

October 21, 2019

TO: Karen Carey, Provost
Thomas Thornton, Arts and Sciences Dean

CC: Andrzej Piotrowski, Natural Sciences Chair

FROM: Brian Blitz, Professor of Mathematics and Program Coordinator *Brian Blitz*

RE: Expedited Program Review: Mathematics B.S. degree

This document was drafted and endorsed by the UAS Juneau mathematics faculty.

The UAS mathematics BS degree was established in 2004 because of a request by Chancellor Pugh. The intention was to better serve the small population of math degree seekers by offering a few more courses so that students would have better success in obtaining a teaching certificate, pursuing further studies in engineering or graduate school, or entering the job market.

From the outset the math faculty knew this would be a low enrolled degree as was its predecessor the BLA degree with mathematics emphasis. With this in mind, we set up the degree so that most upper division math courses are offered every other year. This ensures each faculty member would typically get one or two upper division math classes to teach each year, while also keeping each faculty member's student credit hours relatively high.

It is also worth noting that the Learning Center is better staffed with a math degree on campus and several Natural Sciences students have strengthened their qualifications by taking advantage of the additional courses available. Finally, the math degree is associated with entities like Pi Mu Epsilon (a nationwide mathematics honors society), the Intercollegiate Biomathematics Alliance and the Mathematical Association of America's William Lowell Putnam Mathematical Competition. The three issues are addressed below as requested.

Completion rates of 20%:

Consider the hypothetical situation of 40 students in a program. If the program gets 10 new students per year and 10 students graduate per year, then the number of students in the program is always 40. By your calculation the "completion rate" would be 25% (10/40). However, in this hypothetical situation every student graduates in four years. In light of this, a "completion rate" of 20% for a four year degree seems quite respectable.

In the past five years UAS has been admitting students (at least 11 of the 33) into the mathematics BS degree who have not completed MATH 151 with a C or better. This does not comply with the UAS academic catalog and these students typically do not know what it means to be a math major so they rarely finish (actually they don't start). Excluding these students our "completion rate" would be even higher than 20%.

Small degree attainment average over the past five years (3):

A BS degree in math is not easy to obtain and very few students have the willingness, tenacity and capacity to complete the degree. From 2015 to 2019, UAS graduated an average of 137 students with bachelor degrees, so approximately 2.19% of the graduates are math majors. According to the National Center for Education Statistics, the percentage of mathematics majors relative to all other majors in AY16 was 1.18%. This is another positive indicator for the quality of the UAS math degree. However, the quality of a program should be judged by the success of its graduates, so attached is a document that lists the known placements/achievements of the UAS mathematics BS graduates.

Seven tenured faculty and one adjunct across UAS with an average head count of 8.6 on the Juneau campus. Please address how this is viable from a budget perspective:

The adjunct is a high school teacher that we did not want to teach STAT 200, but because dual enrollment is gaining traction we were forced to let this happen. Two of the faculty members listed are the Sitka and Ketchikan math faculty who only teach lower division courses which includes STAT 200. By workload we have 5 mathematics faculty members teaching in the mathematics BS program. However, approximately 1.5 faculty FTE (by workload) is dedicated to the mathematics BS degree. The other 3.5 faculty FTE is dedicated to service and/or GER courses. By this measure, the mathematics degree at UAS seems extraordinarily cost effective. Finally, based on the Institutional Effectiveness website the average head count for the past five years of all MATH and STAT classes at UAS is 15.43 whereas the average head count for all classes at UAS in the same time period is 12.62.