

## Annual Report for Academic Year 2008-2009

### **Department of Mathematics and Statistics Student Learning Outcomes Assessment for MS, MAT, PhD Degrees in Mathematics**

INTENDED OUTCOMES OBJECTIVES	ASSESSMENT CRITERIA	IMPLEMENTATION PROCEDURES (what, when, who)
1) Our curriculum will be comparable to national standards	Compare our program to University of Idaho, University of Wyoming, and University of North Dakota.	Every three years, the members of the Graduate Committee from mathematics will compare our program to the three specified institutions and give a report on their findings to the assessment committee to include in the annual report.

#### **Status:**

The University of Idaho program has 16 math faculty, and around 20 graduate students. The M.S. program requires students take a similar number of courses to UAF, but has comprehensive examinations on 6 topics, and does not require a project or thesis. Course offerings are slightly more extensive than UAF's. As at UAF, there appear to be no true Ph.D. level courses. Ph.D. student must pass comprehensive exams in 3 topics, with specific books indicated for study (similar to our new Ph.D. requirements). The major difference from UAF is that UI has several courses designed specifically for the MAT program, as well as 3 faculty members in Mathematics Education.

The University of Wyoming has around 21 faculty members, and 30 graduate students (25 of whom are supported through TA-ships!). Graduate course offerings are approximately double UAF's. The MS program is similar to UAF's, requiring both a qualifying exam and a thesis/project. The Ph.D. program requires an additional qualifying exam, and specific coursework beyond what we have sufficient staff to offer at UAF.

The University of North Dakota has 17 faculty, and around 10-12 graduate students. It offers only M.S. and M.Ed. degrees, based entirely on course work, without qualifying exams or theses/projects. Although the UND catalog lists more courses than UAF offers, it appears that actual offerings are quite similar (3 or so graduate courses per semester).

UAF has had only 10 full-time math faculty members to contribute to the graduate math program. Given our smaller faculty size, we have done a good job of maintaining quality programs, but we are probably a bit over-extended. Of the

comparison schools, only Wyoming has courses approaching a Ph.D. level, and it has twice the staffing and many more TA-ships. We are perhaps most similar to Idaho, though with many fewer graduate students. Our program is clearly within the range of these schools', and our requirement for an M.S. project is a strength over some of their programs. Our M.A.T. remains underdeveloped, but changes would require additional resources. Our new Ph.D. program rules represent a step forward, but some faculty have continuing doubts that we are large enough to offer a strong program. We would benefit greatly from having a larger number of graduate students, but need additional TA-ships for that to be possible.

2) Our students will master a core of mathematical concepts.	All students are required to take and pass four core courses. In order to graduate, all students must take and pass a collection of exams on core subjects.	Every spring, comprehensive exams will be given, graded, and discussed by the majority of the math faculty. A summary of the results will be prepared by the members of the Graduate Committee from mathematics to be included in the yearly assessment report.
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Of the past 2 entering classes of 2 Masters students each, we had 3 students drop out of the program during 2008-09. One of these was making progress toward completion of the core, but left after two semesters due to family reasons (pregnancy and spouse's job prospects). A second, whose academic performance was poor all along, dropped out after her TA-ship was terminated due to a low GPA at the end of the third semester. A third also experienced academic difficulties, and decided to leave after two semesters. Both of the students who performed poorly were given adequate advising, and encouraged to take undergraduate courses to increase their chances of success. While it is unfortunate neither overcame their problems, it was better for them to drop out than to linger with little chance of long-term success. The department upheld appropriate standards for the MS program.

With only 3 students needing to take comprehensive exams this year, they have been rescheduled to be in August, at the unanimous request of the students. Thus there are no comprehensive exam results to report yet for this year.

3) Our students will have the opportunity to develop the skills necessary to achieve their career goals in mathematics.	alumni survey	Every May, alumni surveys will be sent to all students who graduated with a degree in mathematics two years prior. The returned surveys will be summarized by the assessment committee in the annual report the following spring.
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**Status:** Surveys were sent out to all those earning MS degrees in 2004-05 and 2005-06.

However, only 1 form was returned. This student is currently unemployed, though with the recent economic downturn it is not clear if this represent a failure of the program. (Even math Ph.D.s are facing difficulties in job searches.) He was generally positive about his experience at UAF, with the exception of one course. As instructors change yearly, it is not clear what that means, and he gave no further information. He did express a wish for more career guidance, while admitting this might be due to his current unemployment. However, any

career guidance that occurs now is informal and dependent on an advisor's inclinations, so this is an issue the department should consider.

We had 4 students complete the M.S. this year. One entered a Ph.D. program in another department at UAF, one is working as a grant-funded researcher in the department, one is teaching at TVC, and one has accepted a teaching position at a community college on the east coast. 3 students are continuing in the program next year.

One student is currently facing a Ph.D. defense, and will either receive a Ph.D or leave the program by the end of this summer. The second current Ph.D student expects to complete his program in the fall, but has not yet attempted his qualifying exams.

There are no current M.A.T students.