

Two-Year Progress Report

Geography and Geomatics (BES), Master of Climate Change (MCC) and Master of Tourism (MA)

March 2020

Background

The review of two core plans in the Department of Geography and Environmental Management (GEM) programs, specifically Geography and Environmental Management (BES) and Geomatics (BES) was conducted on April 13 and 14, 2015. The two core programs that were reviewed also form part of the Joint Honours plans in Geography and Environmental Management and in Geomatics, plus the three year general degree plan in Geography and Environmental Management. In addition, the Department's two course-based Master's degrees, Master of Tourism and Master of Climate Change, were reviewed. The remaining graduate research thesis-based plans at the Master's and PhD levels were reviewed under a separate process and do not fall under this report.

The two review visit days comprised interviews with various administrators from the Department, Faculty and central administration at the University of Waterloo. In addition, several sessions were conducted with the faculty and students of the programs being reviewed along with visits of the main map library and the GEM facilities.

The resulting report from the examiners was completed on June 11, 2015. A written response to the reviewers' recommendations was submitted to the University on August 17, 2015, by the Chair, Professor Peter Deadman.

Overall, the Reviewers' general comments on the program objectives and learning outcomes stated that *"the requirements for the programs and the learning outcomes were clearly laid out in the reports we were provided. There is clearly a strong emphasis at the University of Waterloo's Geography on educating graduates for future employment. This is part of the Waterloo brand and the programs associated with the co-ops seems to be very well developed and successful."*

The following section provides updates on the recommendations made by the reviewers. Each **Recommendation** is followed by the Department's initial **Response** (August 17, 2015) followed by a **Progress on Implementation** as of May 2018.

Responses to the Reviewers' Recommendations

Recommendation 1: *We recommend that GEM consider a strategic visioning of the Department as a whole, to define future plans and identify priorities for faculty positions, undergraduate and graduate teaching programs, and resources.*

Response: We agree with this recommendation. Discussions around the future of the department are ongoing. Currently, we are reviewing our experiential learning activities, our undergraduate recruitment activities, and the overall research and teaching focus of the Department, with a particular emphasis on human geography. These activities will continue over the next year with the following specific goals: reviewing and revising the undergraduate and graduate curriculum, clarifying and improving our experiential learning activities, and arriving at a plan for future hiring, with a focus on human geography. These activities will be led by the Department Chair and Associate Chairs.

Progress on Implementation: Since the review, the Department has embarked on several far-reaching initiatives which respond directly to this recommendation. In January 2017, a standing Curriculum Committee was struck to monitor, adapt and adjust the undergraduate curriculum in response to the report but more importantly to respond to existential needs from students as well as workplace demands, and to strengthen our identity from a programmatic perspective. This activity is making significant progress in several areas of the curriculum. Significant structural adjustments to the curriculum have been developed in 2017 for the new undergraduate intake to the BES GEM program in 2018 and BES Geomatics Program in 2019. These changes streamline the pathways through the GEM BES program with similar adjustments to the Geomatics program. The goals are a) to provide students with more clearly prescribed pathways through our BES programs, including our specializations, b) to increase predictability of core course offerings for each incoming cohort to help improve student course selection and curriculum management, and c) to better define our experiential learning activities within courses and explicit field course offerings.

With respect to undergraduate recruitment efforts, the Department initiated a dedicated Committee on Undergraduate Recruitment (CUR) tasked with increasing outreach to high

school students and teachers. CUR recognizes two challenges to the sustained recruitment of geography undergraduate students. First, the prominence of Geography as a scholarly university discipline has increasingly been challenged in high school curricula; currently, the last time students are exposed to geography is in Grade 9. Students now see Geography as one of many "environmental" pathways available to them. This identity strengthening is a priority of Canadian Association of Geographers for which GEM has been an active member (the current incoming president, 2018-20 is Professor Sanjay Nepal). Second, the discipline of Geography is broad covering human geography (e.g. economic geography, geographies of urban and rural regions, cultural geography, environmental sustainability, climate change), physical geography (e.g. geomorphology and physical landscape change, water science, cryospheric science, soil science, hillslope processes) and geographical information science (geographical information systems, remote sensing, surveying and mapping). While GEM covers many of these elements, students have a wide range of disciplinary choices within the Faculty of Environment, some of which intersect with GEM. In addition, GEM competes with other geography departments at other universities for new undergraduate students.

Therefore, CUR is developing specific outreach materials that highlight key issues that Geography addresses and which can be delivered in a "roadshow" format to high school students, *in situ*. The "Climate Change Roadshow" package has been taken to high schools in Southern Ontario (over 100 Grade 11 and 12 classes since September 2017) and similar human and physical geography packages will be developed for 2018-19. These efforts are supported by a co-op student each term.

Finally, the Department's strategic vision is being refined. First, our research themes have been adjusted to reflect our collective identity: Geomatics, Climate Change and Environment, Earth Systems Science, Economy and Society. Geomatics and Earth Systems Science have remained largely unchanged since the review. However, our Climate Change theme has been strengthened to be Climate Change and *Environment* and our previous human geography theme of Development and Environment has been changed to *Economy and Society*. This is in response to strengthening of our human geography sub-discipline. Two appointments were made in Economic Geography in 2016-17 to re-invigorate this area of the discipline in GEM and across the faculty. The following rationale defines this approach:

"new economic geography has moved away from viewing economic processes as separate from social, cultural and political contexts. Instead, social, cultural,

and institutional factors now tend to be seen as key factors in understanding economic dynamics. Unlike previous genres, the new economic geography is not represented by a particular theoretical perspective or methodological practice..." (Coe *et al.*, 2007, p. 13)¹

Status: Significant progress, ongoing

Recommendation 2: Undergraduate student advising and mentorship should be broadened within the department to include a wider range of faculty and on a more frequent basis.

Response: We will take this recommendation under advisement. The Department has two Associate Chairs and two staff who are available to advise students on academic and curriculum matters. We are not aware of any complaints from students regarding a lack of access to academic advising. Further, we are concerned that other faculty in the Department do not have sufficient knowledge of policies, procedures, and curriculum requirements to provide accurate and uniform advice. Over the next year, we will review and discuss our current academic advising activities with student representatives to determine if adjustments are required to improve the service we provide. This activity will be led by the Department Chair and Associate Chairs.

Progress on Implementation: The retirement of the long-standing staff Undergraduate Advisor (GEM) took place in 2015; however, their replacement continues to provide this important advisory function and is highly proactive in advising our students. The Associate Chair for Undergraduate Studies (GEM) also has continued oversight of this important activity. With respect to the Geomatics plan, a new staff Undergraduate Advisor was appointed to replace a second retirement, and this position is gradually coming up to full advising capacity. Oversight of this plan is provided by our Associate Chair for Undergraduate Studies (Geomatics, Geography and Aviation and International Students) who remains a significant mainstay of these programs, along with a new faculty hire in the Geography and Aviation field who supports this program. The Associate Chair for Undergraduate Studies (Geomatics, Geography and Aviation and International Students) also spends significant time advising our international students in the 2+2 and 1+2+1 programs (see Recommendation 9 below).

¹ Coe, N.M., Kelly, P.F. and Yeung, H.W.C. 2007. *Economic Geography: A Contemporary Introduction*. Oxford: Blackwell.

Status: Completed

Recommendation 3: We strongly recommend the Department seek to improve communication with undergraduate students related to course enrollment. Determining Department course offerings prior to student registration would eliminate many challenges faced by students in meeting their program requirements. Additionally, given the complexity on offering courses due to the co-op programs, we recommend the Department consider multi-year course planning to improve student access to courses.

Response: We agree with this recommendation. We currently advise students of our term-by-term course offerings one year ahead of time. However, the specific scheduling of these courses in each term is handled by the Registrar's Office, with notice of the schedule given about two months prior to the start of that term. This scheduling of classes and times is beyond the control of the department. We will review our communication of course offerings to students to improve the availability of this information and lengthen advance notice of course offerings. This activity will be led by the Chair and Associate Chairs over the next year.

Progress on Implementation: Ongoing efforts to strengthen the curriculum continue. As described in our progress report to Recommendation 1, GEM provided all Fall 2018 incoming undergraduate students with an explicit roadmap of the core courses in their plan and specializations from terms 1A to 4B. A similar roadmap will be provided for incoming Geomatics students in Fall 2019. Students will be fully aware of when their core courses should be taken. It is anticipated that this will help students in course selection and enable them to better understand where they are in the program. It is also expected that this "road mapping" will progressively improve their learning confidence. Program roadmaps will be created each year starting in Fall 2018. This is only achievable having developed the increased streamlining and predictability of the three single Honours undergraduate programs (including regular and co-op tracks).

Status: Ongoing monitoring

Recommendation 4: The program in Human Geography is in a transition period and we recommend initiating a review and visioning for the program to reflect the current faculty complement. We anticipate elements of the geography of health would be well supported by

the expertise in the group, and natural linkages could be developed to the Geomatics and other units in the Faculty and across campus.

Response: We agree that The Department is in transition with respect to its strengths in Human Geography. We would note, however, that the Department's combined strengths in the human and physical dimensions of climate change are noteworthy, that the ways in which social science and natural science are integrated around this theme reflect an important aspect of Waterloo's Geography programming, and that Human and Physical Geography do not exist as two silos. That said, we agree that a review and visioning exercise is needed, with a particular focus on human geography, and this has been underway for the past year. These will continue with a view to outlining a vision for the Department that will guide future hiring. This activity will be led by the Department Chair and Associate Chairs.

Progress on Implementation: Since the last report, the faculty complement of 26 (25 FTE) has increased to 32 (20.25 FTE). Whilst three of the 2015 complement have retired or moved, eight new hires have been made to the faculty complement. This includes one new position in health geography, one position in geography and aviation and two new positions in economic geography. We have also benefited from a faculty appointment at the lecturer level in resource management for which the incumbent has a home in GEM. The decision was made in 2015 to pursue re-building the area of economic geography for which the Department has been known in the past and for which strong links exist across the faculty. In addition to these five hires, we have also hired two new physical geography faculty (both successful CRC Tier II holders) and have made a joint appointment with a faculty member in the Faculty of Science.

Status: Completed

Recommendation 5: The program in Geomatics has rapidly developed and appears poised for further growth. Increased promotion to incoming undergraduate students with interests in computing may further increase enrollments.

Response: We agree with this recommendation. We have recently struck a committee for undergraduate recruiting. This committee will develop a strategy that will include raising awareness of geomatics amongst high school students. Additional resources from the Dean's Office may be required for promotional activities, such as the revival of the

"Geomatics Roadshow" or the preparation of promotional materials. This activity will be led by the Department Chair, working with the Undergraduate Recruitment Committee.

Progress on Implementation: Since the last report was released, the undergraduate Geomatics plan is now one of the strongest recruitment plans in the faculty. The Fall intake in 2017 recruited 92 new geomatics students of whom ~55 were deflections from Computer Science and 37 were direct applications. Despite the Geomatics plan not being able to offer a Computer Science minor, this plan continues to be a robust recruiter for GEM. CUR continues to be active in strategizing on approaches for ongoing geomatics recruitment. What is very gratifying is that anecdotally, our geomatics students who deflected into the program are highly appreciative of this stream and once they become engaged in the program, demonstrate a high level of satisfaction with the plan. Through the Dean, the Department continues to engage with Computer Science regarding the possibility of re-opening the CS minor pathway.

Status: Ongoing monitoring

Recommendation 6: Development of a Master's program in Geomatics appears to hold strong potential. The existing faculty complement could support an advanced program that would be uniquely positioned to train students for research and development aspects of Geomatics. A co-op offering would be a logical consideration given the university strengths.

Response: We agree with this recommendation. Discussions regarding the development of a Master's program in Geomatics have taken place in the past. The Department will consult with the Dean of Environment to explore the feasibility of developing a co-op Master's program in Geomatics.

Progress on Implementation: Since the last report was released, the funding landscape has shifted and the emphasis now is on the funding of domestic doctoral students. Whilst the aspiration in the medium term is to consider a program in Geomatics, the current focus is on increasing Honours Geography numbers (see recommendation 1) and encouraging increased domestic graduate applicants at the doctoral level.

Status: Ongoing monitoring

Recommendation 7: The new Master of Climate Change (MCC) program has already built a strong international attraction and positive feedback from students. Maintaining the "lead" of this program in a rapidly developing sector in Ontario and globally will require continuing to innovate [and] attract high quality students. We recommend considering the development of co-op and research program streams to better meet student career goals and to make sure that student expectations are being matched effectively.

Response: We agree with this recommendation. Over the next year, we will explore and discuss the possibility of adding a co-op stream to the MCC program. This initiative will be led by the Director of the MCC program, working with the Department Chair and Associate Chairs.

Progress on Implementation: Since the last report was released, the MCC program has blossomed in student number and quality. In 2016 our intake was 19 students, while in 2018 we accepted 32 new MCC graduate students. In 2016, 2017 and 2018, 15 (94%), 15 (83%), and 26 (93%) MCC students respectively, were successfully placed for internships. The use of internships in 2017, 2018 and 2019 has been especially successful with students placed at Federal ministries, municipalities and NGOs. This is in part the outcome of the strengthening of ties between the faculty and these various entities in the past three years. For example, the MCC program makes efforts to engage key senior federal employees in course development; for the past three years, a resource management and climate change course was taught by a senior federal employee. Furthermore, we are in the process of developing an online climate change and health course in collaboration with Health Canada. Students in the program have secured internships which in some cases have segued into full time positions. And the strength of these internship placements has been demonstrated by repeat requests for more interns from the partners involved. In addition, the flexibility that the program offers in terms of taking advantage of an internship or completing a major research paper is a real attractor for students. Adding a co-op term will both extend the program and increase student financial and time burden, and reduce flexibility at a time (Spring term) when they typically have demonstrated an ability to optimize their options to suit their own needs. It seems now that adding a co-op stream will very likely reduce this flexibility for a program that can be agile at a key time in the student experience. Furthermore, given the nature of our relationships with external partners it is not clear what the role of Co-operative and Experiential Education would be for implementing co-op in such a program given the nature of the tight connections between faculty instructors and

internship placement organizations. It is also unclear whether a co-op track is even available to the MCC program. So, while a co-op stream in the MCC was initially attractive, it is still premature. Moreover, significant internship placements are proving very popular with our students.

Status: Completed.

Recommendation 8: The Master of Tourism appears to be at a crossroads, with declining enrollments and a change in the faculty complement that makes the viability of this program questionable.

Response: We agree with this observation. GEM has already decided to discontinue offering the Master of Tourism. The Department of Recreation and Leisure Studies has decided to admit students to the Tourism program for the Fall of 2015. However, they will review their commitment to the program over the next year. We will coordinate with them as they make that decision.

Progress on Implementation: This program is no longer offered since the application pool became not sustainable to support its delivery and the clustering of faculty expertise in this area is no longer sufficient to support the program. This is in part due to retirements and to core faculty being engaged in other high profile programming in the Department.

Status: Completed

Recommendation 9: Based on feedback, we feel that the Department needs to invest in expanding cultural and related support for the programs that attract a sizable international cohort (2+2, Master of Climate Change).

Response: We will take this recommendation under advisement. The Faculty of Environment has a full-time Coordinator of International Education who works with international students, and especially the 2+2 students, to support their adjustment to the Canadian academic environment. We will work with the Dean of Environment to review the activities of the coordinator and address any perceived needs.

Progress on Implementation: The continued implementation of this student support is ongoing. Since the review was conducted, new China university 2+2 and 1+2+1 programs have been developed each of which requires significant oversight by the Associate Chair for

Undergraduate Studies (who also has oversight responsibilities for the Geomatics, Geography and Aviation and Science and Aviation plans). As indicated in the Department's response to the original review, the Faculty has a full-time Coordinator of International Education who works with our international students and we are continually reviewing our activities and responding to perceived needs.

Status: Ongoing monitoring

Recommendation 10: Graduate student application review and acceptance practice in the Department appears to be heavily weighted towards support staff with limited academic oversight. The volume of applicants and the screening process should be reviewed to increase faculty involvement.

Response: We disagree with this assertion and recommendation. Support staff facilitate the review of graduate applications, but they do not make decisions with respect to the admission of graduate students. The final decision regarding the admission of each applicant is made by the potential faculty advisor of that student and the Associate Chair, Graduate Studies, under the supervision of the Associate Dean, Graduate Studies.

Progress on Implementation: As a matter of standard procedure, we monitor admissions procedures with specific reference to the MCC program, to ensure that the burden on the support staff continues to be managed in support of the review process and not the acceptance process. In addition and for the record, in September 2019 the Graduate Program Administrator position for MCC and the new Diploma in Climate Risk Management, which was previously split with School of Environment Enterprise and Development, was consolidated in GEM to a full time FTE staff position.

Status: Completed

Recommendation 11: Support staff in the Department are in the process of developing documentation for best practices and procedures to enhance the continuity of staff support. We recommend continuing to support this positive initiative.

Response: We agree with this recommendation. This activity will be ongoing, under the supervision of the Department Chair.

Progress on Implementation: With significant turnover of three of the support staff positions, replacement hires and existing staff have taken on the responsibility for creating and maintaining documentation of best practice and procedures of their roles. Staff have developed or are in the process of developing documentation for standard operating procedures. This will help provide continuity.

Status: Ongoing monitoring

Updated Implementation Plan

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
1.	GEM consider a strategic visioning of the Department as a whole, to define future plans and identify priorities for faculty positions, undergraduate and graduate teaching programs and resources.	Streamlining and clarification of the plans. Significant outreach activities to Ontario high schools. Refined research themes that more clearly propagate through all programs. Increased complement of Economic Geography cluster.	Chair, Associate Chair, Undergraduate Studies, Associate Chair, Graduate Studies, Standing Curriculum Review Committee, Committee for Undergraduate Recruitment	Curriculum review and recruitment outreach activities ongoing. Research themes refinement completed. Two Assistant Professors hired in Economic Geography completed.
2.	Undergraduate student advising and mentoring should be broadened within the department to include a wider range of faculty and on a more frequent basis	Staffing turnover in advising positions has injected fresh energy and vision into this activity. In addition, associate chairs are now able to be more proactive in their capacity.	Chair	Completed
3.	Improved communication with undergraduate students with respect to course planning, selection and registration.	Turnover of support staff has injected new energy and increased activity in this support role. Cohort road mapping is underway for 2018 to provide students predictability of core course offerings in their plans and specializations.	Chair and Associate Chairs, Undergraduate studies. Curriculum Review Committee	Ongoing monitoring
4.	The program in Human Geography is in a transition period and we recommend initiating a review and visioning for the program to reflect the current faculty complement. We	Following a Departmental white paper on Human Geography needs in the Department, two new hires in the economic geography theme were made	Chair	Completed

	anticipate elements of the geography of health would be well supported by the expertise in the group, and natural linkages could be developed to the Geomatics and other units in the Faculty across campus.	at the Assistant Professor level. A further appointment was made in health geography.		
5.	The program in Geomatics has rapidly developed and appears poised for further growth. Increased promotion to incoming undergraduate students with interests in computing may further increase enrollments.	The Geomatics plan is the strongest recruitment pathway in the department. In 2017, nearly twice as many geomatics students were accepted as any other plan. Some rebalancing between Geomatics, GEM and the Aviation plans is needed.	Associate Chairs Undergraduate Studies, Committee on Undergraduate Recruitment	Ongoing monitoring
6.	Development of a Master's in Geomatics	Changes in the provincial funding landscape has meant that there is more focus on the doctoral graduate level than a Geomatics Master's degree.	Chair, Associate Chair, Graduate Studies	Monitoring
7.	Development of a co-op stream and research pathway in the Master of Climate Change plan.	Co-op graduate programs are not the norm and will be challenging for the international students in this cohort. Internships are highly desirable especially for those placed in government departments (Federal and Provincial). MCC has been successful in this area. Major Research Paper students seem satisfied with their pathway through the MCC. Strong MCC students can segue into a Doctoral program after their Master's.	Director of MCC, Program Chair	Completed

8.	The Master of Tourism appears to be at a crossroads, with declining enrollments and a change in the faculty complement that makes the viability of this program questionable.	Program no longer offered	NA	NA
9.	Expand cultural and related support for the programs that attract a sizable international cohort (2+2, Master of Climate Change)	Faculty has a full-time Coordinator of International Education who takes on this responsibility. Associate Chairs also provide oversight of these students.	Chair, Associate Chairs, Undergraduate Undergraduate Advisors	Ongoing monitoring
10.	Graduate student application review and acceptance practice in the Department appears to be heavily weighted towards support staff with limited academic oversight. The volume of applicants and the screening process should be reviewed to increase faculty involvement.	Support staff facilitate the review of graduate applications. They do not make decisions with respect to the admission of graduate students. The potential faculty advisor makes the final decision about whether or not to accept the student, given the student's academics are satisfactory.	Associate Chair, Graduate Studies. Director of MCC program. Administrative Assistant to MCC program.	Completed
11.	Support staff documenting best practices and procedures to enhance continuity of support staff.	Ongoing with recent turnover of support staff	Administrative Manager, Chair, Associate Chairs.	Ongoing monitoring

The Department Chair/Director, in consultation with the Dean of the Faculty shall be responsible for monitoring the Implementation Plan.



Date of next program review: _____ 2021-2022
Date

Signatures of Approval:

Chair/Director _____ Date 13 July 2018

Richard Jackson Kelly

AFIW Administrative Dean/Head (For AFIW programs only) _____ Date

Jan Arndt

Sept 26/19

Faculty Dean _____ Date

Hans Conigli

March 26, 2019

Associate Vice-President, Academic _____ Date
(For undergraduate and augmented programs)

Jeffrey M. Czell

March 29, 2019

Associate Vice-President, Graduate Studies and Postdoctoral Affairs _____ Date
(For graduate and augmented programs)