

Mathematics Program

School of Arts & Science, University of Alaska Southeast

2017-18 Annual Report on Assessment of Program Learning Outcomes

Jill Dumesnil, Assessment Coordinator

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Format: This report adheres to the “Preferred Format” posted 3/1/2018 on the Provost’s website instead of following the posted Mathematics Assessment Plan.

1. Program Overview

The Bachelor of Science in Mathematics provides a solid foundation in mathematics. In addition to taking the core and interdisciplinary courses, students will also take part in a seminar dedicated to undergraduate research during their last two years. After obtaining the degree, students have opportunities in secondary education, graduate studies and direct entry into the job market. Each student is advised by faculty to achieve a specific program tailored for the student’s goals.

2. Program Learning Outcomes (PLOs)

The following program learning outcomes have been identified by the Mathematics Program faculty as being relevant to measuring the potential success of UAS mathematics Bachelor of Science graduates in the workforce or in academics.

Outcome 1: Competency in Core Subject Content

1A. Graduates will demonstrate skills in basic quantitative and analytic problem solving and competency in basic undergraduate mathematics coursework.

1B. Graduates will demonstrate knowledge of foundational theoretical concepts essential to the study of mathematics.

1C. Graduates will demonstrate an ability to extend and generalize foundational concepts and critically analyze and solve abstract problems in mathematics.

Outcome 2: Skills in Analysis, Application, and Technology Utilization

2A. Graduates will demonstrate the ability to use technology as an aid to understanding and solving mathematical problems.

2B. Graduates will demonstrate the ability to apply mathematical knowledge in new settings and situations.

2C. Graduates will demonstrate the ability to critically analyze and solve a wide variety of problems using theoretical or technological tools.

Outcome 3: Communication Skills

3A. Graduates will demonstrate the ability to read and comprehend mathematical ideas.

3B. Graduates will demonstrate the ability to communicate mathematical ideas in writing.

3C. Graduates will demonstrate the ability to communicate mathematical ideas verbally.

Outcome 4: Professionalism and Independence

4A. Graduates will produce a resume highlighting marketable mathematical skills and knowledge.

4B. Graduates will demonstrate confidence in communicating mathematical ideas verbally and in writing.

4C. Graduates will demonstrate the ability to independently pursue investigations in the mathematical sciences.

3. Data Collection Method(s)

We assessed each of our graduates on these outcomes by considering the Student Individual Record file (SIR file) for each. The contents of the SIR file are outlined below:

1. Resume
2. Degree audit
3. Final transcript
4. Final capstone seminar paper
5. Summary scorecard for the final capstone presentation
6. First seminar paper and presentation scorecard
7. Exit Survey
8. Proficiency matrix for PLO competency
9. Permanent contact information
10. Post-graduate surveys, if applicable

The permanent Juneau faculty members meet each spring (in early May) to review and evaluate the SIR file for each graduating mathematics major. There are three categories of assessment possible with a high and low in each category. The lowest category is “Does Not Meet Expectations” with a possible numerical score of 1 or 2. The second category is “Meets Expectations” with possible scores of 3 or 4. The last category is “Exceeds Expectations” with possible scores of 5 or 6.

4. Data from 2017-2018 Academic Year

The average score for the AY 18 graduates on each outcome is given in the table below along with the cumulative average score from AY 17 when the program began this assessment scheme.

Outcome	AY18 Average Score	Cumulative Average Score
1A	4.75	4.875
1B	4.00	4.375
1C	3.50	3.625
2A	3.50	3.750
2B	3.25	3.625
2C	3.50	3.625
3A	4.25	4.625
3B	3.50	4.000
3C	3.75	3.875
4A	2.50	2.125
4B	4.50	4.125
4C	4.00	4.000

5. Evaluation of Data

On average, our students are meeting program expectations with the exception of outcome 4A. Consequently, we have added instruction on resume writing and job searches to our Junior/Senior Seminar course. We've also added the course requirement that each student turn in a resume highlighting marketable mathematical skills and knowledge. Since our majors are required to take the one-credit seminar four times (twice as junior seminar and twice as senior seminar), we expect that over time this outcome will see increased attainment.

6. Program Changes

In AY18, the mathematics major was also revised slightly to allow more student choice in the hopes of making the major more attractive to students without sacrificing quality. The major was deliberately repackaged to increase flexibility in electives that students may take. The hope is to appeal to different interests: traditional, secondary education, and interdisciplinary.

As mentioned previously, we have added instruction on resume writing and job searches to our Junior/Senior Seminar course. In addition, students are now required to develop and submit a resume highlighting their marketable mathematical skills and knowledge.

In addition, STAT 200 will be moved from a degree requirement to the required GER for mathematics majors. This will allow for a more accurate profile of faculty teaching in the degree program. While there are tenured mathematics faculty in Sitka and Ketchikan, as well as a variety of adjuncts associated with those campuses, only the five tenured faculty members in Juneau with doctorates in mathematics actually teach in the degree program. Roughly half of the Juneau mathematics faculty workloads (2.5 fulltime faculty) are focused on the Bachelor of Science degree in mathematics. The remainder of the workloads are focused on remedial and service courses.