



University  
of Regina



Faculty of  
Science

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February 16, 2024

Re: Five-year Response to the Academic Unit Review of the Dept. of Geology  
To: Dr. Wes Pearce, Chair, Council Committee on Academic Mission  
Dr. Isabelle Dostaler, Provost and Vice-President (Academic)

Between April and July of 2019, the Department of Geology underwent an Academic Unit Review (AUR). Subsequently the department submitted an initial response in December 2019 and an 18-month response in April 2021. Each of these reports outlined progress made in addressing the recommendations generated by the AUR in context of the University of Regina's (UofR) goals of students' success, research impact, and commitment to community, as well as through the lens of indigenization and sustainability. The AUR yielded eight specific recommendations which may be summarized as: (i) that faculty numbers be maintained and any new hires be strategic with an eye to the future of the department; (ii) that support to faculty be maintained despite budgetary constraints; (iii) that relationships be explored and improved through the development office in order to support improved facilities and funding of field camps; (iv) that the department consider offering new courses to serve the greater university and that the department should be renamed to make the program more appealing and accessible; (v) that the department collaborate with other departments and faculties with respect to education and training; (vi) that the success and strengths of the department be highlighted within the University of Regina; (vii) that the department find a way to better collaborate and include Indigenous partners and students; and (viii) that the department develop a 5-10 year strategic plan. Additionally, the AUR identified the need for additional analytical capabilities within the department and recommended pursuing the acquisition of cutting-edge instrumentation such as a laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) system that would support research within Geology and other units on campus. As this was a recurring theme throughout the AUR it will be addressed in addition to the above recommendations.

Before addressing the progress made and successes regarding each recommendation it is important that additional context be provided. Shortly after the completion of the AUR, the department, the UofR, and the wider community were impacted by the CoVID-19 pandemic. Furthermore, the department has seen significant turnover in the Department Head position. This has included a total of four heads (one of whom was external to the department) and two-acting heads since July 2020. Despite these challenges, significant progress and success has been made toward each of the AUR's recommendations. The AUR noted that the department was highly research productive and well-funded for its size. To this end, the department has maintained its funding with seven faculty members currently holding NSERC, and three applications submitted 2023-2024, two of which were renewals. The department has also benefited from successful NSERC Research Tools and Instruments and Canadian Foundation of Innovation John Evans Leaders Fund applications in 2021 and 2022, respectively. Finally, based on a brief survey of Scopus, the department has published more than 155 documents (peer-reviewed journal articles, book chapters, etc.) since 2020.

Recommendation (i) – That faculty numbers be maintained. The department experienced a retirement in 2019 (Dr. Stephen Bend). In response, the department launched a search, and two new faculty members (Drs. Joyce McBeth and Leslie Robbins) were hired, beginning their appointments in July 2020. Dr. McBeth brings expertise in geomicrobiology, environmental geochemistry, and the use of synchrotron-based analyses to the department, while Dr. Robbins expertise lies in geobiology, Earth systems history, and low-temperature aqueous geochemistry. Both tenure-track hires are well aligned to teaching our core classes and to support the Environmental Geoscience program. With these tenure-track hires, the faculty complement grew to 10 members, but was reduced back to nine following the retirement of Dr. Janis Dale in 2021. Overall, the department has maintained its faculty levels and expanded its research expertise to novel areas. The department is cognizant that there is a significant skew to senior researchers, as only two of nine faculty members are pre-tenure, and has recently been advocating for an additional hire in the strategic area of critical minerals. Such a position would be strongly aligned with identified areas of growth in the resource sector within Saskatchewan and Canada, as well as ongoing initiatives in the transition to clean energy.

Recommendation (ii) – While the past few years have presented several challenges regarding support faculty and staff in the department, including the loss of a lab instructor (Dr. Richard From), the long-serving administrator Van Tran, and centralization of Science administration in two offices in College West and the Lab Building, we continue to be supported by excellent personnel. This includes our departmental technician Joanne Downing and the centralized administration in College West (Jodi Spies, Sara Apperly, and Brigitta Mosiondz). The departments teaching activities are further supported by two exemplary lab instructors (Monica Cliveti and Dr. J. Roelofsen). These lab instructors and staff continue to support our efforts in research and the delivery of our program. As geology involves considerable experiential learning, the lab instructors play an essential role in their delivery of our academic program.

Recommendation (iii) – The department continues to explore and improve relationships with alumni, industry, and external stakeholders to support infrastructure and funding of our field school courses. Increasing engagement with alumni and external partners is an ongoing priority. This has resulted in several funding opportunities or proposals that have benefited from this engagement. These include several NSERC CRD and Alliance Grants, Saskatchewan Geological Survey (SGS) project grants that support graduate student research, and a recently submitted NSERC Alliance Mission - Critical Minerals proposal with Orano Canada, Cameco, the Geological Survey of Canada, and the Saskatchewan Geological Survey.

With respect to our field schools, which are critical for the on-hands experience they provide, the added costs to students (in excess of tuition) are a factor that affect many programs across North America. While our students currently benefit from an anonymous donation that helps to alleviate these additional costs, they remain relatively high.

Moving forward the department plans to continue to engage alumni and industry partners. As part of our 5-10-year Strategic Plan and department rebranding, we are planning an on-campus event that will welcome back alumni and members of the geoscience community. The event will provide an opportunity to highlight research initiatives and impress upon our alumni and partners the need for supporting our undergraduate and graduate students and the acquisition of cutting-edge analytical equipment.

Recommendation (iv) – The department is in the process of finalizing an official name change to the ‘Department of Earth Sciences’. This more holistic and inclusive name better aligns with the expanded research expertise in the department that reflects our recent faculty hires, and is consistent with trends across North America. To the latter point, ~70% of geoscience departments have some variation of Earth Sciences within their name. Along with this name change, a course code change from GEOL to ESC has been proposed. The department will continue to offer two BSc degree programs (Geology and Environmental Geoscience), while graduate programs will become MSc or PhD in Earth Sciences.

In addition to the name change, the department is developing a version of our introductory class (GEOL 102) that can be offered without the lab component in order to reach a wider audience. In addition, there are plans to begin developing a version of GEOL 240 Earth Systems History, that will be aimed at a more general audience. The updated version of GEOL 240 will be a second-year course and is planned to be offered fully asynchronously to non-majors, with the only pre-requisite being a first-year science class. This course will provide a wide array of students an introduction to the importance of understanding Earth’s history, and the dynamic processes that govern planetary systems. The department has also developed a course, GEOL 497, that provides the opportunity for senior students to participate in an international field trip for credit and enhances our commitment to offering experiential learning.

Recommendation (v) – The department continues to collaborate with other departments and faculties with respect to education and training. The most relevant example of this is our continued cooperation with Geography and Environmental Studies (GES) in the Faculty of Arts. This relationship involves shared responsibilities for the cross-listed courses GEOL/GES 329 on Soils and GEOL/GES 429 Glacial and Periglacial Geoscience, plus several required GES courses in our undergraduate degree programs (and vice versa). Furthermore, the department has established research and funding opportunities with other faculties on campus. These include building strong links with colleagues in GES and engineering. For example, in 2019 we partnered with GES to purchase a Malvern laser grain size analyzer. Further, Drs. Jinkai Xue and Na Jia (Environmental Systems Engineering and Energy and Process Systems Engineering, respectively) have also been active participants on several grants and supervisory committees. Faculty members in Geology continue to serve on supervisory committees for students in a number of other departments within Science or other units on campus including Biology, Chemistry, Physics, and Engineering and Applied Sciences. These collaborative relationships allow us to better deliver our program and provide enhanced training to students within our department and across the broader campus.

Recommendation (vi) – The department strives to highlight the success of our teaching and research initiatives, as well as the impact of our unit within the University. To this end, we have had several faculty, staff, and students recognized for their contributions and achievements over the past several years. In 2022 our long-time administrator Van Tran was recognized by a President’s Award for Service Excellence and in 2023 Dr. Hairuo Qing was the recipient of a Faculty of Science Distinguished Long Service Award. Our faculty have also nominated for several awards, for instance Drs. Kathryn Bethune and Joyce McBeth, were both nominated for Faculty of Science Research Awards in 2022. In 2023, Dr. Leslie Robbins was also asked to present a public talk as part of the Bushwackers Science Pub Talk series and was highlighted on the Faculty of Science’s website as part of the *Get to Know Us* series.

Similarly, our students have been recognized at the university for their outstanding achievements. In 2020 Daniel Ferguson received the Dean's Medal in Science at Spring Convocation, before obtaining an NSERC Canada Graduate Scholarship to undertake a MSc under the supervision of Dr. Guoxiang Chi. Similarly, Brendan Bishop has been acknowledged on several occasions by the Faculty of Graduate Studies and Research as a recipient of a Doctoral NSERC Canada Graduate Scholarship and winner of the inaugural Kickstart Pitch Summit in April 2023. Finally, two MSc students, Kaitlyn Crawford and Nahanni Young, were finalists in the 2023 Three-Minute Thesis Competition, with Nahanni being selected as the winner of the People Choice. Additionally, Nahanni Young was a finalist in NSERC's *Science Exposed* photography competition. Our undergraduate and graduate students also continue to receive recognition for excellent communication of their research, with three poster awards at national and provincial conferences in the past year; adding to a long list of similar awards in the past decade. These serve as a few examples of ways in which the achievements of our faculty and students have been highlighted within and outside the University.

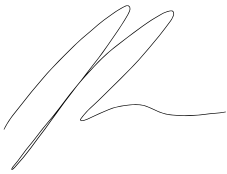
Recommendation (vii) – Finding a better and more meaningful way to collaborate and include Indigenous partners and students continues to be a challenge. It is one that is not undertaken lightly given the importance of Reconciliation. However, despite making limited progress in this area, the department can report several meaningful steps. First, the department was able to facilitate an initial meeting with representatives for the Peter Ballantyne Cree Nation (PBCN), Mistay Wasak Developments, LP and members of the Faculty of Science and Research Office. This was grounded in interest in seeking guidance from the department on development of a graphite deposit. However, it has since led to discussion on other ways in which the University can engage with the PBCN, several of which have been led by Dr. Richard Manzon (Associate Dean Academic for the Faculty of Science). Second, we have been encouraging Indigenous students who self-identify and are eligible to apply for relevant scholarships. Third, we have incorporated some indigenous knowledge into our self-guided tour (and related information pamphlet) 'U of Rocks', a geo-tour of the university campus. Finally, the department is in the midst of establishing several memoranda of understanding with international partners in Oman, Colombia and Vietnam. Building these relationships is critical for engaging local communities for both fieldwork and international field trip opportunities for students in our program.

Recommendation (viii) – In 2020-2021 the department developed a strategic plan outlining a vision for the next ten years. Highlights included: changing the departmental name to Earth Sciences (in-line with AUR recommendation (iv)), emphasizing experiential learning such as that which takes place in our field school courses, keeping programs current, promoting the professional nature of our degree programs, leveraging new faculty hires to expand our research areas, improving grant application success rates, expanding in-house analytical capabilities, and establishing a new visual identity for promoting the department. In addition, the department wants to continue to highlight the successes of its students, staff, faculty, and alumni. The strategic plan also outlines departmental priorities for increasing Indigenous engagement, reconciliation, and sustainability initiatives.

Finally, with respect to the acquisition of a LA-ICP-MS system and the ability to increase our in-house analytical capabilities, an application was submitted for the internal UofR CFI Innovation Fund call in 2021. The instrumentation was included on the 2022 CFI ACCETS application from

the UofR. While this application was ultimately unsuccessful, the proposed LA-ICP-MS system is slated for inclusion on the upcoming 2024-2025 CFI Innovation Fund application from the UofR. To this end, Dr. Robbins continues to advocate for the acquisition of this instrumentation and secured a President's Research Seed Grant in 2023 that allowed for the purchase of an Iolite software license. Use of this software will aid in building experience in handling/treating LA-ICP-MS data. The acquisition of a LA-ICP-MS system on campus would be transformational for the Department of Geology with respect to both research capability, as well as training of undergraduate and graduate students. It would also be highly beneficial for other internal and external units/agencies pursuing Earth science or materials related research. As such, acquisition of an LA-ICP-MS system continues to be a high priority item for the department.

On behalf of the Department of Geology,

A handwritten signature in black ink, appearing to be 'L. Robbins', written in a cursive style.

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