

Earth Sciences

Graduate and Undergraduate Review

Year 3 (2023) - FAR Implementation Report

(reviewed 2019/20)

Recommendation #1

Unit should define their strategic niche, especially in the context of competition with other universities in southern Ontario. Emphasis could be in Environmental geoscience, Quaternary geology, Palynology, Glacial Sedimentology and Micromorphology, Remote sensing, in conjunction with Geography appointments, and linked to planetary science.

ARC Disposition of the Recommendation

ARC considers the recommendation to be accepted and in the process of implementation. The Committee recognizes that the Department has already taken steps toward occupying a niche, such as the proposal for a new BA in Earth and Planetary Science Communication, which is undergoing the review process in 2020. The Committee expects that the definition of a strategic niche will require a number of years of development by the Department.

Implementation Plan (3rd Priority)

Responsible for approving:	Department
Responsible for resources:	Department
Responsible for implementation:	Department
Timeline:	Dean of Mathematics and Science to report by the end of academic year 2022/23

Actions	Responsibility	Year One	Year Two	Year Three*
Action #1 Revision of new BA program in process; Introduction of micro- certificate	Department	T	T	C

Comments 2021:

The Department continues its effort to develop a strategic niche that utilizes the unique composition of our faculty. We also welcome closer integration with our colleagues from Geography and Tourism, several of whom already supervise graduate students within our department. Beyond the ongoing efforts, we plan on making this a major point of discussion during our retreat (Recommendation #5), which has been postponed until we can meet in person for several hours.

*On Target (T), Delayed (D), Complete (C), Complete and Ongoing (O)

Comments 2022:

We are currently awaiting final government approval for our BASc program in Earth and Planetary Science Communication. This degree is unique in Canada and clearly helps to identify the strategic niche of the Department. The revision of the proposal was undertaken by a committee that included three faculty members from Geography and Tourism as well as one from Communications, Popular Culture & Film (CPCF). The governance of the degree itself will also be overseen by such a committee.

Comments 2023:

The BASc program in Earth and Planetary Science Communication has been approved, introduced into the calendar and we await our first cohort in September. This program, which combines the understanding of science with communications skills, is unique in Canada. We believe the 2023 application numbers reflect this uniqueness as we have 35 applications from 18 different school boards in Ontario, from British Columbia and from 2 students who self-identified as Indigenous. We will likely exceed our initial intake target and anticipate increasing numbers of applicants as the program becomes better known in future years.

We believe that this program, along with the departmental expertise, for example, in Anthropogenic Changes, Martian Exploration along with other unique specialties such as Drift Prospecting clearly defines the strategic niche of the Department.

Recommendation #2

Unit should develop a 5-10 year hiring strategy, focused on their strategic niche as well as possible future retirements. The rationale for each hire should be justified based on the unit's own strategic plan as well as linked to the overall mission and strategic university plans.

ARC Disposition of the Recommendation

ARC considers the recommendation to develop a 5-10 year hiring strategy to be accepted and in the process of implementation. The Committee recognizes that hiring lies outside of its jurisdiction and expects that the Department will proceed through normal channels of advocacy for faculty resources.

Implementation Plan (1st Priority)

Responsible for approving:	Department
Responsible for resources:	Department
Responsible for implementation:	Department
Timeline:	Dean of Mathematics and Science to report by the end of academic year 2020/21

Actions	Responsibility	Year One	Year Two	Year Three*
Action #1 Hydrologist is top priority; detailed plan to wait until retreat	Department	T	T	C

Comments 2021:

The Department has already decided that the next position it will pursue will likely be a Hydrologist. The need for this position and the possible curriculum changes with it are part of the FMS growth position plan, completed in the Fall of 2020. We have no immediately pending retirements. We will discuss a more complete plan, which will also include the needs of the new program, during the faculty retreat (Recommendation #5).

Comments 2022:

As the result of our retreat (Recommendation #5) we have an existing replacement strategy that serves the need of the Department. As mentioned in last year's comments, we have already requested a Hydrologist for a retirement on December 31, 2022. With the pending approval of our new BASc program, the next urgent need will be for a Planetary Scientist with expertise in planetary igneous processes. This position will address needs in both Professional Geoscientists Ontario (PGO) and BASc programs. To help the Department develop programs, such positions naturally need to be long-term, tenure track positions. Hence the current offer of a 1-year Hydrologist position is of very limited use to the Department.

Comments 2023:

Following the approval of the BASc, the 1-year Hydrologist position was converted to a 3 year Hydrologist position and the new faculty started on January 1, 2023. Expertise in Hydrogeology remains a priority and we will be asking that this position be converted to tenure track.

Due to Dr. Finn's retirement on June 30, 2023, and his salary line reverting to FMS, the Department has submitted a replacement request for a Planetary Scientist with expertise in planetary igneous processes. As stated in the previous submission, this position will be required for both PGO-compliant programs as well as for the BASc.

The 2023/24 academic year will be the last year of employment for Dr. Cheel, our sedimentologist, who is on a phased-retirement plan. As we clearly outlined in a previously submitted replacement request, Sedimentology is a core discipline among the knowledge requirements of the PGO for both the Earth Science as well as the Environmental Science streams. Sedimentary processes also play an important, though specialized role, shaping the

surfaces of other terrestrial planets and icy worlds. Hence the Department will be requesting a tenure-track position in sedimentology as a replacement.

In addition, Dr. Brand has opted for the 3-year phased-retirement starting July 1, 2023. We will naturally be requesting a replacement.

We believe that the Department has a clear strategy for replacements, which will help to pursue its goal to support undergraduate degree programs.

Recommendation #3

The unit should investigate increasing opportunities for international enrollments, especially in niche areas (such as palynology) that can service an international need. Perhaps consider developing a 2+1 or 2+2 program. The aim should be to increase international students by 5-10.

ARC Disposition of the Recommendation

ARC considers the recommendation to be accepted and in the process of implementation.

Implementation Plan (1st Priority)

Responsible for approving: Department
 Responsible for resources: Department
 Responsible for implementation: Department
 Timeline: Dean of Mathematics and Science to report by the end of academic year 2020/21

Actions	Responsibility	Year One	Year Two	Year Three*
Action #1 Discussion about niche programs ongoing, international student program plan delayed.	Department	D	T	T

Comments 2021:

We have not yet formalized program plans and have not actively pursued any 2+1 or 2+2 programs this year. We will be scheduling a meeting with Brock International to discuss option prior to our retreat.

Comments 2022:

To attract international students and provide Geoscientists with existing degrees with an overview of modern and innovative techniques in several focused areas, the Department developed an 8-month certificate program last year. We were not able to bring this certificate proposal forward as one of our colleagues, who was scheduled to teach a quarter

On Target (T), Delayed (D), Complete (C), Complete and Ongoing (O)

of the required courses in it, took advantage of one of the retirement offers and is no longer teaching as of Dec 31, 2022. We will revisit this option.

Comments 2023:

As mentioned above, our new hydrogeologist started January 1, 2023 and we can now include her expertise in the certificate program. But we will also need to consider the above-mentioned retirements and their associated uncertainties. We will likely revise the certificate to accommodate the uncertainty and hope to have a new version ready for later this year. Our research into the 8-month certificate program indicated that no other university in Ontario and possibly Canada is currently offering such a program in the Earth Sciences sector. We do believe there is a market for such a program, especially if it can also help to provide students in the certificate program to complete their PGO-compliant knowledge requirements.

Recommendation #4

Examine strategies to increase undergraduate enrollment, and especially recruitment from 1st year students that transfer into the program, emphasizing niche areas of expertise.

ARC Disposition of the Recommendation

ARC considers the recommendation to be accepted and in the process of implementation.

Implementation Plan (1st Priority)

Responsible for approving:	Department
Responsible for resources:	Department
Responsible for implementation:	Department
Timeline:	Dean of Mathematics and Science to report by the end of academic year 2020/21

Actions	Responsibility	Year One	Year Two	Year Three*
Action #1 Changed admission requirements, added micro-certificate, revision for new program ongoing.	Department	T	O	O

Comments 2021:

The most significant immediate action undertaken was to change our admission requirements and align them with our competing schools. Prior to that change, we required more high school courses than other Universities in the province, so our program was less accessible to many potential students than other programs with which we compete. Our new, unique micro-certificate has been added to the calendar and we are currently revising the proposed new program.

On Target (T), Delayed (D), Complete (C), Complete and Ongoing (O)

Comments 2022:

We have made additional efforts to convert students in our first-year courses into ERSC majors. We also hope that full government approval for our new BAsC program will be in time for the 2023 cohort and are currently working on promotional material for this program. We are also currently working on an articulation agreement with Fleming College that should provide a path for graduates of their Earth Resources Technician program.

Comments 2023:

We continue to make efforts to convert students in our first-year courses. We have also increased our efforts at advertising our programs. We have especially focused on advertising the new program through a dedicated website (<https://brocku.ca/mathematics-science/earth-sciences/basc-earth-planetary-science-communication/>) and mailing information to all high-schools in the GTA area. These efforts have benefited not only our new BAsC program but also our existing BSc programs. In 2023, the number of combined applications in our 4 PGO compliant BSc programs have increased by 74.6% (Power BI) over last year and our new program has 35 applicants as mentioned above.

Recommendation #5

Recommend a facilitated retreat to address recommendations 1, 2, 3 and 4. Retreat should include participation of jointly and cross-appointed faculty, especially in physical geography.

ARC Disposition of the Recommendation

ARC considers the recommendation to be accepted and in the process of implementation. The Committee understands that a Departmental retreat is just one of the options available in taking steps to address recommendations 1,2,3 and 4.

Implementation Plan (3rd Priority)

Responsible for approving:	Department
Responsible for resources:	Department
Responsible for implementation:	Department
Timeline:	Dean of Mathematics and Science to report by the end of academic year 2022/23

Actions	Responsibility	Year One	Year Two	Year Three*
Action #1 Retreat delayed until post-pandemic	Department	D	C	

Comments 2021:

The Department has had several successful retreats over the years and we look forward to holding one when it is possible to do so in person. None of us are keen to participate in a On Target (T), Delayed (D), Complete (C), Complete and Ongoing (O)

multi-hour Teams event, which would surely not be as productive. We plan on holding our retreat during the fall term when we are back to an in-class mode. Our retreat will be scheduled before the end of 2021.

Comments 2022:

Due to ongoing Covid restrictions the Department held a virtual retreat on Monday December 13, 2021. The Department did not see the need for a facilitator. We discussed several of the recommendations above, but the main focus was on replacement strategies. We had frank discussions in which several faculty members outlined their tentative retirement plans. The Department also confirmed that it remains committed to PGO and the new BAsC programs. Based on those commitments, it was easy to identify the necessary replacement strategy.

Recommendation #6

We recommend that Brock University establish a student-supervisor agreement that is reviewed by both the student and supervisor at the start of the student's graduate program.

ARC Disposition of the Recommendation

ARC considers the recommendation to be already current practice at Brock. The Committee expects that the Department will benefit from ongoing efforts by the Faculty of Graduate Studies and the Centre for Pedagogical Innovation to improve and streamline these practices.

Implementation Plan

No action required.

Recommendation #7

The Department should develop a NWS that is reflective of the workload required in both undergraduate and graduate teaching and mentoring

ARC Disposition of the Recommendation

ARC considers the recommendation to be not accepted as it lies outside of the jurisdiction of the Committee

Implementation Plan

Recommendation not accepted.