

# ASSESSMENT REPORT 2018 - 2019

**Natural Sciences (Environmental Science and Management**  
(Instructional Degree Program)

**M.S.**  
(Degree Level)

## **Program Mission:**

The mission of the M.S. Natural Sciences-Environmental Science & Management Concentration is to provide students with pre-professional and post-graduate education in environmental science and management, including engagement in graduate-level coursework, practice in teaching undergraduate biology, forestry and geology laboratory sections, and participation in thesis research.

## **Student Learning Outcome 1:**

Competency in graduate level coursework.

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

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

## **Means of Assessment for Outcome 1 (SLO1):**

Maintenance of a 3.0 GPA for graduate level coursework.

## **Summary of Data:**

Number of Students Meeting Criterion:	17	Number of Students Not Meeting Criterion:	<b>0</b>
Total Number of Students Assessed:	17	Percentage of Students Meeting Criterion:	100%

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

Students in the Natural Sciences ES&M program are consistently strong in their coursework. Fewer than 50% of applicants to the program are admitted. Students are only admitted to the program if a faculty member is willing to mentor and advise a student. Students only find a faculty member sponsor if they show through prior education and/or experiences that they are motivated, capable students that show promise of succeeding as a graduate student in the program.

In order to improve this means of assessment, it is advisable that the program revise the means of assessment to be more rigorous (e.g. 3.5 GPA), not as a means of punishing students or the

program, but as a means of detecting change over time.

**Student Learning Outcome 2:**

Competency in teaching assistantship.

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

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

**Means of Assessment for Outcome 2 (SLO2):**

Success in delivering lab introductions, grading and returning student materials, maintaining office hours, and making meaningful contributions to laboratory section, as reported by faculty instructors.

**Summary of Data:**

Number of Students Meeting Criterion:	9	Number of Students Not Meeting Criterion:	1
Total Number of Students Assessed:	10	Percentage of Students Meeting Criterion:	90%

**Interpretation of Results for Outcome 2:**

Students selected as TAs come from the cohort of graduate students already deemed capable of being successful students in the program. Of these, we have been fortunate that applicants have been diverse in experiences, expertise, and interest. This has led to the outcome that we always have qualified candidates to be successful TAs for classes in the undergraduate programs associated with the graduate program. It is acceptable and expected that students will occasionally fail to live up to expectations. This can happen for reasons that are not the fault of the student (e.g. change in life circumstances) or, indeed, the fault of the student (e.g. attitude and lack of motivation or meticulousness). In this instance, it is believed that the problem was the latter.

**Student Learning Outcome 3:**

Progress and proficiency in thesis research, including the design, execution, and defense of a thesis project.

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

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

**Means of Assessment for Outcome 3 (SLO3):**

Writing of a thesis proposal, defense of the thesis proposal, and progress in the thesis research as reported by graduate thesis advisors.

**Summary of Data:**

Number of Students Meeting Criterion:	16	Number of Students Not Meeting Criterion:	1
Total Number of Students Assessed:	17	Percentage of Students Meeting Criterion:	94%

**Interpretation of Results for Outcome 3:**

Students can (but rarely do at NMHU) choose their advisor, or change advisors during their time at NMHU, but must do so with the permission of the faculty member. This means that faculty members effectively choose who they are willing to work with and mentor. Once matched up, the faculty mentoring students in the ES&M Concentration work hard to ensure that students make progress. This occurs through regular lab (or advisor-advisee) meetings, training, encouragement, and management. The outcomes for 2018-19 for SLO3 demonstrate that students regularly make progress towards their graduation and that faculty are satisfied with the students' progress.

**Student Learning Outcome 4:**

Successful completion of a Master's thesis within 3-year (6-semester) timeframe.

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

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

**Means of Assessment for Outcome 4 (SLO4):**

Completion of a M.S. thesis project and paper within 3-year (6-semester) timeframe

**Summary of Data:**

Number of Students Meeting Criterion:	2	Number of Students Not Meeting Criterion:	8
Total Number of Students Assessed:	10	Percentage of Students Meeting Criterion:	20%

**Interpretation of Results for Outcome 4:**

Students regularly fail to graduate within three years of matriculation into the program. This is a serious issue within the program and one that must be rectified. Nevertheless, some undesirable outcomes are at least impacted by failure to push paperwork through quickly enough (1 student), the absence of their primary advisor because they were moved to Administration (2 students), and students indicating their intention to finish their degrees, but only while working a full-time job

(1+ students). With high faculty turnover, students can become disconnected from the expertise and personality compatibility that likely led to success during the early years of their graduate work. Nevertheless, graduate students at NMHU regularly suffer from financial difficulties and choose to leave the program, or slow down their progress, while they pursue opportunities that allow them to pay their bills. We expect that the recent \$5 million NSF CREST grant that was awarded to the Forest Restoration Triangle (NMHU, NMSU, and NM Forest and Watershed Restoration Institute) will lead to better-funded graduate students, with defined projects before admission, that will lead to faster graduation rates.

### **Utilization of Results:**

These outcome results suggest the program is generally meeting its goals, but that work needs to be done to help students graduate on time. Part of this might be financial (i.e. providing a higher, guaranteed stipend for a longer timeframe that gives students confidence in their financial stability), advisory (e.g. the need to retain the Forestry and other associated faculty that have agreed to advise the student), and/or confidence in writing (students typically stall out during the thesis writing stage), among other potential variables. The program clearly has capable, motivated students, but changes have to be made to help students progress in a timely manner.

### **Changes to Program Based on Results:**

Students during the past year have been required to have an assigned project, or at least project area, and main advisor (or chair). We expect this to be even more rigorous of a requirement in the coming years with the CREST award. Students will apply in response to posted advertisements on national websites and only be admitted when already having been in contact with a proposed thesis advisor. This should streamline the project and thesis work, ensuring a timely graduation.

### **Retention Strategies:**

We will continue to implement the strategy proposed in the previous report – encouraging students that are not making progress to transition to a project or course option for graduation. We must continue to tailor the type of program to the needs and abilities of the student while we implement the changes outlined above. We expect that these two actions will lead to the graduation of students currently stalled within the program, while ensuring that future students that are admitted do not fall into the same pitfalls that have affected students in the past.