

**Undergraduate Programs in Earth Sciences
Update on Unit Response to External Reviewers' Report & Action Plan
Programs Being Reviewed: Undergraduate Programs in Earth Sciences
Completed by: Tim Patterson, Chair, Earth Sciences
Approved by Dean: Maria DeRosa, June 24th, 2024**

Note: This document is made available for public posting on the Vice- Provost's website.

***** Denotes items that SQAPC would like the unit to pay particular attention to based on their past review of the original action item.**

External Reviewer Recommendation	Original Action Item	Owner & Timeline	Progress Update June 2024	Have calendar changes been initiated or completed (Not applicable/Yes/No), if Yes, when
<p>1. Opportunity: Core geoscience program - As described in the following document, the program is excellent, providing a mixture of teaching and assessment methods, outstanding experiential learning, and ample student research opportunities. In this context, we encourage the department to continue to build the earth science program.</p>	<p><i>We will continue to identify opportunities to diversify our programs, including increasing the environmental earth sciences component of our teaching and research, expanding our Outreach programs to engage a new cohort of potential earth sciences students, developing collaborations with other departments and faculties, and expand our recruitment efforts.</i></p>	<p><i>Faculty members, staff, department Strategic Planning Committee</i></p>	<p>We have been exploring ways to develop a new undergraduate concentration, or new combined undergraduate degree in Earth and Environmental Geoscience, as an attractive program for potential students. A new high enrollment general interest course "Planet Hollywood (ERTH 2012)" has been developed to provide opportunities for students outside of Earth Sciences to gain knowledge of this burgeoning field. This course joins several other high enrollment general interest courses put on by Earth Sciences that are similarly designed to attract students from other disciplines. Field courses and experiential learning has been reinstated after being not offered during the closures of the COVID 19 pandemic. Three new hires have joined the faculty ranks providing additional mentoring opportunities for undergraduates.</p>	<p>Planet Hollywood course has been part of the calendar for two years. The proposed new concentration in Environmental Geosciences, designed to comply fully with knowledge requirements for professional (PGO) status is expected to be implemented in the 2025-26 academic year .</p>

<p>2. Concern: Enrollment - As the Department is aware, they are a small unit with a narrow enrollment base. The unit is already undertaking numerous steps to address this concern, including an exemplary outreach program.</p>	<p><i>We will continue to build on our Outreach program, expand our High School teachers workshop to aid teachers in developing earth science curriculum in their courses, improve department advertising in Ontario high schools, strive to offer an Enrichment Mini-Course annually, add recruiting materials to our department website and social media platforms, and expand our service course selection to attract new students.</i></p>	<p><i>Chair, Department Recruiting Committee, Undergraduate Administrator</i></p>	<p><i>As a result of our considerable physical outreach efforts, possible again now that COVID 19 restrictions have been lifted, as well as a major expansion of our social media/COMMS efforts, it was reported in June 2023 that there had been a 100% increase in enrolment interest over previous year at the same time. This increase in interest may also be a result of the considerable media attention applied to environmental earth sciences issues, particularly the huge coverage of the role that critical minerals will play in growing the green economy. As described in the section above we are proposing a new combined undergraduate degree in Earth and Environmental Geoscience this Fall that should be very attractive to prospective students and it will be recession proof.</i></p>	<p>Calendar changes initiated for program component.</p>
<p>3. Opportunity: Outreach - There is a deep commitment by the department to earth science outreach, particularly to high school students, but also alumni and the wider community. Our sense was that there is an opportunity for the university to coordinate with and enhance departmental outreach efforts.</p>	<p><i>We request a multipurpose teaching room dedicated to Outreach school visits, potentially for all Science departments. We request improvements to the outdoor area between Richcraft and Herzberg used for our Summer Sports Camps. We request the establishment of the Alice Wilson Geoheritage Park on campus. The Department/Faculty can help to better advertise and promote Geoheritage Day.</i></p>	<p><i>Dean, FMP, Chair, staff</i></p>	<p><i>We run very successful and popular combined Earth Sciences/Sports camps. Due to space restrictions it will not be possible to grow this program. We are putting considerable effort through Social Media and our COMMS channels to promote our September Geoheritage Day to the community. We have also initiated a lecture series to celebrate Geodiversity Day. Progress continues on developing an on campus 4.6 km (the Earth is 4.6 billion years old) long “Geologic Time Trail “ throughout campus; including a stop in the Alice Wilson Geoheritage park, and themed displays on Indigenous perspectives on nature and time. This is part of the campus outdoor masterplan. The Time Trail is moving forward with funding already in place.</i></p>	<p>Not applicable.</p>
<p>4. Opportunity: Interdisciplinarity - There are potential opportunities for the department to further engage and interact with other programs on campus. The university is prioritizing interdisciplinarity, as discussed in the Strategic Plan. The department has some obvious and existing connections to the environment, sustainability, and climate change. We encourage thinking about other opportunistic areas that are</p>	<p><i>The department recognizes the value of collaborations with other departments and faculties. We agree that data science, computer programming, and public policy programs that exist at Carleton may be programs that our students could connect with, and also</i></p>	<p><i>Faculty, Dean</i></p>	<p><i>A new climate/environmental themed interdisciplinary degree is being discussed with other units with two separate combined degrees; one in social science, and one combined of components from departments, including Earth Sciences, in the Faculty of Sciences. Chris Burn from Geography is leading this initiative, ES will sit on</i></p>	<p>Yes</p>

<p>new for the discipline, interdisciplinary, and/or address grand challenges, such as data science, machine learning, and perhaps governance and policy in applied social sciences. Perhaps codeveloped programs in the direction of data science may also bring in new students to the earth sciences. Other areas of potential interdisciplinarity are in evolutionary biology and geobiology, given the interest that these topics are receiving, along with potential connections to biology and evolutionary ecology.</p>	<p><i>serve to attract new students into Earth Sciences from those fields. Our department experience is that new programs require faculty support – an “in-house driver” - (e.g., our Vertebrate Paleontology program) to be successful. For example, we can envision a new degree program based on a broad understanding of earth sciences coupled with other disciplines, such as history, economics, social studies, and archeology. We also see an opportunity to offer a program on Canada’s North, including earth sciences, geography, social sciences, public policy, history, and climate change – but our department currently has no expertise in the geology of the North.</i></p>		<p><i>the planning committee that will begin its work in September, 2023. We actually have considerable research expertise in the North, with nearly half the faculty in the department now carrying out research in the North. Three faculty members have NSERC Discover Northern Supplement grants.</i></p>	
<p>5. Opportunity: Enhanced Indigenous and racialized engagement – both to target Indigenous students, but also to enhance student understanding of cultural, social, political aspects related to the environment and resource development in traditional territories.</p>	<p><i>We have contacted both University Advancement and the Awards Office about establishing scholarships for under-represented students, especially Indigenous students. We will work with the Centre for Indigenous Initiatives to improve communication of concerns from Indigenous groups to our students and all members of the Department. We will also approach Equity and Inclusive Communities to evaluate how to improve the diversity of our student population.</i></p>	<p><i>Faculty, staff, students, department EDI member on Faculty of Science EDI Committee</i></p>	<p><i>Considerable progress has been made on Indigenous engagement with Sivummut Solutions meeting with the department regarding a collaboration to train Indigenous geoscientists so they can be accredited for work in the Nunavut territorial government. An Indigenous student in ES, is developing an Indigenous Learning Bundle for the Faculty of Science. Some faculty in ES are already using Learning Bundles in their courses. We are working with the Office of Indigenous Teaching, Learning and Research on ways to bring Indigenous youth to campus to learn about integrating Traditional Knowledge with western Knowledge. This plan was initiated on the eve of the pandemic and after a hiatus due to COVID 19 travel restrictions is now being actively developed with First Nations in Alberta.</i></p>	<p>Not applicable.</p>