

**ASSESSMENT REPORT
2018-2019**

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 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 570 (Rivas FA 2018, Biol 576 (Rivas SP 2019), Biol 620 (Rivas FA 2018), Biol 640 (Chavez, SP 2019), Biol 689 (Rivas FA 2018).

Summary of Data:

Number of Students Meeting Criterion:	12	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	12	Percent of Students Meeting Criterion:	100 %

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:	6	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	6	Percent of Students Meeting Criterion:	100%

Interpretation of Results for Outcome 1:

Students in the MS Biology Program successfully met Student Learning Outcome (SLO) 1, mastery of principle biological knowledge. Students evaluated on tests and projects in five 500-600 level courses demonstrated 100% successfully met the criterion. Students evaluated through thesis or project defense demonstrated 100% met the criterion for success.

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 (course records unavailable).

Summary of 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

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 570 (Rivas, FA 2018).

Summary of Data:

Number of Students Meeting Criterion:	4	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	4	Percent of Students Meeting Criterion:	100%

Interpretation of Results for Outcome 2:

Students were successful at utilizing the scientific method and scientific technology in the MS Biology program as measured by well written research projects and oral defense of their research. The first means of assessment for this SLO was not available due to inaccessible data for this course. Students in laboratory courses demonstrated success with acceptable grades on lab reports and exams. There was a slight increase in the percentage of students meeting the criterion from 93% in the 2017-2018 academic year to 100% for the 2018-2019 academic year. However, course data was limited by availability. This limited evidence supports the notion that our Master's program sufficiently prepares students for applying and thinking with the scientific method and scientific technology.

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:	6	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	6	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 (SP 2019, Rivas).

Summary of Data

Number of Students Meeting Criterion:	6	Number of Students Not Meeting Criterion:	6
Total Number of Students Assessed:	6	Percent of Students Meeting Criterion:	100%

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 570 (Rivas, FA 2018), Biol 576 (Rivas, SP 2019), Biol 689 (Rivas, SP 2019).

Summary of Data:

Number of Students Meeting Criterion:	5	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	5	Percent of Students Meeting Criterion:	100 %

Interpretation of Results for Outcome 3:

Students were successful in critically analyzing biological knowledge and communicating their

findings effectively with peers and the scientific community. These data suggest that the Biology Program is effectively preparing our graduate students to be robust contributors to the greater scientific community. Our sample size for this semester is unfortunately low because two of the faculty members that taught graduate classes left at the end of the term and their data is not available.

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 (last five year window). 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:	17	Number of Students Not Meeting Criterion:	1
Total Number of Students Assessed:	18	Percent of Students Meeting Criterion:	94 %

Interpretation of Results for Outcome 4:

Students in our program that have graduated with a master’s degree are currently working in a biology field or advanced degree. A substantial number of the students met the SLO indicating appropriate program application to careers in the biological sciences.

Utilization of Results:

The MS concentration in Biology program successfully prepares students with the targeted learning outcomes. Our program continues to build on success of past years and recently revised the non-thesis MS concentration in Biology degree program to increase the number of graduate students we can accommodate in our program. In line with more non-thesis students coming into the program (in addition to the continuing thesis program), our revised 2020 OA plan for this program specifies outcomes met for thesis and non-thesis projects.

Changes to Program Based on Results:

Current changes to the program are a more streamlined non-thesis MS concentration in biology option to increase the 2-year graduation rate of students from our program. Overall, we did not find major deficiencies in Master's student SLOs.

Retention Strategies:

The graduate program in Biology successfully retains students. We have addressed the need to increase student graduation rates from our MS program by streamlining the non-thesis option, which was successfully revised Fall 2018 and went into effect in Fall 2019.