

ASSESSMENT REPORT 2018-2019

Natural Sciences

(Instructional Degree Program)

M.S.

(Degree Level)

Concentration

Geology

Program Mission:

The mission of the M.S. Natural Sciences-Geology Concentration is to provide students with pre-professional and post-graduate education in the management of natural resources with a geology emphasis through engagement in graduate-level coursework, practice in teaching undergraduate 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

- Mastery of Content Knowledge and Skills

First Means of Assessment for Outcome 1:

Maintenance of a 3.0 GPA for graduate level coursework.

Summary of Data:

Number of Students Meeting Criterion:	9	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	9	Percent of Students Meeting Criterion:	100%

Interpretation of Results for Outcome 1: *M.S. Natural Sciences-Geology graduate students consistently do well in their graduate-level coursework. The Natural Resources Management – Environmental Geology faculty selects a relatively small pool of qualified applicants into the graduate program with undergraduate academic records and/or applied experiences that demonstrate potential to succeed in graduate level coursework. Rigorous review of application materials and maintenance of program pre-requisites factor into student success.*

Student Learning Outcome 2:

Competency in teaching assistantship.

NMHU Traits Specifically Linked to Student Learning Outcome 2

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

First Means of Assessment for Outcome 2:

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:	7	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	7	Percent of Students Meeting Criterion:	100%

Interpretation of Results for Outcome 2: *M.S. Natural Sciences-Geology graduate students consistently do well in their teaching assistantships. The Natural Resources Management – Geology faculty meets regularly with and mentors graduate students in aspects of teaching (lecture preparation, material delivery, one-on-one student interaction, and grading) to help with teaching assistantship professional development. The faculty also prepares a “Teaching Assistant Contract” at the beginning of the academic year that delineates teaching assistant expectations, including maintenance of office hours, laboratory session preparation, and one-week turn-around-time for grading. In addition, the Geology faculty shared previous graduate students’ interest in professional development training with the Center for Teaching Excellence. These discussions, among other factors, led to the development of a 1-day graduate assistant training (now in its third year) at the beginning of the fall and spring semesters. The workshop covers a variety of topics, including sexual harassment reporting, classroom behavior, academic misconduct, responding to accessibility, communicating, and overall professionalism. This training added value to the M.S. Natural Sciences-Geology graduate students’ classroom comportment and professional growth.*

Student Learning Outcome 3:

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

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:

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:	10	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	10	Percent of Students Meeting Criterion:	100%

Interpretation of Results for Outcome 3: *M.S. Natural Sciences-Geology graduate students consistently do well, in collaboration with their graduate thesis advisors, designing, defending, and executing their thesis research projects.*

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
- Effective Communication Skills
- Critical and Reflective Thinking Skills

First Means of Assessment for Outcome 4:

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

Summary of Data

Number of Students Meeting Criterion:	0	Number of Students Not Meeting Criterion:	0
Total Number of Students Assessed:	0	Percent of Students Meeting Criterion:	N/A

Interpretation of Results for Outcome 4: *None of the current graduate students were in their third year of graduate work. All of the students are doing well developing and executing their thesis projects. Several students are slated for degree conference in AY2019-2020. Each of these students is doggedly reducing their data, interpreting their results, and writing their thesis. All of the students have given at least one presentation at a regional or national conference.*

The Environmental Geology graduate faculty is stretched extremely thin in teaching, research, and service commitments and has campaigned for 3+ years for an additional tenure-track faculty member to assist with the delivery of graduate courses and mentoring of graduate students. The Environmental Geology Program has been asking specifically, based on incoming student interest, regional needs, and career trends, for a permanent tenure-track faculty member with surface hydrology, water science, and water resources expertise. The request has consistently been denied. At this time, the Environmental Geology Program is threatened not only by a staff shortage but by a proposed department reorganization that moves Natural Resources Management instructional programs that are under the Environmental Geology Program's purview (Water Resources and Geographic Information Systems) into a "Forestry Science Department." This proposed restructure will seriously impact the Environmental Geology Program's ability to teach its required classes and support students in meeting the program learning objectives. The faculty are voicing their concerns to their departmental colleagues and administration in the hopes that the instructional programs remain as-is and that an additional faculty member is added to the Environmental Geology teaching staff. This will lead to more time, effort, and talent directed towards student mentoring and support.

Utilization of Results: (Indicate your plans for using the results in this report to improve your program. All programs are required to complete this section.)

Based upon the 2018-19 outcomes data as well as longitudinal data from the last 5+ years, student learning outcomes have been maintained at a consistently high level (100% for most student learning outcomes) in the M.S. Natural Sciences-Geology Concentration. Academic areas to continue to reinforce throughout students' graduate careers include time management and writing proficiency. Early intervention and provision of writing support (such as appointments with the Writing Center, enrollment in a technical writing class) will be provided to graduate students stalling in their thesis research writing.

Changes to Program Based on Results:

- *Develop a Graduate Student Exit Survey to gain the students' perspective of their graduate experience and better assess student needs.*

- *Consider the addition of a technical writing requirement for graduate students.*
- *Build guest speakers into the curriculum (water resources managers, economic geologists, hazard mitigation specialists, etc.) so that students see the application of geology to natural resources management issues and learn about career tracks.*

Retention Strategies

- *Gain budgetary approval for a 3rd tenure-track geology faculty member with surface hydrology, water science, and water resources expertise to provide additional learning experiences, research opportunities, and individualized attention to Geology graduate students developing water budgets and conducting water quality studies of local watersheds.*
- *Coordinate field and laboratory experiences among senior- and graduate-level classes to build larger student cohorts and increase academic integration.*