Student Learning Outcomes Assessment Summary—Mathematics MS

Department of Mathematics and Statistics

Fall 2012 – Spring 2014

The following summary assessment of the MS, MAT, and PhD in Mathematics covers the time period from Fall 2012–Spring 2014, and was developed in conjunction with the SLOA Plan for M.S., M.A.T., and Ph.D. dated February 20, 2010.

During the time covered in this assessment, three students graduated with an M.S. in Mathematics (one in August 2012, one in May 2013, and one in August 2013), and three more are expected to finish in Spring 2014.

For Fall 2012, 10 students applied to the MS; of these, 5 were admitted and 3 attended. One of these students left after the first year, one is graduating in Spring 2014, and one is expected to finish by December 2014.

In Fall 2013, 11 students applied to the MS in Math. Of these, 8 were admitted, 5 attended, and one postponed after acceptance.

Two additional students applied in Spring 2014; one was withdrew the application after admittance and one was not admitted.

Outcome 1

From the SLOA Plan:

Intended outcomes	Assessment criteria and procedures	Implementation
Our curriculum will meet national standards	Comparison of UAF program to University of Idaho, University of Wyoming, and University of North Dakota	Every three years, the Graduate Mathematics Committee will compare our program to the three specified institutions and report their findings in its annual assessment report.

Structure of the MS program

University	Number of credits	exams	required core courses
UAF	30 credits minimum; all four core courses	three 1.5 hour written exams covering 3 subjects and at least two core courses	Algebra I, Real Analysis, Complex Analysis, Topology
Idaho	30 credits; at least 18 credits (6 courses) in mathematics at the 500 level	4.5-hour written examination covering six courses, 5 at graduate level	at least six 500-level courses in mathematics
Wyoming	30 hours of formal course work at the 5000 level or above; 6 core courses	Exam in multivariate calculus and linear algebra at the level of upper- division undergraduate courses.	Core courses: Real Variables I, Complex Variables I, Methods of Applied Mathematics I, Computational Methods I, Advanced Linear Algebra, Graduate Abstract Algebra
North Dakota	30 (thesis) or 32 (non-thesis) credits; Two full graduate sequences of the five available	no exam	Core sequences: Analysis; Applied Mathematics; Algebra; Topology; Probability and Statistics

Departmental Demographics

University	number of FT faculty	number of students	PhD?
UAF	10 TT, 2 lecturers (excluding statistics)	10 graduate students	yes
Idaho	14 TT faculty, plus an associate dean and 2 research associate professors; one instructor; one director of math lab	11 MS students and 5 PhD students	yes
Wyoming	25 TT, 7 lecturers	27 graduate students and 3 post-docs	yes
North Dakota	18 TT faculty, 8 lecturers (3 PT)	10 graduate TAs	no

Our MS is in line with those offered by the comparator institutions. Our comprehensive exams are harder than Wyoming and North Dakota, but similar in aggregate to Idaho. We have fewer choices in the required core courses, but we also don't require as many core courses to be taken; we require 4, while Idaho and Wyoming require 6. Everyone requires 30 credits and graduate courses are 3 credits.

We have fewer faculty than any of the comparator institutions and a similar number of masters students as Idaho and North Dakota; it is not apparent how many of Wyoming's 27 graduate students are masters students.

Outcome 2

Intended outcomes	Assessment criteria and procedures	Implementation
Our students will master core mathematical concepts	All students are required to pass four core courses and pass a collection of exams (which depend on degree areas) in core areas	Every spring, comprehensive exams will be given, graded, and discussed by the math faculty. A summary of the results will be prepared by the Graduate Committee and included in its annual assessment report.

Graduate core courses in Real Analysis, Complex Analysis, Algebra and Topology were all offered on the usual schedule.

MS comprehensive exams were given in June 2011, May 2012, May 2013, October 2013, and March 2014.

In June 2011, two students took exams for the first time; topics offered were Algebra, Topology, Numerical Linear Algebra, Complex Analysis and Mathematical Physics. One student passed all three exams, and one student passed two of the three; that student retook and passed one exam in May 2013.

In May 2012, one student took and passed the comprehensive exams; topics offered were Real Analysis, Complex Analysis, and Optimization.

In May 2013, four students took comprehensive exams; topics offered were Topology, Algebra, Graph theory, Numerical PDEs, Complex Analysis, and Numerical Linear Algebra. Two students passed all three exams, one student passed two of the three and retook and passed the third in October 2013. The final student failed all three exams in May 2013; the student retook and passed all three exams in March 2014.

Outcome 3

Intended outcomes	Assessment criteria and procedures	Implementation
Our students will have opportunities to develop the skills necessary to achieve their career goals in mathematics	alumni survey	Every three years, alumni surveys will be sent to all students who earned a graduate degree in mathematics 2, 3 or 4 years prior. The Graduate Committee will summarize responses in its annual report.

No alumni surveys were available.

Of the three students who graduated during the time of this report, one is working on a Ph.D. in mathematics at UW-Madison, one will be adjuncting for DMS in the fall, and one is pursuing a Ph.D. in geophysics at UAF.