

**ASSESSMENT REPORT
2015-2016**

Mathematics

(Instructional Degree Program)

B.S.

(Degree Level)

Program Mission:

The mission of the Mathematics Program at New Mexico Highlands University is to provide students with a challenging, market relevant and high-quality education in mathematics. Students completing the baccalaureate program in mathematics will be well prepared for their first position in the field. Each mathematics graduate will be capable of independent thought and initiative in the field of mathematics. Each graduate will demonstrate the behavior and attitudes of a professional in the field and be capable of performing the technical tasks required of their field.

Student Learning Outcome 1:

Understanding and demonstrating mastery of basic algebraic skills (Math 120) as well as more advanced algebraic technique and concepts (Math 140).

NMHU Traits Specifically Linked to Student Learning Outcome 1

- Mastery of Content Knowledge and Skills

First Means of Assessment for Outcome 1:

Final grade from Math 120: Intermediate Algebra. Students' mastery will be measured by the cumulative percentage of passing grades for all sections of the course offered in spring and fall of 2016.

Summary of Data:

Number of Students Meeting Criterion:	121	Number of Students Not Meeting Criterion:	80
Total Number of Students Assessed:	201	Percent of Students Meeting Criterion:	60.2%

Second Means of Assessment for Outcome 1:

Final grade from Math 140: College Algebra Students mastery will be measured by the cumulative percentage of passing grades for all sections of the course offered in spring and fall 2016.

Summary of Data:

Number of Students Meeting Criterion:	160	Number of Students Not Meeting Criterion:	105
Total Number of Students Assessed:	265	Percent of Students Meeting Criterion:	60.4%

Interpretation of Results for Outcome 1: *Only 60% of students taking Math 120 and Math 140 in the spring and fall semesters of 2016 passed the course. This appears to be a poor result, though still somewhat consistent with passing rates from other colleges and universities throughout the country. The mathematics department is currently investigating alternative pedagogic methods and procedures for these courses, as well as creating a liberal arts mathematics course that would be a reasonable alternative to Math 140 (satisfying core requirements) for liberal arts, non-STEM students. Ultimately, STEM students would be routed to Math 140, whereas non-STEM students would be encouraged to take Math 145 (Intro Statistics) or take this to-be-created new liberal arts mathematics course.*

Student Learning Outcome 2:

Effectively understand and demonstrate competence and proficiency with analytic geometry, algebraic manipulation of formulas and equations, rates of change and applications of the derivative and the integral; effectively be able to write proofs in Math 317.

NMHU Traits Specifically Linked to Student Learning Outcome 2

- Critical and Analytic Thinking Skills
- Algebraic Competence

First Means of Assessment for Outcome 2:

Math 211: Calculus 1 Students' ability to successfully demonstrate proficiency with the topics and concepts in this course will be measured by an achievement of a passing grade.

Summary of Data

Number of Students Meeting Criterion:	37	Number of Students Not Meeting Criterion:	14
Total Number of Students Assessed:	51	Percent of Students Meeting Criterion:	72.5%

Second Means of Assessment for Outcome 2:

Math 252: Calculus 2. Students' ability to successfully demonstrate proficiency with the topics and concepts in this course will be measured by the achievement of a passing grade.

Summary of Data:

Number of Students Meeting Criterion:	18	Number of Students Not Meeting Criterion:	5
Total Number of Students Assessed:	23	Percent of Students Meeting Criterion:	78.3%

Third Means of Assessment for Outcome 2:

Math 317: Discrete Mathematics. Students' ability to successfully demonstrate proficiency with the topics and concepts in this course will be measured by the achievement of a passing grade.

Summary of Data:

Number of Students Meeting Criterion:	7	Number of Students Not Meeting Criterion:	3
Total Number of Students Assessed:	10	Percent of Students Meeting Criterion:	70.0%

Interpretation of Results for Outcome 2:

Mathematics and STEM students are doing well with the material in these courses. There is evidence of evolved mathematical maturity insofar as effectively communicating solutions to problems and constructing logical arguments in writing proofs for Math 317.

Student Learning Outcome 3:

Effectively process more abstract and theoretical mathematical ideas and concepts, and effectively construct and write mathematical proofs associated with these concepts.

NMHU Traits Specifically Linked to Student Learning Outcome 3

- Mastery and Interpretation of Abstract Analytic Mathematical Concepts
- Mastery of Content Knowledge and Skills
- Critical and Reflective Thinking Skills

First Means of Assessment for Outcome 3:

Math 425: Introduction to Real Analysis: Students ability to construct and transcribe meaningful and logically correct mathematical proofs, as well as processing abstract theoretical concepts and ideas will be measured by the achievement of a passing grade.

Summary of Data

Number of Students Meeting Criterion:	2	Number of Students Not Meeting Criterion:	1
Total Number of Students Assessed:	3	Percent of Students Meeting Criterion:	66.7%

Second Means of Assessment for Outcome 3:

Math 421: Applied Abstract Algebra: Similar to Math 425, students are asked to construct mathematical proofs in relation to concepts involving abstract algebraic structures. The student's ability to demonstrate mastery of proof-writing and abstract interpretive skills will be measured by the achievement of a passing grade.

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:	0%

Interpretation of Results for Outcome 3:

Math 425 and Math 421 will be the designated courses to assess proficiency and competence for mathematics majors. In Math 425, despite low enrollment, results were mixed. One student was quite adept and talented, another proved capable, but not overly skilled with constructing proofs and digesting the more abstract material and the third student could not complete the course. This breakdown is rather typical for this particular course. Math 421 was not offered in the spring or fall semesters of 2016.