

AY20 Expedited Program Review – Optional Program Response to the Dean’s Findings Form

Date: February 28, 2020

To: John Stalvey, Interim Provost

From: Khrys Duddleston, Professor and Director of Biological Sciences

Cc: John Petraitis, Interim Dean, College of Arts and Sciences
Jonathan Stecyk, Associate Professor of Biological Sciences

Re: AY20 Expedited Program Review: Optional Program Response to Interim Dean’s Recommendation

Program/s in this review: MS Biological Sciences

Program response to Dean’s findings

We thank the Interim Dean for his review of the MS in Biological Sciences Degree. We agree that our program “contributes to CAS’s and UAA’s mission, and is **unusually important in serving UAA’s research mission**, by connecting graduate students with research-active faculty in state-of-the-art facilities.” As the Interim Dean stated, **our Master’s students are deeply embedded in the Bachelor’s programs** as teaching assistants, mentors to undergraduates performing research in our labs, and as role models to undergraduates who are considering pursuing a graduate degree. He also commended program faculty “... **for doing some of the most important research in Alaska**, and **being among the leaders in helping UAA in one of its core missions: research**”. Our MS BIOS program betters Alaska and beyond by providing place-based research programs for students who are interested in pursuing jobs in health and natural resources in Alaska. Despite the above accolades, the Interim Dean recommended the MS BIOS program for revision. Here we not only rebut the recommendation by shedding light on inconsistencies in the review, we also make the argument that rather than revision, our program deserves to be enhanced.

According to the Interim Dean’s review, “...*the gap between UAA’s estimate of (a) the program’s instructional costs and (b) the program’s tuition revenue is so steep that it is more than two standard deviations larger than the average gap in CAS’s graduate programs. According to UAA’s budget calculations, the program only brings in 25% of its instructional costs, the lowest return of any of CAS’s masters or doctoral programs*”. Examination of the data and approach used to calculate graduate program efficiency revealed **serious flaws in the analysis**, resulting in an **egregious overestimation of the costs of the graduate program**.

For the analysis, the Interim Dean utilized 80% Tuition Revenue and Instructional Cost data provided by the UAA office of Institutional Research (IR) specifically for the expedited program reviews (EPRs). To achieve the percent coverage estimate reported, he divided tuition revenue (80% tuition to CAS) generated from 600-level courses by the Instructional Cost data. In preparing our response to the recommendation, we noted that the FAQ sheets provided with the EPR data define Instructional Costs as 100% of the salary of F9, A9 and other non-FR/FN faculty. To confirm if this was true we did the following:

First, we reconstituted the EPR data by accessing the Official 2020 Program Review Data Instructional Productivity tab and selecting the same filters as the Interim Dean (note: while the tuition data matched what was in the EPR-provided IR table, the instructional cost values did not match. According to IR staff, reports are updated throughout the year; however, the cost data increased between \$100,000 and \$300,000 for every fiscal year from 2014-2019, calling into question the very accuracy of the data used in all program reviews). *Second*, we compared the Instructional Cost data in the reconstituted EPR table to that in the *Course Tuition by Faculty Pay* IR tables on the UAA IR site (Filters: UAA campus, CAS college, BIOL subject, 600-699 course level). This second step confirmed that the Instructional Cost data in the EPR tables was in fact “Faculty Total Pay” from the *Course Tuition by Faculty Pay* IR tables. .

The graduate and undergraduate programs in Biological Sciences are highly integrated. Indeed, we have no faculty with teaching, research and/or service exclusive to the graduate program. Not only are there no graduate-only faculty, but the MS BIOS degree contains but three graduate-only courses (BIOL A601, A605

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and A606) in its curriculum. All other graduate courses are stacked with undergraduate courses, and the undergraduate enrollment is 2-5 times higher than graduate enrollment; thus, it is incorrect to attribute the entire cost of teaching those courses to the graduate program. In addition, tripartite faculty are expected to contribute to the mission of the University through their research as well as teaching, and all research-active faculty in Biological Sciences have both graduate and undergraduate students in their laboratories. Likewise, their grants include funding to support both graduate and undergraduate students in research. Given this, research activities (and pay for research time) are not attributable to the graduate program alone.

Given the above, “Faculty Total Pay” is inappropriate for use in this analysis because 1) it is inconsistent with the distribution of teaching, research and service in the faculty workload; 2) it fails to account for stacked undergraduate/graduate courses and; 3) there are no faculty in biological sciences who are exclusive to the graduate program. In addition, Faculty Total Pay is the entirety of what the faculty member was paid, regardless of the source of those funds. Thus, academic year salary paid from grants (i.e., buy-outs) was counted against the department, when in reality it offsets GF.

In order to more faithfully assess the instructional cost of the graduate program, Faculty Instructional Pay from general funds (GF) rather than Faculty Total Pay is the appropriate IR data to use. These data are by no means perfect. The distribution of course credits to undergraduate vs graduate instruction in stacked courses does not always align with the faculty member’s actual workload. In addition, a course credit is counted for graduate enrollment in research and thesis credits (BIOL A698 and A699), even though faculty get no workload credit. Despite these inconsistencies, Faculty Instructional Pay from GF better reflects WL credit for teaching than the alternative, and does not include pay from restricted funds. We therefore relied on this data for our reanalysis (From IR Table Course Tuition by Faculty Instructional Pay, filtered for UAA campus, CAS college, BIOL subject, 600-699 course level).

Table 1 shows the amount of tuition (rounded to the whole dollar) generated for CAS from enrollment in graduate credits (600-699 level) for academic years 2016-2019. Summers are not included because graduate credit enrollment is rare in the summer. Note the trend of increasing tuition over those four years. Table 1 also includes Instructional Pay from GF for the same four academic years. The final column in the table shows percent efficiency, calculated by dividing instructional pay by tuition generated. Here we see that efficiency increased from 60% in 2016 and 2017 to 93% in 2019. Even the lowest number of 60% is more than double the efficiency calculated by the CAS Interim Dean for the MS BIOS program.

Table 1: Graduate Program Efficiency

| Academic Year | Tuition (80%) from 600 level credit enrollment | Instructional pay from General Funds | Efficiency [(Tuition/GF)*100] |
|----------------------|---|---|--------------------------------------|
| 2016 | \$91,706 | \$146,798 | 63% |
| 2017 | \$100,522 | \$166,487 | 60% |
| 2018 | \$127,498 | \$143,968 | 87% |
| 2019 | \$151,003 | \$162,177 | 93% |

One cost that is not included in this analysis is that of Graduate Teaching Assistantships (GTAs). CAS provides GF to support GTAs each academic year, and the GTAs are instructors of record for undergraduate labs in Biological Sciences. These labs generate tuition for the college. Table 2 presents the data from Table 1, but also includes the GF provided by CAS to support GTAs as well as the tuition generated in undergraduate labs taught by GTAs. Note that when we account for both the GTA labor and the tuition generated in the labs GTAs teach, our programmatic efficiency was higher in all years.

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Table 2: Graduate program efficiency including GTA support and tuition

| Academic Year | Tuition (80%) from 600 level credit enrollment | Tuition (80%) from courses taught by GTAs | Instructional pay from General Funds | GF to support GTAs | Efficiency (tuition/GF) |
|---------------|--|---|--------------------------------------|--------------------|-------------------------|
| 2016 | \$91,706 | \$87,907 | \$146,798 | \$72,998 | 82% |
| 2017 | \$100,522 | \$100,304 | \$166,487 | \$87,598 | 79% |
| 2018 | \$127,498 | \$115,990 | \$143,968 | \$114,535 | 94% |
| 2019 | \$151,003 | \$108,849 | \$162,177 | \$114,535 | 94% |

In the review, the Interim Dean stated that “...the surplus from the undergraduate program is more than surpassed by the deficit in the MS program”. He goes on to state that “...when all costs for running all programs in Biological Sciences are combined (including costs for instruction, research time, and service), the Department operated at a deficit in 2019, requiring the allocation of state appropriations to cover the overall gap.” The implication is that the MS BIOS program is a money pit draining the department coffers, which is clearly not the case. Here the Interim Dean also makes reference to total departmental costs, analysis of which reveals an additional flaw in the approach to calculating departmental revenue. Namely, the only revenue credited to the department is tuition, despite that externally funded grants to Biological Sciences faculty generate revenue through indirect cost recovery (ICR, or “Indirects”). Indirects generated from grant activities are distributed across the University, with 22.4% going to the College and 10% going to the Department. Although indirect revenue is utilized when assessing the efficiency of the College as a whole, CAS has routinely refused to count the indirect as a *departmental* revenue stream, despite that faculty write the grants and carry out the research that generates the indirects.

Table 3: Departmental efficiency, tuition revenue only

| Fiscal Year | Faculty Pay (GF) | Tuition (80%) | Efficiency (tuition/GF) |
|-------------|------------------|---------------|-------------------------|
| 2016 | \$2,964,678 | \$2,351,610 | 79% |
| 2017 | \$2,892,007 | \$2,390,758 | 83% |
| 2018 | \$2,501,705 | \$2,474,097 | 99% |
| 2019 | \$2,502,802 | \$2,350,520 | 94% |

Table 3 presents overall departmental efficiency for Fiscal Years 2016-2019, relying only on faculty cost and tuition revenue. Here, faculty cost is Faculty Total Pay (from GF only), which is appropriate for use here as it accounts for all research, teaching and service, as well as GTA salaries. By this measure, Departmental efficiency has improved significantly since 2016. Missing from this efficiency determination is the indirect revenue stream. Table 4 presents efficiency calculations that include indirects. When the CAS proportion of indirects is included as a revenue stream, overall departmental efficiency increases by two to four percent each year. In 2018, efficiency was therefore 103%, and in AY 2019 efficiency rose from 94% to 99%. The Department uses its 10% portion of indirects to support a variety of research activities, but primarily to maintain/replace shared research equipment (e.g., regularly scheduled maintenance, repair or replacement of broken equipment, etc). As a consequence, we do not need to ask the College (or Vice Provost for Research) for these funds. When both the CAS and BIO proportion of indirects are included in the revenue stream, efficiencies increase by an additional one or two percent such that the department achieved 105% and 101% efficiency in fiscal years 2018 and 2019, respectively. Regardless of how CAS chooses to use its proportion, **indirects are revenue generated by the department and the department should get credit.**

Not shown in Table 4 is the departmental efficiency for the current fiscal year (i.e., Fall 2019 only). Based on data from the same IR tables, our departmental efficiency is currently running at 105% without accounting for indirects, 112% when accounting for CAS’s proportion, and 115% when accounting for both CAS and BIO proportions of indirects. The department worked very hard to adjust workloads and improve efficiencies for this academic year, and our efforts appear to be paying off, even in the face of overall decreases in enrollment and tuition across the College and the University.

Table 4: Departmental efficiency, tuition and indirects

| Fiscal Year | Faculty Cost (GF) | Tuition (80%) | CAS proportion of indirects (22.4%) | BIO proportion of indirects (10%) | Efficiency [(tuition + CAS indirects)/GF] | Efficiency [tuition + CAS + BIO indirects/GF] |
|-------------|-------------------|---------------|-------------------------------------|-----------------------------------|---|---|
| 2016 | \$2,964,678 | \$2,351,610 | \$76,376 | \$34,096 | 82% | 83% |
| 2017 | \$2,892,007 | \$2,390,758 | \$76,232 | \$34,032 | 85% | 86% |
| 2018 | \$2,501,705 | \$2,474,097 | \$112,261 | \$50,117 | 103% | 105% |
| 2019 | \$2,502,802 | \$2,350,520 | \$125,009 | \$55,808 | 99% | 101% |

The Interim Dean indicated that our awards per year are below the average for CAS graduate programs (5.4 vs 13.8), and that awards dropped in 2017-2019. First, a research-intensive MS degree will not have the same graduation rate as programs that are course-driven and prescriptive; thus, a comparison of graduation rates across all CAS graduate programs is “apples to oranges”. We acknowledged in our original review that we anticipated an uptick in graduation rates soon. Indeed, four Ms students graduated in summer (August 2019), making them FY2020 graduates. Including these students, we anticipate at least six MS graduates in 2020.

In his decision to REVISE, the Interim Dean stated *“Unfortunately, with its modest state appropriations, CAS likely cannot sustain the MS program in Biological Sciences in its current form.”* Unfortunately, this decision was based on **an analysis that was deeply flawed**, in particular with respect to the data used to determine the efficiency of our program. The Interim Dean also stated: *“To be sustainable in the long-run with less state appropriations, the Biological Sciences Department must revise this program.”* This statement is based not only on a flawed analysis, but by placing the department’s burden of University budget cuts solely on the shoulders of the MS program, it fails to recognize the true degree of faculty integration across all programs, as well as the interconnectedness of our graduate and undergraduate programs. The Interim Dean also stated *“UAA’s program review process gives the following examples of area for revision: 1) faculty or staff workloads and assignments, 2) curriculum, 3) program delivery, 4) student success initiatives, 5) outreach and/or partnerships with the community or industry, program promotion and marketing, and facilities”*. Regarding workload assignments, Biological Sciences does not have department-specific staff; however, tenure track faculty are teaching 30% more instructional credits this academic year compared to last, and we cut our term and adjunct faculty hires considerably. As noted in the AY20 efficiency calculations, our efforts appear to have made a difference. As noted in our original EPR submission, we are also developing a non-thesis MS option *in order to meet demand and increase tuition revenue (without concomitant salary costs)*. We have been highly responsive to the budget climate and it is unfortunate this fact was ignored in the recommendation. Another suggestion was to engage in outreach with the community. We find this ironic, considering that over the last few years these very outreach activities (e.g. UAA STEM Day, which brings 1000s of people to UAA each October to engage in STEM and promote our, and other, departments at UAA) have been systematically devalued on faculty workloads. The Interim Dean further notes that *“The program must greatly narrow (if not erase) the gap between the costs of all the Department does (namely, teaching, research and service), all that it needs (e.g., specialized staff support), and all of the revenue they generate (namely, tuition, direct expenses [we assume the Interim Dean means grant expenditures here] and indirect recovery for grants, etc.)”*. Again, the Department does not have department-specific specialized support staff. Perhaps this is in reference to support staff within the Math and Natural Sciences Hub, but these individuals support ALL programs in this hub, not just Biological Sciences. Finally, the Interim Dean indicates a need to narrow the gap by addressing all the revenue we generate, including indirect. We find this statement ironic considering that historically, the indirect we generate has not been attributed to our department as a revenue stream when determining our efficiency.

Department recommendation

Our graduate program covers much more of its costs than suggested by the Interim Dean and is completely undeserving of a “Revise” designation. Given that our program is *“...unusually important in serving UAA’s research mission...”*, that our **MS students are deeply embedded in our Bachelor’s programs**, and that our faculty are *“doing some of the most important research in Alaska”* and are

“...among the leaders in helping UAA in one of its core missions: research”, our program should be targeted for ENHANCEMENT.

The Northwest Commission on Colleges and Universities recently recommended that UAA “Expand efforts around institutional planning of graduate programs to demonstrate their academic quality and role in mission fulfillment (Standard 2.C.12).” To meet this goal, the University is in the process of hiring a new Dean of the Graduate School, which should strengthen the resources available for our students and provide the support needed to increase the retention and graduation rates. However, UAA must not only reinforce graduate studies from the top-down, but also from the bottom up. This is particularly true in light of the CAS Interim Dean’s proposal to delete several CAS graduate programs, which will diminish UAA’s already small set of advanced degree options.

Providing enhanced support to the MS in Biological Sciences program will not only allow us to recruit and retain outstanding students, but will stimulate the formation of the diverse and supportive graduate community that the NWCCU will expect to see during its next accreditation visit. Our Department has a strong reputation for recruiting diverse MS students from state and federal agencies, the military, and the Alaska Native Science and Engineering Program (ANSEP). In many cases, these agencies also financially support their affiliate students. Prior to our net loss of 10 faculty over the past 10 years (18 losses, 8 hires), we were able to maintain a sizable group of grant-supported students; however, for those students not directly funded from agencies, fellowships, or faculty grants, we are currently limited to approximately six lines of GTA support. New GTA lines will not only enable us to support Alaskans in our MS program, but also enable us to recruit more students from out of state. Recruiting top-tier students from outside Alaska brings new ideas, skills, and cultural and geographic diversity that are the lifeblood of healthy graduate cohorts and academic departments. Notably, now that UAA has joined the Western Regional Graduate Program, we have an unprecedented opportunity to recruit from outside the state. Just last semester we enrolled three such students, and expect this trend to increase as the prestige of our program grows. Increasing the number of GTA lines to at least 10 is a direct and cost effective way to increase the quality of our graduate program in the short term, retain existing faculty, and stimulate the growth of graduate education. Retaining existing faculty is critically important, as the College has already invested considerable funds in start-up packages to recruit them initially. These research-active faculty and superb facilities are well-prepared to support these new lines.

According to Chancellor Sandeen, health and applied research are a significant part of UAAs future. The Department’s research emphasis in Biomedical and Ecosystem Health Sciences is perfectly aligned with this vision. Our faculty and graduate students conduct research in one of three focus areas, 1) cellular, molecular and microbial biology, 2) physiology and physiological ecology, and 3) boreal and polar ecosystem health and ecology, and graduates from our program are successful in obtaining jobs in the high demand health and natural resources fields in the state. In addition, the National Institutes of Health have invested significant funds to enhance biomedical research capacity in Alaska, and at UAA recently in particular via creation of a microbiome support core and the renovation of a microbiome suite in the ConocoPhillips Integrated Sciences Building. Over the last five years, Biological Sciences has lost several research-active faculty in physiology and boreal and polar ecosystem health. These faculty contributed significantly to the graduate program, and their loss has decreased opportunities for graduate education in those areas. Enhancement through faculty hires will expand opportunities for acquisition of funding (and indirects) and graduate education.

The MS degree in Biological Sciences has great potential to energize CAS and UAA, capitalize on the natural resources of Alaska, and contribute to workforce development in health and natural resources fields in Anchorage and the State. Targeting it for enhancement is also the necessary choice if we are to meet the NWCCU recommendation on graduate studies.