



FOR INFORMATION

PUBLIC

OPEN SESSION

TO: UTSC Campus Affairs Committee

SPONSOR: Prof. William Gough, Vice-Principal Academic and Dean
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DATE: February 4, 2021 for February 11, 2021

AGENDA ITEM: 2

ITEM IDENTIFICATION:

Proposal to Establish an Extra-Departmental Unit D (EDU:D): Centre for Research in Earth System Science (CRESS), UTSC

JURISDICTIONAL INFORMATION:

Under section 5.1 of the *Terms of Reference*, the CAC is responsible for the “*Establishment, termination or restructuring of academic units and proposals for Extra-Departmental Units.*” Section 5.8.1 of the *Terms of Reference* provides that the CAC recommends to the UTSC Council “*on plans and proposals to establish, disestablish, or significantly restructure academic units...regardless of the source of funds. Proposals for Extra-Departmental Units (EDU)-A’s and B’s are considered and recommended for approval while those for EDU-C’s are considered and approved, pursuant to the Policy on Interdisciplinary Education and Research Planning.*” Under the *University Guidelines for Extra-Departmental Units* (January 2015), Extra-Departmental Unit Ds require divisional governance approval “as determined by the Dean’s Office.” The process established by the UTSC Office of the Vice-Principal Academic and Dean, and finalized on August 19, 2020, states that all new EDU:Ds must be approved by the Dean, and reported to the UTSC Campus Affairs Committee, for information.

GOVERNANCE PATH:

1. **UTSC Campus Affairs Committee [For Information] (February 11, 2021)**

PREVIOUS ACTION TAKEN:

No previous action in governance has been taken on this item.

HIGHLIGHTS:

The University of Toronto Scarborough (UTSC) has established the Centre for Research in Earth System Science (CRESS) as a new Extra-Departmental Unit D, effective as of January 1, 2021. UTSC is the Lead Division; the Vice-Principal Academic and Dean will assume active administrative and budgetary responsibility for the Centre, and will appoint a Director, who will be responsible for the administrative and financial operations of the Centre. The Department of Physical and Environmental Sciences (DPES) will provide an intellectual home for the CRESS.

The primary impetus behind the creation of the CRESS is to showcase cutting edge research activity investigating the natural evolution of the Earth and solar system (as opposed to anthropogenic influences on Environmental Geoscience). The fields of interest featured in the Centre's activity will include Cryospheric Dynamics, Sedimentology, Petrology, Structural Geology, Geodynamics, Geochemistry, Atmospheric Physics and Planetary Physics. A specific aim of the CRESS will be to promote an understanding of Earth and Atmospheric Science and to provide clarity in distinguishing between human influence and natural cycles on the evolution of our planet.

A key goal of the Centre will be to engage tenure stream faculty and graduate students, who typically spend a significant amount of their time away from the UTSC campus, and to provide maximum inclusiveness in the DPES for faculty and students who are not under the Environmental Science umbrella of the Department. Another goal of the Centre will be to increase the links between undergraduate students enrolled in DPES programs such as the Geoscience stream of Environmental Science, Environmental Physics and Physics and Astrophysics.

The CRESS's central activity will be the hosting of a monthly colloquium, that will be accessible to undergraduate students. The CRESS also aims to engage in outreach activities for Physics undergraduates, including most notably undergraduate Summer research awards, and administer financial travel support for UTSC affiliated graduate students in Physics, Astrophysics, Environmental Physics and Geoscience.

The Centre for Research in Earth System Science is supported by a core group of permanently appointed faculty, all from the Department of Physical and Environmental Sciences at UTSC. The CRESS Director will be appointed for a fixed term of not more than five years.

The proposal to create the CRESS was developed by a team of scholars comprised of a core group of faculty members from the Department of Physical and Environmental

Sciences. There has also been consultation across faculty in the DPES more broadly. Beyond the Department, there has been consultation with the Office of the Dean.

CGDS will be subject to periodic review commissioned by the Vice-Principal Academic and Dean of the University of Toronto Scarborough.

FINANCIAL IMPLICATIONS:

The CRESS shall, under the authority of the Dean, administer a budget to sustain its activities. The Vice-Principal Academic and Dean has reviewed, and supports, the budget model. For more information, see the budget outlined in the proposal.

RECOMMENDATION:

This item is presented for information only.

DOCUMENTATION PROVIDED:

1. Proposal: EDU:D – Centre for Research in Earth System Science, dated November 30, 2020

PROPOSAL FOR A NEW EDU:D CENTRE FOR RESEARCH IN EARTH SYSTEM SCIENCE (CRESS)

November 30, 2020

Statement of Purpose

This is a proposal to establish the Centre for Research in Earth System Science (CRESS), as an Extra-Departmental Unit D (EDU:D), at the University of Toronto Scarborough (UTSC). UTSC will be the Lead Division. The Vice-Principal Academic and Dean at UTSC will assume active administrative and budgetary responsibility for the Centre, and will appoint a Director, who will be responsible for its administrative and financial operations. The CRESS will be effective as of January 1, 2021, and the Department of Physical and Environmental Sciences (DPES) will provide its intellectual and administrative home.

Academic Rationale

The primary impetus behind the creation of the CRESS is to showcase cutting edge research activity investigating the natural evolution of the Earth and solar system (as opposed to anthropogenic influences on Environmental Geoscience). The fields of interest featured in the Centre's activity will include Cryospheric Dynamics, Sedimentology, Petrology, Structural Geology, Geodynamics, Geochemistry, Atmospheric Physics and Planetary Physics. A specific aim of the CRESS will be to promote an understanding of Earth and Atmospheric Science and to provide clarity in distinguishing between human influence and natural cycles on the evolution of our planet. In addition, the CRESS will focus on natural processes that are vital for the habitability of the Earth, with an emphasis on insight into the physical and chemical requirements that stabilize the climate, diurnal cycle, atmosphere and oceans on time scales ranging from millennia to hundreds of millions of years. In so doing, the CRESS will be able to raise student awareness of these fascinating areas of study, and provide more opportunity for students to discover and actively engage with them.

Locating the CRESS in the DPES

The DPES is an omnibus academic unit that is home to undergraduate programs spanning the disciplines of Chemistry/Biochemistry, and Physics/Astrophysics. In addition to undergraduate programs in each of these areas of studies, the DPES offers interdisciplinary undergraduate programs in Environmental Studies/Environmental Science, Environmental Biology, Environmental Chemistry, Environmental Geoscience and Environmental Physics. Finally, the DPES is home to a highly successful professional Masters of Environmental Science (MEnvSci) and PhD in Environmental Science.

Faculty in the DPES, who are conducting exciting research in the fields of Planetary Physics (including Astrophysics and Geophysics), Geology, Geochemistry and Atmospheric Physics, teach undergraduate courses at UTSC but are primarily engaged in graduate teaching and supervision through their appointments in the graduate Departments of Physics, Chemistry, Astronomy and Astrophysics and Earth Science, which are located on other University campuses. Locating the CRESS in the DPES establishes a research hub at UTSC for these faculty. It creates a cohesive gathering place for faculty in which they can promote the fields in which they are active, highlight their research findings, disseminate the results of their research activity, and increase student engagement. Additionally, teaching stream faculty in the DPES, with expertise in the fields encompassed by the CRESS, will find opportunities to mentor senior undergraduate students in their fields of expertise. It is anticipated that the increase in opportunities for interaction will benefit both faculty and students.

A key goal of the Centre will be to engage tenure stream faculty and graduate students, who typically spend a significant amount of their time away from the UTSC campus, and to provide maximum inclusiveness in the DPES for faculty and students who are not under the Environmental Science umbrella of the Department. For example, by providing opportunities for UTSC affiliated graduate students not eligible to apply for the travel grants available to graduate students in DPES's Environmental Science programs, the Centre will offer a financial incentive for participation, as well as an intellectual exchange that is on par with the Environmental Science research opportunities conducted in the DPES.

Another goal of the Centre will be to increase the links between undergraduate students enrolled in DPES programs such as the Geoscience stream of Environmental Science, Environmental Physics and Physics and Astrophysics. The Centre will become a home for students who are focused on the Physical Sciences, and in this way will provide a place of belonging for these students to engage with each other, faculty and graduate students active in studying the Physical Sciences.

Proposed Activities

The Centre's central activity will be the hosting of a monthly colloquium, that will be accessible to undergraduate students. Invited speakers will include scientists working in Geoscience and Atmospheric Physics (including studies of the cryosphere and hydrosphere), as well as Planetary Science. The goal of this activity will be to provide a meeting place for engagement and inquiry regarding research and graduate study opportunity for students enrolled in Geochemistry, Physics, Astrophysics and the Geosciences on the UTSC campus, as well as introducing students to research opportunities and providing a social and academic meeting time for this cohort.

The CRESS colloquia and research activity will be focused on processes and phenomena that are rooted in origin, natural cycles and evolution, as opposed to the anthropogenic influences on environment. Examples range from: ice age cycles, to plate tectonic phenomena, secular variation of the magnetic field, planetary orbits and planetary chemistry. (N.B., Some Universities traditionally refer to these areas of study as the Natural Sciences.) Accordingly, the

scientific focus of the CRESS will differ from existing DPES colloquia interests and student outreach but will nevertheless promote activity in highly complementary fields. Ultimately, the success of the CRESS will be judged by attendance at the monthly colloquium and application numbers for summer research positions with associated faculty.

Similar activities to those described above were offered in the 2019-2020 academic year under the mission of the Centre for Planetary Science (CPS), which is an EDU:C. However, the CPS is no longer active at UTSC, and it is anticipated that it will close or relocate to the St. George campus in short to medium term, leaving a vacuum in terms of providing a draw for the physics undergraduate students enrolled in DPES programs. The CRESS aims to ensure the continuation of CPS outreach for Physics undergraduates and financial travel support for UTSC Physics and Astrophysics graduate students, and to extend this activity to the Environmental Physics and Geoscience students. The past and final year (2019-2020) of the CPS expanded the scope of the research promoted under its umbrella to include Solid Earth Geophysics, Geochemistry, Hydrospheric Science and Atmospheric Science, in addition to featuring its original foundations in Planetary Science. In 2019-2020 CPS funding supported the hosting of a monthly colloquium pitched at an undergraduate audience, travel support for graduate students (affiliated with UTSC) registered in the Astronomy and Astrophysics, Earth Science and Physics PhD programs, and the sponsoring of four undergraduate summer research positions in Earth and Planetary Physics. The final activity planned for the past year, a *Planet Day* featuring three invited speakers from international peer institutions was cancelled due to the pandemic.

Consultation

This proposal has been developed by Professor J. Lowman, with support from Professors N. Eyles and M. Wells. This core group has reached out to DPES faculty more generally to determine who would be interested in participating in the proposed Centre; each of the proposed faculty participants identified below have confirmed their interest in becoming affiliated with the CRESS through e-mail exchange with Professor Lowman. Faculty engagement will vary from organizing and attending the colloquia to supervising undergraduate summer research students and ranking the financial need of graduate students applying for CRESS travel grants. The Centre will actively recruit and welcome additional faculty through promotion of its programs and colloquia.

Faculty Participation

The Centre for Research in Earth System Science is supported by a core group of permanently appointed faculty, all from the Department of Physical and Environmental Sciences at UTSC, as follows:

Heidi Daxberger (Assistant Professor Teaching Stream)
Maria Dittrich (Associate Professor)
Nicholas Eyles (Professor)
William Gough (Professor)

Alen Hadzovic (Associate Professor Teaching Stream)
Julian Lowman (Professor)
Mandana Meriano (Associate Professor Teaching Stream)
Myrna Simpson (Professor)
Karen Smith (Assistant Professor Teaching Stream)
Dan Weaver (Assistant Professor Teaching Stream)
Mathew Wells (Associate Professor)

It is anticipated that the Centre will also include a new faculty member currently being searched to fill an advertised Environmental Geophysics position in the DPES, as well as any future hires in the Geoscience or Atmospheric Science fields. The expertise to be attained with this new faculty member will potentially introduce students to investigation of the evolution of polar regions, geophysical field work and natural variation in sea-level and glacial cycles. The areas of research encompassed especially illustrates how the Centre will complement Environmental Science by illustrating the contrast in natural evolution versus anthropogenic driven changes in the Earth system.

As DPES completes the fulfillment of offering all courses required for Professional Accreditation in Geology and Geophysics by the Professional Geoscientists of Ontario, it anticipates an increasing demand from incoming students for exposure to the lines of research to be showcased by the new Centre.

Administration/ Governance Structure

The CRESS Director will be appointed for a fixed term of not more than five years, renewable once, by the Vice-Principal Academic and Dean of the University of Toronto Scarborough (or designate). The Director will be responsible to the Dean for all facets of the CGDS including policies, budget, and administrative and financial operations.

The CRESS will be supported in terms of administrative issues, including budget and allocation of funds, printing, and publicity by appointed University staff as determined by the Chair of the Department of Physical and Environmental Sciences.

Furthermore, the Centre shall maintain a public list of members across the University (e.g., posted on the Department website). Affiliated faculty and researchers have no administrative responsibilities to the Centre.

Estimated Budget

The Centre for Research in Earth System Science shall administer a budget under the authority of the Chair of the DPES. Budgetary requests will form part of the annual request made by the DPES Chair. The budget model below provides a framework for the support needed for the proposed activities of the Centre, which has been reviewed by the Office of the Vice Principal Academic and Dean.

1. Six colloquia per academic year, refreshments, travel support and hosting of speakers: \$2000/yr.
2. Four competitively awarded summer undergraduate research positions: \$18,000/yr. (i.e., four \$4500 awards to be topped up by supervising faculty members that will be equivalent to the amounts awarded by the NSERC USRA program.)
3. Graduate travel bursary awards: \$10,000/yr. (To be disseminated based on applications to a committee of two affiliated faculty.)
4. Director's annual stipend: \$3000/yr.
5. Our Planet Day travel, hosting and organization costs: \$7000/yr.

Total annual budget: \$40,000.

All activity will occur on the UTSC campus and graduate travel awards will be made to students affiliated with the UTSC campus working with supervisors appointed in DPES.

Review

In line with normal practice, the CRESS will be subject to periodic review (normally every 5 years) commissioned by the Vice-Principal Academic and Dean of the University of Toronto Scarborough. The review will assess the EDU's sustainability, performance, and achievements relative to the goals set out at its establishment. A possible outcome of the review may include closure of the Centre. The first review will be scheduled to take place in the 2025-26 academic year.

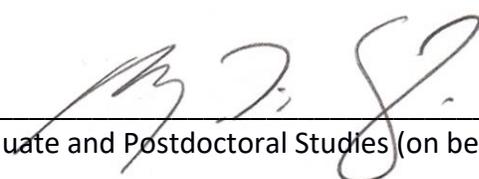
Approvals



George Arhonditsis:

Chair, Department of Physical and Environmental Sciences
Chair, Graduate Department of Physical and Environmental Sciences

Date: December 10, 2020



Mary T. Silcox: _____
Vice Dean Graduate and Postdoctoral Studies (on behalf of Dean Gough)

Date: December 11, 2020

