1. Assessment information collected

ETS Major Field Test

In order to assess our students’ mastery of core curriculum, the department administers a standardized test, the ETS Major Fields Test, to seniors enrolled in our capstone courses, the Senior Seminar and the Statistics Consulting Seminar.

In the two-year period under review 13 students enrolled in these capstone classes took the Major Fields Test in Mathematics. Both years saw similar results on the exam and we summarize here the pooled numbers.

The results were on par with nationwide performance, but lower than previous years’ scores. Two of our students obtained the highest possible score on the exam and placed in the top 5% of students nationwide. Another four students placed in the top 26% of examinees and four of the remaining seven students placed in the top 60%. Overall, our department ranked in the 86th percentile of institutions taking this exam.

In addition to overall institution scores, the exam reports a breakdown of performance in five categories. In Algebra, Routine Problems, and Non-Routine Problems, our program scored in the top 20% or better. Our Calculus score was in the top 32%, but Applied Problems (historically, our weakest category) saw us in the bottom 10% of reporting institutions.

1 Scoring in the top n% means that we did better than (100-n)% of tracked US institutions. So a score in the top 5% means that we did better than 95% of reporting institutions.

Exit Surveys

In order to monitor student experience in the program, and to gather data on post-graduation plans, students in the capstone Senior Seminar and Statistics Consulting Seminar are administered an Exit Survey.
A total of eleven surveys were gathered during the current two-year reporting cycle. This represents the full complement of students taking Senior Seminar during this time period but a failure to gather surveys from the Statistics Consulting Seminar.

The overall picture presented by the surveys is one of general satisfaction. Students were asked the extent to which they felt the program prepared them in five core topic areas: Calculus, Proofs, Abstract Algebra, Linear Algebra, and Real Analysis. All students agreed or strongly agreed that they felt well prepared in these topics, with the exceptions of a few appropriate N/As, as well as one student reporting dissatisfaction with Calculus (Calc III specifically) and one dissatisfaction reported with Real Analysis. As in past years, nearly all students strongly agreed that they were well prepared in Calculus and in Proofs.

Students were asked about their satisfaction in four areas: advising, elective offerings, course scheduling, and instructional quality. All students reported agreeing or strongly agreeing that they are satisfied with advising and instructor quality. There was mildly weaker satisfaction with elective offerings and course scheduling with one disagree for elective offerings and three neutral responses for satisfaction with course scheduling.

The survey asks students to list classes they found beneficial, those that were not, and topics they felt were missing from their experience.

**Most Beneficial:** Three or more students listed Real Analysis, Proofs, and Calculus, and a broad variety of courses were listed by one or two students.

**Least Beneficial:** Three students reported dissatisfaction with the Senior Seminar; these reflect students who all took the course in a single year. No other commonality was noted, other than three students who reported “none”.

**Missing Topics:** Graph Theory appeared twice, with no other topic mentioned more than once.

**Post Graduation Follow-up**

An attempt was made to contact past graduates from years 2016 and 2017 to determine their current career activities. Faculty members were consulted as needed as part of these efforts. Of the 13 students who graduated in the period Summer 2016 through Fall 2017, 9 students responded to our emails. This rate was comparable to previous years.

Six of the nine replies were from students who were enrolled in masters degrees. Two of these students were attending schools internationally. One student was completing her degree by distance while working as an accounting supervisor.
One student was working as an engineer for a defense arm of Boeing.

One student had applied to the Peace Corps to teach math or English.

One student had decided to return to school to gain training as a dental hygienist.

In summary, 7 of 9 contacted students are working in math/statistics related fields and all 9 describe themselves as employed or actively in graduate school.

**Transcript Review**

Transcripts are reviewed each assessment cycle to determine if students graduate in a timely fashion and as an opportunity to holistically observe the degree path.

Twelve transcripts were analyzed, consisting of all students who graduated during the period summer 2016 through Spring 2018.

Of these, most students completed a degree in a timely fashion. Five students completed a degree in four years, many of these with more than one major. Three students completed in five years, with two of these completing multiple degrees or majors.

Of the remaining four students, one could have graduated in 5 years but did not apply to graduate until after 7 years. Another took eight years to graduate, but only two of these years were spent as a math major. A third student took six years to graduate after having spent 5 years previously at the University of Hawaii. The final student graduated in six years, with four of these spent as a math major.

Five of the twelve students completed multiple degrees or majors.

In all cases, the course ordering and progression towards the degree seemed reasonable. The selection of elective classes was typical, and we saw no anomalies.

The undergraduate degree can be earned either as a BS or a BA and has two concentrations: mathematics or statistics. Half the students graduating earned a degree with a statistics concentration, and unusually high number compared with past years. Two of the twelve students earned a BA instead of a BS degree. In one case, this facilitated a double major with psychology, and in the other case the student minored in finance and emphasized the humanities in her course choices.

All students met the requirements of our Communications Plan by successfully completing their four required communications intensive courses.

Statistics-option undergraduate students are required to take one of Real Analysis or Abstract Algebra for their degree, with Real Analysis being preferable. In the last SLOA
summary, we had noted that none of the students had taken Real Analysis, which is not desired. In this summary we find four of the six students took Real Analysis. One student attempted and failed Real Analysis and then took Abstract Algebra the following semester in order to complete her degree on time. The remaining student only attempted Abstract Algebra.

2. Conclusions drawn from the information summarized above

Strong ETS test scores indicate that students who complete an undergraduate major in mathematics at UAF successfully learn the core of baccalaureate mathematics to an extent that meets or exceeds national standards.

Students are reporting a high level of satisfaction with their training and experience at UAF. As a small department, we are aware that we have limited capacity to offer electives. While it is true that some surveys mentioned a desire to have taken an unavailable elective, students are by-and-large satisfied with our course offerings and scheduling.

The graduates we were able to contact are generally obtaining work or obtaining follow-up training in fields associated with their undergraduate education.

Students are completing their degrees in a timely fashion, with most delays caused by students taking multiple degrees or majors. Some students are taking advantage of the availability of the BA in math to obtain degrees with a humanities focus.

3. Curricular changes resulting from conclusions drawn above

No specific curricular changes were identified.

Although we have made improvements to our gathering of the student surveys, and obtained a complete set from the Senior Seminar in the last two years, we need better coordination with statistics faculty to obtain surveys from the statistics concentration students. This will be brought to the attention of the department as a whole; adding a statistics faculty member to the undergraduate SLOA committee could be beneficial.

4. Identify the faculty members involved in reaching the conclusions drawn above and agreeing upon the curricular changes resulting
The conclusions and proposals are due to David Maxwell, John Gimbel, and Leah Berman. Implementation of these proposed changes will require departmental consultation and approval.

5. Has your SLOA plan been updated to include assessment of the program’s Communication Plan, as required by Faculty Senate motion? (required for baccalaureate programs only)

Yes.