

## ASSESSMENT REPORT 2015-2016

**Natural Sciences: Biology**  
(Instructional Degree Program)

**M.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 a 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 mastery of principle biological knowledge

### **NMHU Traits Specifically Linked to Student Learning Outcome 1**

Mastery of Content Knowledge and Skills

Effective Communication Skills

Critical and Reflective Thinking Skills

### **First Means of Assessment for Outcome 1:**

Course grades and evaluations; successful students will receive an average grade of “B” or better on class tests and/or projects in Biol 620 (Fall 2015) and Biol 610 (Spring 2016).

### **Summary of Data:**

Number of Students Meeting Criterion:	8	Number of Students Not Meeting Criterion:	2
Total Number of Students Assessed:	10	Percent of Students Meeting Criterion:	80.0%

### **Second Means of Assessment for Outcome 1:**

The general knowledge component of the thesis or project defense will be used as the assessment tool. Measure of success – 80% or more of our students will successfully meet our criteria.

### **Summary of Data:**

Number of Students Meeting Criterion:	3	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	3	Percent of Students Meeting Criterion:	100%

### **Interpretation of Results for Outcome 1:**

Our biology Master's students successfully met our criterion for biological knowledge (80%). We will revise this outcome in future assessments to clarify whether 75 or 80% of our students must meet this criterion to interpret it as a success. Graduate students also met our criterion of successfully defending a thesis or project. The assessments through course grades and thesis defense seem to accurately reflect our expectations for graduate students. We are concerned that two of our students did not meet the first means of assessment criterion, and we plan to examine particular issues that could improve student mastery of biological knowledge (e.g. course and TA loads, mentorship, student probation).

### **Student Learning Outcome 2:**

Utilize scientific methodology and technology through which biological knowledge accumulates.

### **NMHU Traits Specifically Linked to Student Learning Outcome 2**

Effective Use of Technology

### **First Means of Assessment for Outcome 2:**

Successful students will write an acceptable thesis proposal or project proposal and successfully defend it (B or better) in Biology 600 (Research Methods, Fall 2015).

### **Summary of Data**

Number of Students Meeting Criterion:	14	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	14	Percent of Students Meeting Criterion:	100%

### **Second Means of Assessment for Outcome 2:**

Course grades and evaluations of laboratory courses; Successful students will receive an average grade a "B" or better on laboratory reports and exams which include

designing and carrying out experiments. Measure of success – 80% or more of our students will successfully meet our criteria. (Biol 585 and Biol 523 Spring 2016).

**Summary of Data:**

Number of Students Meeting Criterion:	2	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	2	Percent of Students Meeting Criterion:	100%

**Interpretation of Results for Outcome 2:**

Graduate students met our criterion for effectively utilizing the scientific method and technology as demonstrated by earning a B or better on a research thesis proposal (first means of assessment, 100% of students met criterion).

Graduate students were also successful in meeting the second means of assessment criterion (100%) of earning a B or better on lab reports requiring experiment design and execution. However, this second means of assessment used data from only two students. We are revising whether this is an effective assessment and plan to revisit how frequently we provide graduate course offerings that strengthen general knowledge and experience with laboratory experimentation.

**Student Learning Outcome 3:**

Be able to critically analyze information and effectively impart biological knowledge with peers, mentors, and other professionals in the scientific community.

**NMHU Traits Specifically Linked to Student Learning Outcome 3**

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

**First Means of Assessment for Outcome 3:**

Thesis (or Project) and Defense; Successful students will write an acceptable thesis and pass their thesis defense.

**Summary of Data**

Number of Students Meeting Criterion:	3	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	3	Percent of Students Meeting Criterion:	100%

### Second Means of Assessment for Outcome 3:

Graduate Seminar-successful students will receive a “B” or better in the seminar Biol 650

#### Summary of Data

Number of Students Meeting Criterion:	12	Number of Students Not Meeting Criterion:	2
Total Number of Students Assessed:	14	Percent of Students Meeting Criterion:	85.7%

### Third Means of Assessment for Outcome 3:

Course grades and evaluations for courses other than graduate seminar, particularly for courses involving written and oral reports; Successful students will receive an average grade of “B” or better for written and oral reports presented during these courses. Measure of success – 80% or more of our students will successfully meet our criteria. Biol 577, Biol 523, and Biol 585 (Spring 2016).

#### Summary of Data:

Number of Students Meeting Criterion:	6	Number of Students Not Meeting Criterion:	1
Total Number of Students Assessed:	7	Percent of Students Meeting Criterion:	85.7%

### Interpretation of Results for Outcome 3:

Overall, Biology graduate students successfully met the criteria for critical analysis and communicating to the scientific community. We plan to revise our criteria (e.g. 80% of students met criterion) in future assessments.

Our graduate students met the criterion of writing and defending a research thesis (100%) demonstrating their ability to critically analyze and communicate to the scientific community (first means of assessment).

Biology graduate students also met the criterion of earning a B or better in Biol 650 (seminar; 85.7%) and earning a B or better on oral or written reports in graduate courses (85.7%).

#### **Student Learning Outcome 4:**

Receive a comprehensive science background essential to advance to a doctoral program and/or career in biology or related fields.

#### **NMHU Traits Specifically Linked to Student Learning Outcome 4**

Mastery of Content Knowledge and Skills  
Effective Use of Technology

#### **First Means of Assessment for Outcome 4:**

Tracking students receiving Master's Degrees in the program in the program using faculty knowledge. Measure of success - 75% of respondents indicating continuing their education or employed 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.

#### **Summary of Data**

Number of Students Meeting Criterion:	3	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	3	Percent of Students Meeting Criterion:	100%

#### **Interpretation of Results for Outcome 4:**

Our program has great success at preparing graduates for biology careers. We think that this criteria is an important measure of our program's success.