

ASSESSMENT REPORT 2020-2021

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:	7	Number of Students Not Meeting Criterion:	1
Total Number of Students Assessed:	8	Percentage of Students Meeting Criterion:	88%

Interpretation of Results for Outcome 1:

The program saw no significant change in outcomes for SLO1 relative to 2018-19 outcomes.

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. We believe the results are acceptable particularly considering that during COVID-19 times, our students have been intensely impacted due to the distant learning tools. Despite of that, all the students in the Forestry Department maintained a GPA higher than 3.5.

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:	5	Number of Students Not Meeting Criterion:	1
Total Number of Students Assessed:	6	Percentage of Students Meeting Criterion:	83%

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. We always have qualified students to be successful TAs for classes in the undergraduate programs and some of them had several semesters of experience assisting the same classes. It is acceptable and expected that students will occasionally fail to live up to expectations. Some of our MS students have moved to live in other areas and experienced difficulties during COVID-19 times. Despite of that, they have still maintained high quality standards in their teaching distance learning skills.

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:	8	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	8	Percentage of Students Meeting Criterion:	100%

Interpretation of Results for Outcome 3:

All the students in this cohort made progress on their thesis proposals, and some of them have already a draft of their MS final thesis. Despite of the COVID-19 challenges, students in the ES&M Concentration work really hard to ensure progress in their thesis and keep on track despite the circumstances. This has been possible thanks to the continuous advice and support of our faculty members who have made a huge effort mentoring and supporting our students’ morale and motivation. The outcomes 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:	5	Number of Students Not Meeting Criterion:	2
Total Number of Students Assessed:	7	Percentage of Students Meeting Criterion:	29%

Interpretation of Results for Outcome 4:

Students regularly fail to graduate within three years of matriculation into the program and during

COVID-19 times, this has not been an exception. This is a serious issue within the program and one that must be rectified.

Many students indicated their intention to finish their degrees during the academic year 2020-21, but they have been struggling for many different reasons. Distance learning and the lack of students' interaction on campus, the uncertainty of times and many other personal circumstances have made it complicated for our students to find the motivation and focus to finish. 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.

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. The NSF FORT CREST grant provides a much more organized framework for forest restoration research at different levels, and that will benefit our students' graduation rates. During the academic year 2020-21, the project could only award one of the students included in this report. However, the project is financially supporting seven students in Spring 2022, and we hope that the financial stability will help to improve the SLO. 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 a project area, and main advisor (or chair), and this is now more rigorous of a requirement in the coming years with the NSF FORT CREST award. In this context, we are building a mentoring mechanism between undergraduate and graduate students that will help them to create a stronger graduate student community that will provide them more research and educational support. FORT CREST will assist to provide the students with a coherent progression within their research projects, as well as with a community of FORT CREST peers graduate and undergraduate students that participate in the project.

Moreover this semester, we will be proposing two new master program proposals. The Master of Science in Forest Resources (M.S. in Forest Resources) program will prepare students for careers in forestry and related disciplines which require expertise in research and applied science, as well as preparing students for entrance into Ph.D. programs in these and other fields. This program is designed around a small core of foundational courses after which students develop individualized programs of study that reflect each student's research interests, educational goals, and career objectives. Students gain experience in the design, execution, and reporting of scientific research by completing a master's thesis. Housed in New Mexico's only Department of Forestry, the M.S. in Forest Resources degree offers a unique opportunity for students to develop expertise in the study and management of forest resources. On the other hand, the Master of Forestry (M.F.)

program will prepare students to assume mid- and upper level technical, supervisory, and leadership roles within the field of forestry which require more advanced training and expertise than can be gained during the B.S. in Forestry program and which also require greater breadth of subject matter expertise and less emphasis on research than are provided by an M.S. program. The Master of Forestry program is tailored for current practitioners in the field of forestry seeking opportunities for further education and career advancement, as well as toward B.S. in Forestry graduates seeking an advanced degree but who wish to pursue a more applied practitioner-focused educational track rather than a research-focused M.S. track. The M.F. program is not recommended for individuals who anticipate pursuing a career in research or who anticipate seeking admission to a Ph.D. program in the future. This program may be capable of completion as an entirely online program depending upon the student's program of study.

Retention Strategies:

We will continue re-designing our research-based program to attend the needs and abilities of our students, and we will continue to implement the FORT CREST research and projects in an integrated model so students can collaborate and support each other. Our department developed a renovated mission and budget with its Forestry Department Strategic plan 2020-25. These revisions will focus efforts of the Program to develop and implement high quality and hands-on forestry education. Additionally, an abundant number of activities, workshops and training opportunity will be implemented in the next 2-3 years, as opportunities to support more frequent communications and consultation between students and academic advisors, as well as to increase the contact with the community, and professional agencies and personnel. Moreover, FORTCREST is promoting the participation of Forestry students in SAF conferences and professional events organized by the Student Engagement Coordinator of the project. Moreover, we will still encourage students that are not making progress to transition to a project or course option for graduation. We believe these actions will lead to the graduation of students in less than three years in our program.