

DEPARTMENT OF MATHEMATICS AND STATISTICS  
B.S. AND B.A. DEGREE ASSESSMENT  
2011-2012

In the 2010-2011 Program Review, the Department of Mathematics and Statistics was asked to provide different outcomes assessment for the undergraduate degrees, BA and BS. This review also suggested eliminating the B.A. altogether. The position of DMS is that the availability of both a B.A. in Mathematics and a B.S. in Mathematics is crucial to students interested in certain double majors even though the mathematics requirements for these two degrees is exactly the same. As of the date of this report, the status of the B.A. in Mathematics is unclear.

In Fall 2012, DMS needs to review the Outcomes Assessment Plan for our undergraduate program and address three items in particular: (a) the change in the degree to include two separate tracks (b) the findings of the 2010-2011 Program Review and (c) the status of the B.A. in Mathematics.

In this round, the most recent plan will be followed.

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**Objective:** Our curriculum will meet national standards.

**Procedure:** Comparison of UAF program to University of Washington, University of Wyoming, and University of North Dakota.

**Implementation:** Every 3 years, the math assessment committee will compare the curriculum to that of the three specified institutions, and will include their findings and recommendations in its annual assessment report.

**Status:** This will occur next year if it continues to be a part of the revised assessment plan.

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**Objective:** Our students will attain mastery of core mathematical concepts comparable to those at other institutions.

**Procedure:** All majors will take the ETS Major Fields Test in Mathematics.

**Implementation:** Every spring, the instructor of Math 490, a required course for math majors, will require all students to take the Major Fields Test in Mathematics. The assessment committee will summarize results in its annual report.

**Status:** All twelve students enrolled in MATH 490 O Senior Seminar took the ETS Field Test in Mathematics this Spring 2012. For reasons that are unclear, ETS returned only 11 scores. This error was noticed only recently and has not been resolved. The eleven returned scores, in decreasing order, are: 200, 193, 190, 178, 178, 175, 169, 166, 166, 164, 152. Note that the scale range for the score on this test is 120 to 200. From the Comparative Data Guide at the ETS website which uses scores only from senior-level students taking the most recent test

(<http://www.ets.org/s/mft/pdf/2011/mathematics4amf.pdf>) we find that:

- one student earned a perfect score which places it in the top 4%
- 3 of 11 earned scores in the top 7%
- 7 of 11 earned scores in the top 25%
- 10 of 11 earned scores in the top third

Furthermore, when the average scores of these 11 students are split by topic – Calculus, Algebra, Routine, Nonroutine, Applied – the students scored in the top 90%, 94%, 98%, 98%, and 97% respectively.

These scores indicate that our students perform very well compared to math majors at other institutions.

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**Objective:** Our students will have opportunities to develop the necessary skills to achieve their career goals in mathematics.

**Procedure:** A) Exit survey; B) Alumni survey

**Implementation:** A) Every spring, the instructor of Math 490, a required course for all math majors, will give all students an exit survey at the end of the course. The assessment committee will summarize results in its annual report.

B) Every 3 years, alumni surveys will be sent to all students who graduated with a degree in mathematics 2,3, and 4 years prior. The assessment committee will summarize results in its annual report.

**Status:** Exit Interview Data

- Number of students: 12
- Degree Type: 8 B.S.; 3 B.A.; 1 no answer; 5 double majors; 2 double degrees  
The list of second majors is: Biology, Computer Science (2), Electrical Engineering, Physics (2), Spanish.
- Post-graduation Plans  
Seven students were already accepted in graduate school or had employment. The graduate programs included a master's program in mathematics (2), a PhD program in computational social science, teacher certification in secondary education, veterinary school. Two students would immediately begin (or continue) jobs. One would continue in information technology and one would be employed as a fisherman.

- Advising: Five students identified an advisor. (Note all 5 students had different advisors.) Five students had no advisor. Two students described “sort of” advisors.
- Most beneficial topics: 13 different courses were mentioned here covering essentially all the undergraduate curriculum. No course was listed by more than two students.
- Least beneficial topics: 8 different courses were mentioned. Five students viewed Real Analysis as least beneficial. The remaining 7 courses were mentioned by no more than two students.
- Additional Topics: No courses were mentioned here that we do not already offer. It’s not clear that the frequency of electives can realistically be changed.

- Confidence in their preparation in each area

topic	strongly agree	agree	neutral	disagree	strongly disagree	not applicable
Calculus	4	5	1			2
Proofs	3	5	2	1		1
Abstract Algebra	2	4	2	2	1	1
Linear Algebra	3	3	4			2
Real Analysis		4	2	3	3	

- Satisfaction with each aspect of the math program.

topic	strongly agree	agree	neutral	disagree	strongly disagree	not applicable
Advising	1	6	2	1	1	1
Elective Availability	2	5	3	2		
Scheduling	1	7	2	1	1	
Instructional Quality	2	4	6			

**Objective:** Students will gain a broad background in liberal arts, fine arts, science, and ethics.

**Procedure:** University core requirements fulfilled

**Implementation:** Checked automatically by graduation office. These classes are separately assessed at the University level.

**Status:** Checked by the Graduation Office.

**Objective:** We will monitor the effectiveness and implementation of our program requirements.

**Procedure:** Transcript check of recent graduates

**Implementation:** Every spring the department chair will review transcripts of graduating majors and communicate any problems or surprises to the assessment committee.

**Status:** The Chair of the Department found no problems. He observed that our majors generally performed well academically and have overall and major GPA's of 3.0 or better.