Three-Year Check-In for New Programs

The creation and maintenance of graduate programs and certificates represents significant resource commitments by faculty and staff. Given these investments, in 2014 the Graduate Faculty Executive Committee (GFEC) established a “check-in” process for newly approved programs and certificates prior to their first formal university review (which occurs in the fifth year.) Through this “check-in,” the GFEC hopes program faculty and staff will assess the implementation of their new program and determine what mechanisms may be needed for sustained student success.

Progress reports will be included on GFEC agendas, and program representatives may be asked to attend GFEC if additional information is requested. In the interest of brevity, please keep responses to 300 words or less.

Program Name

| MS – Environmental Conservation, Environmental Observation & Informatics option |

Term of First Enrollments

| Summer 2018 |

Check-In Completed By

| Nathan Schulfer and Sarah Graves |

Date Completed

| September 29, 2021 |

Academic Quality and Student Success

1) Provide an update on any changes to the program’s curriculum and learning outcomes. Include a description of the program’s typical course modalities (face-to-face, online, asynchronous discussion, team or individual assignments) and if courses have evolved based on faculty or student feedback.

Although the program learning outcomes have not changed, we modified elements of the curriculum to improve the flow of student learning and accommodate instructor availability.

First, we altered the curriculum to offer more formal training in professional development to incorporate strong aspects of the Environmental Conservation (EC) program and to adjust for faculty retirement/availability. We moved the EnvirSt 950 seminar (Environmental Monitoring Seminar, 2 credits) to the first summer and added EnvirSt 976 (The Practice of Conservation Biology and Sustainable Development, 1 credit) to the fall. We also added two EnvirSt 978 (Environmental Conservation Tools...
Modules, 1 credit) credits to the spring that are also offered as part of the EC curriculum.

Second, multiple changes to the curriculum were made based on student feedback and evaluations to offer more relevant technical training for their professional requirements. A new EnvirSt 978 module, Remote Sensing for Conservation, was created and added as a required course in the spring to provide more application of technical learning to environmental topics. The number of fall semester elective options was expanded to more closely align with the EC program and to satisfy broad student interests. We removed EnvirSt 506 (Modeling, 3 credits, Prof. Mutlu Ozdogan) in response to student feedback and to reduce the teaching load of one of the faculty members.

Finally, we adjusted the timing of courses to accommodate instructor availability. We consolidated the EnvirSt 978 GIS modules to be offered in fall to allow us to hire one instructor; a necessary change due to a faculty retirement (Prof. Janet Silbernagel) and to allow for inclusion of a group project with a conservation organization, such as the UniverCity Year client. The in-person fall offering of EnvirSt 971 (Environmental Sensing Technologies, 3 credits, Prof. Annemarie Schneider) was moved to the spring and converted to a synchronous online course to distribute the faculty teaching load.

2) Please reflect on the diversity of your student population using the data provided by the Graduate School. What efforts have you made to recruit a diverse student population, and what inclusion efforts have you made to ensure the success of the diverse population of students in the program? What areas of opportunity exist for future recruitment of diverse populations? (See here for Institutional statement and working definition of diversity.)

The EOI program has consistency in gender diversity of applicants, admits, and new enrollments at 41-43% female, 57-59% male. This near gender parity is a strength of the EOI program and contrasts with the EC named option with 80% female and technology and computer disciplines (e.g. GIS 36% female, computer science 24% female).

The average student age is 28-30, with a maximum age of each cohort ranging from 35-53, with students having ~4 years since their last degree. These numbers reflect our interest in having cohorts that are diverse in age and professional experience.

Most enrolled EOI students are non-targeted domestic (68%), with 26% international, and 6% targeted minority (data from Grad School Explorer). We have an average enrollment of 9% of students who are AOF eligible, a number that has increased from 0% the first year to 15% in the current year (data from Data Mart). We have a total representation of 8 countries.
We recognize the opportunity to increase representation of targeted minority students. We also acknowledge differences in the composition of applicants and enrolled students where we are more successful at matriculating non-targeted domestic students, and to some degree targeted minority students (though sample sizes are small), than we are at international students.

To increase the diversity of our applicants, we have participated in graduate recruitment fairs, such as the Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) conference and the International Congress for Conservation Biology (ICCB) to meet US students interested in a STEM degree and professionals working in conservation from around the world. We have also eliminated the GRE requirement for all applicants and offer application fee coupons.

To support diverse student enrollment and student success we focus on supporting individual students through one-on-one mentoring, fostering a supportive cohort and learning environment that recognizes and values diversity, and providing as much financial support as we can through our tuition assistance program. We pay especially close attention to those who have identified as AOF eligible or are from another minority group for our tuition assistance awards and are exploring named scholarships that target minority students.

3) The GFEC is interested to learn how departments balance faculty and staff teaching loads and responsibilities between new and existing programs. Discuss how the department or program is achieving balance, and what challenges supporting multiple programs may have created for teaching, student services, advising or funding. Also of interest is information on what if any assets are shared between programs, or additional benefits that have been realized.

As highlighted in our answer to question #1, we have taken proactive steps to improve the EOI curriculum and to manage instructor workload, in particular for two key faculty members who teach in the EOI program. Of note, by building in teaching for our 131-program staff and by offering a fall elective option for EOI students, we streamlined instructional delivery between our two program options. These changes have reduced pressure on our faculty instructors, and strengthened our curriculum in a productive way that best serves our students. All approvals for staff teaching were approved by the Nelson Institute shared governance executive committee.

These changes in our EOI curriculum also have a positive impact on how we administer the EOI and EC programs and meet program learning goals. Despite each program option having its own curriculum and its own program committee, there are a number of administrative functions that we share; how we recruit students, how we share our message and brand, and how we manage our budgets are all done under the MS – Environmental Conservation umbrella program. By streamlining instruction and
creating courses where EOI students and EC students are in class together (as described in question #1), our staff has more time with students because we are in the classroom with them. Not only does this reduce pressure on faculty but it also strengthens how we prepare students to succeed on their final projects. Our team has worked hard to find the opportunities where our program options can overlap and complement each other, such as courses, field trips, and guest speakers. We also receive feedback from students, alumni, faculty, and professional partners through meetings and surveys to regularly review the program and identify new ways to innovate and strengthen our work.

4) Please describe how your program has ongoing and broad faculty commitment, including governance, to ensure its continued success. If applicable, reflections from faculty and staff can be included here or as an appendix. Also consider if implementation of this program is supporting the Department and/or School/College’s current strategic goals.

From its inception, the EOI Program has benefited from broad faculty commitment spanning three divisions and five departments. Our core group of four, and later five, faculty members worked together with program staff to develop the program goals and curriculum from 2017 onward, recruit the first cohorts, and teach all courses. Unfortunately, the initial program committee lost three faculty members in spring 2020: one retired, one resigned her role in EOI to become department chair, and one left in anticipation of her upcoming retirement.

We have worked to invite new faculty to participate both as course instructors, and as core members of our executive committee involved in all decision-making and planning. Yet, the COVID pandemic has created an extra burden on many faculty members and it has been challenging to recruit faculty to officially join the executive committee. Fortunately, we see faculty interest in supporting the program by supporting students directly, where we have worked with 13 academic and faculty advisors from multiple departments (Statistics, Geography, FW&E, Biological Systems Engineering, Civil and Environmental Engineering) as advisors for student projects during the final summer semester. This model has worked well for all three cohorts.

Currently the EOI committee consists of two faculty members (which includes the faculty chair), two student representatives, and our staff representation (which includes the program coordinator and the professional programs director). We’ve been open with our Institute’s leadership about the need to grow the committee, or perhaps to reimagine our committee structures to have one overarching program committee for the MS – Environmental Conservation program, rather than having an individual committee for each program option. We plan to use this fall semester to gage interest on campus for more people joining the EOI committee, and if by spring semester 2022 we have not found faculty and/or staff who have an interest in joining the committee we will explore the transition to a singular committee model.
Using this 3-year review as a catalyst for EOI growth and improvement in advance of our 5-year program review is helpful for us, in particular as we work to best manage faculty work load and their participation across instruction, committee obligations, and student advising in the EOI program.

**Operations and Administration**

5) Explain through a brief narrative how the program has brought in NEW and ADDITIONAL students and met projected enrollment goals (required for non-pooled programs), and how overall enrollment in your related programs has remained steady (if relevant). Provide enrollment data from the past 3 years: [See here for degrees & named options](#) and [here for capstone certificates](#). If unanticipated overlap with existing programs has resulted, discuss steps to mitigate the overlap.

*Non-pooled programs should also provide the updated budget template populated with data from the past year and current year, along with projections for the next 3-5 years. This updated budget template will also be reviewed by the Program Revenue Budget Committee.*

When we first began 131 programming at the Nelson Institute, in 2014, we worked closely with Nelson colleagues who oversee our Environment & Resources MS and Water Resources Management MS to put a system in place that would help us direct students to the MS program that best matches their academic and professional interest. This system has worked well and helped us ensure we are bringing in new and additional students to the Nelson Institute through our 131 programs. We also continue to strengthen this process for helping students find the right program for them through our website and internal Nelson coordination. Across both of our program options we have only ever had two students that were admitted to multiple MS programs at the Institute. Both were Environmental Conservation students who had also been admitted to the Environment & Resources MS program. We have no Environmental Observation & Informatics students that applied to, and were admitted to, multiple MS programs at the Institute.

Although enrollment in Environmental Observation & Informatics is slightly below our original enrollment goals, it has been steady. We are currently in our 4th cohort of students and our enrollment numbers are 11 (2018/2019), 12 (2019/2020), 8 (2020/2021) and 12 (2021/2022). Our slight drop in enrollment for 2020/2021 was because of COVID. In 2021 we had a big applicant pool which we were hoping would result in a bigger cohort, but many of these applicants applied to a unique fellowship opportunity available this year in the Environmental Observation & Informatics program, and when not selected for the fellowship they chose other funded MS opportunities. Because we manage our 131 programs under one program budget we have ample financial resources generated across our program options to ensure our
stability while generating excess revenue annually, even though we are just slightly below our original EOI enrollment goals. We will continue to work and grow student enrollment in the Environmental Observation & Informatics program option, thereby increasing the number of new and additional students at the Nelson Institute.

6) Funding Considerations

a. For traditional/pooled programs – How is the program successfully funding its students?

b. For non-pooled programs – Refer to the updated budget template in addressing if the program has sufficient enrollment for sustainability. Discuss the current market outlook compared to the original marketing study and plans to grow or change the program to become sustainable.

The EOI degree is one of two named options in the MS – Environmental Conservation program. For efficiency, we operate both program options under one budget. Our 131 programs have been fiscally sustainable and have generated excess revenue every single year they have been active, while still reinvesting a portion of our revenue (20-30% annually) into student tuition assistance. As one example, in FY21 we had a net revenue of $1,080,401 across both our program options. Of this amount we reinvested $257,479 into tuition assistance (24%) while paying all our administrative and instructional costs, our marketing and recruitment costs, and our campus and Nelson assessments while carrying over $133,196 to FY22.

In March 2021 we passed the budget audit performed by DCS and campus budget leadership. We are now working to change from our current tuition structure of the standard Grad School in-state and non-resident/international tuition rates to a tiered tuition rate of $1,000 per credit. We have submitted all necessary paperwork for this tuition change and await campus and UW System approval. A budget spreadsheet for our current and proposed tuition is attached.

We have always had sufficient enrollment across both program options to sustain ourselves financially. Yet, we still look to grow enrollment in our program options, especially in EOI, and even to expand our programming by developing new named options. One challenge we face in the EOI program option is that our data shows that many peer universities have full-funding packages available to support students in the geospatial sciences, whereas we do not have this for the EC program. Our analysis shows that by shifting to tiered tuition we will increase our revenue, allowing us to be more competitive with student tuition support.
7) If the program admits international students, describe how program processes address length of stay visa issues, online course restrictions, and needing ESL services.

We recruit heavily for international students in the EOI program option. To date in EOI we have had 11 international students from 8 countries (or 25% of total enrolled students). Because our programs are 15-months in length with a set curriculum, we do not run into issues of students outstaying their visa – all of our international students have graduated on time and either returned to their home country or successfully applied for the OPT visa extension. Our spring semester is officially designated as “blended,” where we meet in-person with students one time per week in each of their classes, all of which are required courses in the EOI curriculum. For international students these class meetings are on campus, in our newly redesigned virtual classroom in Science Hall that allows our US students to join class remotely. We designed our blended semester in consultation with ISS to ensure we meet all campus and US State Department rules for international student enrollment.

For ESL, we have worked with the ESL department to design a specific course for all our admitted international students. We offer this course in the summer and the ESL content is organized around environmental themes to support our students’ learning. We pay a per-student fee to ESL to run this course and it has been a tremendous help for our students, even those who have ESL scores above the threshold required by UW-Madison who we ask to enroll. This last summer (2021) we did not have enough international students with ESL needs to justify running the course, but as we build our international student numbers up again after COVID we intend to run our ESL course annually.

8) Are there any issues impacting the program’s long-term sustainability? If so, what support would you like to help you succeed?

The challenges we mention above and that we want to address long-term are to further reduce pressure on our core faculty instructors, to increase the size of the EOI program committee, and to strengthen the number of academic advisors willing to work with EOI students on their final MS projects. We feel we can address these goals by increasing the participation of faculty members across campus, which reduces the demand for any one person, strengthens the program by providing students with more access to diverse faculty, and ensures program continuity over the long term. Now that we are emerging from COVID we have put plans in place for how to address these challenges, all designed to help us grow, innovate, and strengthen the EOI program.

We also face challenges in EOI related to student funding, which are not quite as pronounced in the EC program option. As mentioned in question 5, our admissions data for the current 2021/2022 EOI cohort (year 4) shows that 8 students (20% of applicants) declined their EOI admissions offer because they had equal or better funding from
another university to support their education. Hence, it is clear that: a) there is a large amount of student funding available in the geospatial sciences and; b) for us to compete we may need to seek more opportunities like the recent NASA grant EOI received to work in partnership with Conservation International. This grant allowed us to fully fund two students to join the EOI program. The grant also clearly showed to us the interest in the EOI program due to the large number of applicants (year 4, 2021/2022), but also highlighted the strong competition among other programs.

In terms of direct support needed for EOI’s long term-sustainability, nothing specific comes to mind that is essential to our overall success. Within the rules governing 131 programs on campus we are doing well across both our program options. We are also responding to the challenges we have learned over the last 3 years in a productive way that always keeps student learning and outcomes as our highest priority in EOI.