

ASSESSMENT REPORT 2015-2016

Biology Undergraduate
(Instructional Degree Program)

B.S.
(Degree Level)

Program Mission:

The mission of the Biology program is to provide undergraduate and graduate students with a high quality science education that includes experience with research and field projects. The program provides a scientific and technical background that empowers students to successfully pursue science and technology careers, or proceed on to advanced graduate studies.

Student Learning Outcome 1:

Have a command of basic biological knowledge in the areas of ecology and evolution, cell and molecular biology and organismal biology.

NMHU Traits Specifically Linked to Student Learning Outcome 1

- Mastery of Content Knowledge and Skills

First Means of Assessment for Outcome 1:

Successful students will master course content in representative upper level major courses, with an average grade of "C" or better on class tests and laboratory reports in Biol 389 (Fall 2016), 331 (Fall 2016) . 75% or more students will meet our criteria for success.

Summary of Data:

Number of Students Meeting Criterion:	30	Number of Students Not Meeting Criterion:	7
Total Number of Students Assessed:	37	Percent of Students Meeting Criterion:	81.1%

Second Means of Assessment for Outcome 1:

Graduating seniors will take the MFAT test. This test will allow us to track individual performance over time. The MFAT test is more a measure of determining how our students compare to national averages.

Summary of Data: The MFAT was not given to students this academic year.

Number of Students Meeting Criterion:	N/A	Number of Students Not Meeting Criterion:	N/A
Total Number of Students Assessed:	N/A	Percent of Students Meeting Criterion:	N/A

Interpretation of Results for Outcome 1:

Our students met our department criterion for mastering course content in upper level major classes (81.1% of students with a C or better; first means of assessment). This demonstrates that biology majors have basic biological knowledge as expressed by their performance on lab reports and exams in representative courses. We would like to expand the number of courses included in our assessment in future years to fully represent our content areas (cell, molecular, organismal, ecology, evolution).

Regarding our second means of assessment using MFAT test scores, we did not have students take the test this 2015-2016 academic year. We will be revising our assessment criteria for this first learning outcome and may choose a different biology content knowledge exam that we can tailor to relevant biology content and also compare our student performance to a national average.

Student Learning Outcome 2:

Have an understanding of and the ability to use scientific methodology and technology through which biological knowledge accumulates.

NMHU Traits Specifically Linked to Student Learning Outcome 2

- Effective Communication Skills
- Effective Use of Technology

First Means of Assessment for Outcome 2:

Senior project-successful students will show mastery and apply knowledge of basic biological principles to a degree that is satisfactory to the faculty of the biology discipline as indicated by a grade of "B" or better in Biol 491 (Fall 2015) and Biol 498 (Spring 2016). 75% or more of students will meet our criteria for success.

Summary of Data

Number of Students Meeting Criterion:	17	Number of Students Not Meeting Criterion:	3
Total Number of Students	20	Percent of Students Meeting	85.0%

Assessed:		Criterion:	
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Second Means of Assessment for Outcome 2:

Mastery of laboratory skills and techniques demonstrated by an average grade of "C" or better on laboratory reports for representative upper level courses: Biol 389 and Biol 331 Fall 2015. 75% or more of students will meet our criteria for success.

Summary of Data:

Number of Students Meeting Criterion:	33	Number of Students Not Meeting Criterion:	4
Total Number of Students Assessed:	37	Percent of Students Meeting Criterion:	89.2%

Interpretation of Results for Outcome 2:

Biology students met our criterion for their understanding of and use of scientific methodology and technology (first means of assessment), with 85% of our Senior project students earning a grade of B or better in the research writing course (Biol491) and applied biological research course (Biol 498). We believe this measure is an accurate reflection of student learning because the graded products are individually designed and written research proposals and reports that fully express a student's ability to carry out original scientific research.

Biology students also met our criterion of mastery of laboratory skills and techniques (second means of assessment) as measured by 89.2% of our students earning a C or better on lab report grades in upper level courses.

Student Learning Outcome 3:

Be able to effectively communicate and critically analyze biological knowledge.

NMHU Traits Specifically Linked to Student Learning Outcome 3

- Effective Communication Skills
- Critical and Reflective Thinking Skills
- Effective Use of Technology

First Means of Assessment for Outcome 3:

Successful students will demonstrate mastery with scores of "B" or better for research papers and/or oral presentations in representative upper level courses, Biol 491 (Fall 2015), Biol 498 (SP 2016), Biol 389 (Fall 2015)

Summary of Data

Number of Students Meeting Criterion:	20	Number of Students Not Meeting Criterion:	4
Total Number of Students Assessed:	24	Percent of Students Meeting Criterion:	83.3%

Second Means of Assessment for Outcome 3:

Successful students will show mastery and apply knowledge of basic biological principles to a degree that is satisfactory to the faculty of the biology discipline as indicated by a grade of "B" or better on the Senior project (Biol 498 Spring 2016). 75% or more of students will meet our criteria for success.

Summary of Data

Number of Students Meeting Criterion:	10	Number of Students Not Meeting Criterion:	1
Total Number of Students Assessed:	11	Percent of Students Meeting Criterion:	90.9%

Interpretation of Results for Outcome 3:

Biology students met our criterion for mastery of effective communication and critical analysis of biological knowledge with 83.3% of our students earning a B or better on research papers and/or oral presentations in our Senior project research classes (Biol 491, 498) and upper level ecology class (Biol389; first means of assessment).

Our students also met the criterion for the second means of assessment, to earn an overall grade of B or better on their Senior research project (90.9% met criterion). Though this is somewhat similar to the first means of assessment, this criterion measures overall performance (lab work, writing, presentation, collaboration with peers). We feel that both metrics are informative for our program.

Student Learning Outcome 4:

Receive a comprehensive background essential to advanced work and/or a career in biology or related fields.

NMHU Traits Specifically Linked to Student Learning Outcome 4

- Mastery of Content Knowledge and Skills
- Effective Communication Skills
- Critical and Reflective Thinking Skills

First Means of Assessment for Outcome 4:

The student satisfaction survey administered to all graduating seniors by the Office of Institutional Research and Effectiveness. Measures of success- 50% or more of respondents indicate that they are continuing their education or employment in biology or related area. 75% of the respondents will indicate that they are satisfied or very satisfied with their preparation for work or graduate school. Faculty knowledge will be used to collect information on career paths of students who graduated the previous year.

Summary of Data: due to changes at OIER, we have not yet collected this data.

Number of Students Meeting Criterion:	N/A	Number of Students Not Meeting Criterion:	N/A
Total Number of Students Assessed:	N/A	Percent of Students Meeting Criterion:	N/A

Interpretation of Results for Outcome 4:

We were not able to obtain this data, but believe this criterion is still useful and informative for our program. We will incorporate the data into our assessment when it becomes available.