 70% of the students will be scored as successfully meeting the expectations.

Cycle of Assessment: Fall 2015

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

Findings for Means of assessment 139

Summary of Findings: 11/24 (46%) students interpreted ALL the experimental results correctly.

24/24 (100%) documented all necessary evidence for their conclusion.

Results: Criteria for Success Achievement Status: Not Met

Analysis of Findings: 21/24 (88%) students correctly identified one or two organisms.

13/24 (54%) students correctly identified only one organism.

8/24 (25%) students correctly identified both organisms.

7/24 (29%) students made only minor errors in providing evidence to support their conclusions.

Recommendations: This project is almost ideal in engaging students in the scientific process. It will continue to be used.

Overall Recommendations

No text specified

Plans of Action

Actions

BIOL 139 Health Microbiology Outcome Set

Outcome

Outcome 1
Demonstrate a coherent (cohesive) understanding of human-microbe interactions, the medical impact of these interactions, and the commercial applications.

Action: Plan of action as of Fall 2013

This Action is associated with the following Findings
No supporting Findings have been linked to this Action.

Details of Plan of Action: For the future, this question should be asked of the students, but should be asked for credit. About 10% of the students did not answer this particular question at all, likely because it was extra credit. This likely skewed the results. Additionally, after the students are required to attempt an answer, I will reevaluate if the target is being met or not.

Plan of Action Timeline: Until next assessment of the cycle.

Who is responsible for carrying out the Plan of Action?: Biology faculty currently teaching the course.

How will you determine if the Plan of Action has been effective?: When the actual is or exceeds 70%

Additional Resources Required (if any):

Budget request amount: $0.00

Priority:

Outcome 2
Employ (Apply) the principles of the scientific method to both laboratory and conventional investigations.

Action: Plan of action as of Fall 2013

This Action is associated with the following Findings
No supporting Findings have been linked to this Action.

Details of Plan of Action: For the future, this question should be asked of the students, but should be asked for credit. About 10% of the students did not answer this particular question at all, likely because it was extra credit. This likely skewed the results. Additionally, after the students are required to attempt an answer, I will reevaluate if the target is being met or not.

Plan of Action Timeline: Until the next assessment of the cycle.

Who is responsible for carrying out the Plan of Action?: Biology faculty currently teaching the course.

How will you determine if the Plan of Action has been effective?: When the actual is or exceeds 70%

Additional Resources Required (if any):

Budget request amount: $0.00

Priority:

Outcome 3
Conduct laboratory investigations according to given experimental procedure, collect and

Action: Plan of action as of Fall 2013

This Action is associated with the following Findings
No supporting Findings have been linked to this Action.

analyze resulting experimental data, and formulate valid conclusions based on the results.

Details of Plan of Action: This project is almost ideal in engaging students in the scientific process. It will continue to be used.

Plan of Action Timeline: Until the next assessment of the cycle.

Who is responsible for carrying out the Plan of Action?: Biology faculty currently teaching the course.

How will you determine if the Plan of Action has been effective?: When the actual is or exceeds 70%.

Additional Resources Required (if any):

Budget request amount: $0.00

Priority:

Status Reports

Action Statuses

BIOL 139 Health Microbiology Outcome Set

Outcome

Outcome 1
Demonstrate a coherent (cohesive) understanding of human-microbe interactions, the medical impact of these interactions, and the commercial applications.

Action: Plan of action as of Fall 2013

Details of Plan of Action: For the future, this question should be asked of the students, but should be asked for credit. About 10% of the students did not answer this particular question at all, likely because it was extra credit. This likely skewed the results. Additionally, after the students are required to attempt an answer, I will reevaluate if the target is being met or not.

Plan of Action Timeline: Until next assessment of the cycle.

Who is responsible for carrying out the Plan of Action?: Biology faculty currently teaching the course.

How will you determine if the Plan of Action has been effective?: When the actual is or exceeds 70%

Additional Resources Required (if any):

Budget request amount: $0.00

Priority:

Status for Plan of action as of Fall 2013

No Status Added

Outcome 2
Employ (Apply) the principles of the scientific method to both laboratory and conventional investigations.

Action: Plan of action as of Fall 2013

Details of Plan of Action: For the future, this question should be asked of the students, but should be asked for credit. About 10% of the students did not answer this particular question at all, likely because it was extra credit. This likely skewed the results. Additionally, after the students are required to attempt an answer, I will reevaluate if the target is being met or not.

Plan of Action Timeline: Until the next assessment of the cycle.

Who is responsible for carrying out the Plan of Action?: Biology faculty currently teaching the course.

How will you determine if the Plan of Action has been effective?: When the actual is or exceeds 70%

Additional Resources Required (if any):

Budget request amount: $0.00

Priority:

Status for Plan of action as of Fall 2013

No Status Added

Outcome 3

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

Action: Plan of action as of Fall 2013

Details of Plan of Action: This project is almost ideal in engaging students in the scientific process. It will continue to be used.

Plan of Action Timeline: Until the next assessment of the cycle.

Who is responsible for carrying out the Plan of Action?: Biology faculty currently teaching the course.

How will you determine if the Plan of Action has been effective?: When the actual is or exceeds 70%.

Additional Resources Required (if any):

Budget request amount: $0.00

Priority:

Status for Plan of action as of Fall 2013

No Status Added

Status Summary

No text specified

Summary of Next Steps

No text specified

2012-2013 Assessment Cycle

- **Measurements**
- **Findings**
- **Plans of Action**
- **Status Reports**