

**University of Washington  
Department of Geography  
Master of Geographic Information Systems: Sustainability Management Program**

January 16, 2017

To: Dr. David Eaton, Vice-Provost and Dean, Graduate School, U of Washington  
Dr. Rebecca Aanerud, Associate Dean, Graduate School, U of Washington

From: Dr. Lucy Jarosz, Professor and Chair of Geography  
Dr. Timothy Nyerges, Professor of Geography, Director of MGIS Program  
Dr. Suzanne Davies Withers, Associate Professor, Associate Director of MGIS Program

RE: MGIS Program Response to Review Committee Report

This memorandum is in response to the report documenting the five-year review conducted in October, 2016 of the Master of Geographic Information Systems: Sustainability Management (MGIS) Program hosted within the Department of Geography. On behalf of the Department of Geography and the MGIS Program, we would like to thank Dean Eaton and Associate Dean Aanerud, plus all others involved in the review, for this opportunity to respond to the review committee's report. We are sincerely grateful for the careful and rigorous review conducted by Professor Jeffrey Hou of Landscape Architecture, UW-S, Professor Ali Modarres of Urban Studies, UW-T, and Professor Alan Shearer of the School of Landscape Architecture at the University of Texas-Austin.

The MGIS Program generally agrees with the report's observations about Program's Strengths and the Issues/Concerns that challenge the MGIS program. We are also in general agreement with the Suggestions offered for improvement as outlined in the report. In the response below, we offer clarifications and responses/actions as relevant and appropriate to each item within the three sections of the Self-Study Report: 1) Issues/Concerns, 2) Suggestions for the Program, and the 3) Suggestions for Support from the University. We end with a fourth and concluding section for the response.

## **1. Clarifications about Issues/Concerns Identified within the Review Report**

- 1.1. **Faculty sustainability and teaching.** The review insightfully draws attention to two distinct aspects of faculty sustainability issues: one internal to the MGIS program, the other external. Internal to the program is the challenge of hiring and retaining high quality instructors given competing opportunities for talented individuals. The part-time instructor who has been teaching 4 courses in the program will resign the instructor position effective June 15, 2017. The MGIS Program intends to hire at least two instructors to teach these four courses, thus providing students with exposure to more instructors.
- 1.2. **Structural barriers.** The report recognizes a disconnection between the fee-based MGIS Program and the state-based in-residence Geography Program. Since the MGIS is a fee-based program we must maintain separation between the two programs. That said, intellectual differences are not as great as one might expect. Four of the courses that are taught within the MGIS program are also taught within the in-residence program. Both the Graduate School and

Continuum College Professional and Continuing Education (PCE) encouraged this complementarity at the outset of the MGIS program.

- 1.3. **Program leadership.** At this time, Nyerges and Withers anticipate Withers becoming Director within four to five years. Nyerges and Withers continue to discuss the viability of the mission, goals, and curriculum structuring. They have concluded that replacing one or two courses is well within the purview of a stable curriculum. One way to ease the transition is for Nyerges and Withers to swap roles in the year before Nyerges retires. That date has not been set as yet, but 2020 has been mentioned.
- 1.4. **Program revenue.** The MGIS program has generated modest return on net revenue (revenue above cost about \$187,000) to the Department over its six-year history; self-sustaining programs normally breaking even in their third year. It is clear that student enrollment numbers which drive revenue are more elastic than program costs. We agree that the cohort enrollment of 25 students is still the goal. For an on-line program, MGIS has excellent program completion rates. Only one year in six has attrition been problematic. Allowing for inevitable attrition, going forward, we aim to admit 30 students so as to maintain the desired cohort size. The biggest influence on this is marketing, i.e. getting the message out to a much broader audience in a much richer way. The MGIS Program is actively working on this broadened and deepened market strategy through additional messaging channels and a remodeled website as mentioned in item 2.9. As well, MGIS will consider alternative sources of revenue.
- 1.5. **Externality cost.** The review report mentions an additional burden on department staff and faculty with regards to externality costs. However, we want others to be aware that the MGIS Program pays for two administrative staff in Geography at 12.5% FTE of their salary, as a buyout of their time. Nonetheless, this represents a net loss of staff time devoted to the in-residence program. The department does indeed suffer a limited number of faculty available to perform teaching and service in the department. It should be noted that Withers continues to provide service in the department over and above her service to the MGIS program; and Nyerges will return to additional service when the MGIS review and strategic planning are completed. The department is currently discussing this strain within the context of its own self-study for a 10-year departmental review in 2017.
- 1.6. **Financial barriers for students.** The MGIS Program has a standing goal to raise sufficient funds for supporting at least one non-traditional and/or underrepresented student in each cohort year. We have yet to achieve that goal because it costs about \$28,000 per student. The MGIS degree is on-line and fee-based, serving a different audience (i.e., professional, older students constrained to place), than a tuition-based degree. As such, it is clear that state funds and fee-based funds must be kept separate such that scholarships must be funded internally in MGIS. There are no funds available directly from Continuum College as per discussion with the review committee. Consequently, a strategy for increasing the number of completed MGIS applications that in turn can lead to increased admissions and subsequent enrollments appears to be the best strategy for enabling the MGIS Program budgeting of scholarships.
- 1.7. **On-site requirement.** The on-site requirement was established to enhance cohort face-to-face learning and distinguish this MGIS program from other programs nationwide. The overwhelming majority of students favor retaining on-site sessions. Further, the Program continues to pursue ways to increase the active learning engagement in materials for on-site

use. An option to allow those in remote locations to make the on-site optional would increase the disconnection within the cohort, reducing effectiveness in the learning experience. This is not something the Program would want to promote.

- 1.8. **Student advising.** The review report refers to many MGIS functions occurring in isolation, including advising. The graduate program advisor position is a one-half time position for which there are many tasks. The current MGIS advisor has indicated he intends to resign effective June 2017. In the future, our intention is to have the MGIS advisor position be held by a counseling professional, not involved with teaching in the program as is currently the case. We are rewriting the advising position to explicitly include professional development opportunities for the advisor. Career counseling and job referral is something that all MGIS instructors participate within from time to time; we have an open-email open-phone approach to such requests. Increasing MGIS advisor staff time on task for this activity would require increasing staff hours, which perhaps might occur if revenues can accommodate such an increase.

## 2. Responses to the “Suggestions for the Program”

- 2.1. **Develop a long-term strategic plan within the department that takes MGIS into consideration and addresses issues of integration, structural disconnections, costs and benefits.** The Department of Geography was notified in autumn 2016 by the Graduate School that a ten-year self-study process was to commence, with an on-site review to take place in 2017-2018. In self-study reviews of past decades, Department faculty members have recognized the opportunity of using a self-study as a basis for formulating a 10-year strategic plan. As the self-study is underway Department-wide, the faculty recognizes that the MGIS Program is to be considered within the self-study process that leads into a strategic planning process. As such, given the occasion of the MGIS Program review and the Department’s upcoming self-study and strategic planning process, the Department’s plan will consider the nature of the Department relationship with the MGIS program. Pursuant to this, the Memorandum of Understanding between the Continuum College and the Department is in need of review and revision.
- 2.2. **Develop a strategic plan within the program that considers future leadership succession and transition.** The MGIS Program will create a strategic plan before the end of the 2017-18 academic year. Geography faculty will have an opportunity to provide input to leadership succession and transition. With regard to instructional support, the MGIS Program can continue to reach out to other units on campus to explore connections for professional education instruction much like exist with shared faculty appointments with state-funded appointments. This sharing of human resources will connect with other suggestions the review committee has made with regard to spreading the instructional load.
- 2.3. **Identify and learn from successful and comparable programs on campus.** There are about forty professional masters programs at the UW, many of them administered as part of UW Continuum College’s Professional and Continuing Education. Many discussions with various program leaders were held at the outset of the MGIS Program. Several of those discussions have continued on an ad hoc basis when various challenging issues arise, but perhaps not enough. Although the MGIS Program is currently the only fee-based and hybrid online program offered through the Department of Geography, the early and continued discussions with other programs continues to inform what has been done and what potentially could be done in regard to instructional hiring, student support, instructional delivery, computing support

technology, etc. The review committee encourages a “best practices” approach to those discussions, and MGIS Program leadership agrees with that suggestion. However, best practices requires large numbers of observations if ‘best’ is truly to be best, and thus more needs to be done. As there are many programs on campus that share similar issues it makes sense to continue the discussions, particularly in light of the development of the strategic planning issues in suggestions 2.1 and 2.2 above that can then lead to better operational insight regarding instructional hiring, student support, instructional delivery, computer support technology, for the program. As all tasks require resources, these efforts will link with actions for items 2.1 and 2.2, wherein setting priorities will be particularly important.

- 2.4. **Engage in more active recruitment to grow the applicant pool and student enrollment.** As noted by the review committee, the MGIS Program established a goal of obtaining 75 completed applications each year from which up to 30 students can be admitted to the program and 25 enrolled. This goal has been a major motivator for the types of marketing efforts performed in the past, those underway, and what has yet to be accomplished. The Continuum College marketing efforts that have been underway are bringing ‘GIS online’ web search users to the website. We have 450+ names on the contact list. However, we are looking to broaden and deepen the effort. We are actively working on a strategy to broaden the base of contacts through a massive online open course about geodesign for sustainability management, but refined to be more of an online workshop than a course per se; one can call it a short course, rather than full course. MGIS is working on development of the materials through internal resources by using existing course materials. However, additional cost of learning materials design and production is about \$15,000 based on others experience. A second thrust in our current efforts are to rationalize the multiple types of delivery products in the form of rich color 11”x17” posters, 2-page flyers, nugget web pages (rich pages that point back to MGIS website), GIS trade magazine stories, and program profiles that involve user stories about education in action. We have had success in all of these areas in past years, particularly if the result is a reusable digital product. However, the Program has not synthesized production timing and delivery, and needs to commit more effort to make it work. One particularly advantageous product is the program profile printed in the *Sustainability: the Journal of Record* published in connection with the Association for Advancement of Sustainability in Higher Education. We are working on other such profiles, but again Staff hours are needed for this effort. The committee suggestion dealing with exploration of career fairs at national and local conferences is something that the Program has pursued. We have had more results with regional meetings rather than national meetings, and the outcomes relative to costs encourage us to put time and effort into regional meetings. These dollars are being weighed against the efforts with generating digital products that are likely to receive wider distribution.
- 2.5. **Consider tradeoffs between the hybrid model and online instruction in future program development.** Three of the nine courses in the MGIS Program contain a three-day intensive session on the UW-Seattle campus. This hybrid face-to-face and online learning experience has proven successful, particularly since the on-site sessions have now moved to group-based active learning sessions. The students very much appreciate the interaction. However, the MGIS Program recognizes that some students prefer all on-line learning. At the same time, programs that contain all online learning are also not learning-group and cohort-based. A cohort-based approach has encouraged many students to be rather vocal about the rich learning opportunity that a cohort-based approach affords, particularly when connected with

on-site face-to-face learning experiences. Given the interest of some local-regional students in having more on-campus experiences, MGIS leadership encourages them to attend the Geography colloquium series and other relevant events and presentations on campus when they have interest and time.

- 2.6. **Support faculty development and mentoring, especially part-time lecturers with limited teaching experience.** Since the MGIS Program offers a professional education experience, the Program seeks to hire active GIS professionals with PhDs from the local community. PhD-level GIS instructors from professional practice commonly command higher salaries, but salaries are set within the College of A&S. Since most GIS professionals are not commonly prepared (or have forgotten how) to teach students at the graduate level, and may be new to the on-line teaching environment, the MGIS program has begun to collect materials and resources on best practices for online adult teaching, and aims to share these resources across the teaching staff. The MGIS Program will also take advantage of the distance learning materials and resources available from Continuum College. Furthermore, it is in the best interest of MGIS Program to require instructors to work with the Center for Teaching and Learning (CTL) when teaching evaluations are deemed to be unsatisfactory for the MGIS program. MGIS Director and Associate Director will consult with Continuum College, Interdisciplinary Social Sciences Program, and other online programs as appropriate to clarify how they are linking to CTL to improve teaching.
- 2.7. **Consider early start for the Capstone project.** The MGIS GIS Workshop course, which is convened every summer quarter as the last course in the program, involves MGIS students working on a capstone project sponsored by a community partner. This course is among the top two courses for which students rated by students as the most valuable in the program, the other being the GIS Programming course. Feedback from students and the suggestion of the review committee encourages the MGIS Program to start the project activity before the GIS Workshop course convenes. Partner projects are sought six months prior to the summer course, and thus it is likely that project activity can ramp-up in spring quarter. Informal lengthening of the learning experience can occur, but formal lengthening requires student credit hours assigned to the work. Consequently, the MGIS Program will explore the informal learning option in spring quarter 2017 prior to the summer quarter GIS Workshop.
- 2.8. **Provide more support for career counseling and job placement opportunities.** The MGIS Program focuses of education for professional practice. The review committee, as encouraged by students, suggests that more support for career counseling and job placement be offered. The MGIS Graduate Program Advisor spends counseling time with students in a face-to-face setting when students come for on-site sessions. All MGIS instructors are encouraged to engage in this capacity, and they do from time to time as requested by students. The MGIS Program has been working with the career counseling center on campus. We encourage students to get in touch with the center when they are ready. Additional staff hours would be required to do more in this regard than we are at the current time. Since the program focuses on professional education, this need will be prioritized with other staff hour needs as part of the strategic planning process.

- 2.9. **Formalize the sustainability concept in course descriptions and publicity materials; communicate the regional focus of the program in a way that has broad implications for other areas in the world.** MGIS Program personnel have worked with the Continuum College marketing group over the past seven years. We meet late in the summer to devise/revise the marketing plan document, establishing expenditures for the coming year in line with the overall MGIS budget set in the spring quarter of each year for the following fiscal year. In early autumn quarter, MGIS Program personnel work with the marketing group to devise/revise the content and style of the website as appropriate to new insights about the entire program. In autumn quarter 2016 a major revision of the website was undertaken principally to design the web content for compatibility with display on mobile devices. At the same time, this provided the MGIS Program personnel with the opportunity to work with Continuum College marketing on content changes. The suggestions from the review committee report about marketing were incorporated into the website content in early November 2016. The new site was launched in December 2016. As the website contains the leading promotional content for MGIS marketing, all other marketing products will receive a thorough upgrade based upon the 'systems' perspective encouraged by the review committee. Although we appreciate the perspective that Continuum College marketing brings to the table to encourage plain language consumption, there is a point at which the message loses its rich character to differentiate the MGIS for Sustainability Management program from other programs across the country. MGIS has heard this message from the review committee loud and clear, and is now more confident that our perspective being refined over the last several years must now be embraced more strongly within the marketing materials.
- 2.10. **Introduce students to concepts presented in the second year during the first year.** The MGIS Program curriculum is organized into a core of five courses in the first year and a sustainability concentration of four courses in the second year. However, sustainability concepts are threaded through the courses from beginning to end. The abstract character of concepts in the second year is perhaps due to the heightened use of sustainable systems concepts related to resilience thinking, but the more likely the issue is the use of different software in the second year. We turn to use of ecosystems valuation software and agent-based modeling software rather than only GIS and statistical programming software used during the first year. The introduction of new software comes with the introduction of new concepts for working with representations. Nonetheless, hearing that a disconnection is occurring motivates MGIS instructors to examine the fundamental concepts across the learning objectives that have been articulated for the courses. This investigation will direct MGIS instructors to identify which sustainable systems concepts could/should be introduced earlier in the curriculum. This will give students needed vocabulary as part of the GIS language skills to help ready them for improved concept scaffolding for second year learning experiences.
- 2.11. **Consider other program enhancements.** Offering a variety of learning experiences can improve the integration of student learning experience across the MGIS Program and the Geography Department. Offering online access to a variety of both on-campus and remote learning experiences can improve that integration. The capability to offer streaming and/or downloadable presentations would enable shareable and shared experience to improve integration. The review committee provided many great suggestions for improving the learning experience for which resources need be identified for executing those suggestions. This might not seem like a strategic issue. In the short term it is not, as one-off task implementations are not a heavy load. However, over the long-term, a consistent and reliable execution requires

more human resources and this should be compared to other enhancements to be made. The main issue concerns trade-off of the human resource time available in comparison to the outcome of the learning enhancement in both short and long-terms.

- 2.12. **Clarify the role of the advisory board and formalize meetings or other activities.** The review committee makes an important observation about the maturing role of the advisory board. The MGIS Advisory Board was rather small composed of three well-respected GIS managers from federal and local government plus private industry. The focus had been technology issues in the curriculum. MGIS Program is in the process of reorganizing the advisory board to embrace a broader perspective that includes sustainability management practice issues, balancing with the technical aspects of the curriculum. We are motivated in this direction based on the community-university partnerships that have developed through the capstone project contacts in the GIS Workshop course. The technology is indeed important, but the program needs a broader perspective. Getting the message out about a balance of GIS and sustainability would be something the Advisory Board could provide feedback when we ask them to review the MGIS (marketing) website.

### 3. Responses to the “Suggestions for Support from the University”

- 3.1. **Provide the department and the program with support in conducting unit-level strategic planning.** The MGIS Program could benefit from a one-half day workshop convened by Continuum College inviting faculty participation from academic units with fee-based programs who would like to attend. The MGIS Program could benefit most from a discussion about directions for strategic planning as listed in this document, e.g. curriculum/course delivery, budgetary strategy, hiring strategies particularly in regards to administration, application completion timing and admissions, advisory board membership, program synergies, and other possible topics. Note that this activity is in support of MGIS strategic planning, but MGIS strategic planning is not dependent on this activity. Program to program outreach has already begun.
- 3.2. **Coordinate sharing of lessons and “best practices” among comparable, fee-based and online programs across the campus, including MGIS.** The MGIS Program would participate in workshops convened for the purpose of sharing insights about ‘best practice’ in addressing program challenges. Perhaps this suggestion from the review committee could be tackled as part of the strategic-level effort mentioned in 3.1.
- 3.3. **Consider greater flexibility in the qualifications and pay rates for new hires to address the specific staffing need.** Like other technology-centric fields of education, the MGIS Program competes for hiring with personnel facing high opportunity costs. GIS professionals with advanced degrees continue to be in high demand. Although ‘satisfaction in teaching’ goes a long way, it cannot in the end be the only motivator for candidates considering a teaching role if MGIS is to hire high quality instructors. This is particularly at issue with part-time instructional hires. There is a practical trade-off between degree level, years of professional experience, years of teaching experience, and the rate of pay. MGIS has faced this issue time and again in hiring, and will continue to face this issue. The MGIS Program seeks flexibility in this regard, while maintaining a high quality of instruction.

- 3.4. **Consider greater flexibility in setting the program fee for students.** The MGIS credit hour fee was set initially in consideration with other professional masters programs through discussions with Continuum College. The MGIS Program revisits the fee amount every year, and has the choice of recommending changes. The UW Provost has final approval over those fees.

#### **4. Conclusions**

The Program was established to make a contribution to skill-based education about GIS for Sustainability Management in the central Puget Sound region, in Washington State, the USA, and beyond. A sustainable systems perspective on the world has grown more important since the start of the program. A complex systems perspective considering connections of resilience, vulnerability, and risk with sustainability is a perspective being considered by many disciplines and organizations dealing with complex problems. Constructive critique and review of the MGIS program substance, method, and conceptual domains are always welcome. The above responses to the review report addressed section-by-section and item-by-item will help the MGIS Program begin their strategic planning. A strategic planning effort will help the Program continue to broaden and deepen its outreach based on the mission it has set out. The Program looks forward to being able to continue to pursue its mission and goals through short, medium and long-term educational activities as outlined above, plus others that arise as the program moves forward.