EDU:C Proposal: Impact Centre

Statement of Purpose
This is a proposal for changing the status of the Impact Centre from an Extra-Departmental Unit, Type D (EDU:D) to an Extra-Departmental Unit, Type C (EDU:C).

The Impact Centre as an EDU:C will be a multidisciplinary unit designed to foster research and scholarly interest in the natural sciences and engineering with a focus on the connection between scientific discovery and application and the pathways used to turn the results of research into value to society.

The Impact Centre is the administrative and budgetary responsibility of the Faculty of Arts and Science (FAS); there are no administrative obligations for any other Faculty or Division. However, a number of Faculties and Divisions are associated with the Impact Centre through the involvement of specific individual faculty, initially listed in Appendix A. This list may change as additional individuals decide to become associated with the unit.

The change in EDU status will be effective July 1, 2016.

Academic Rationale
The Impact Centre’s vision is to catalyze research in the natural sciences and engineering to create benefits to society. It aims to cover the interface between fundamental research and real-world applications by engaging in a continuum of methods by which the results of research are translated from the university to society. These methods include nurturing collaborations with industry, promoting entrepreneurship at all levels of study, and providing student training with a large experiential component. Details regarding the mission of the Impact Centre appear below.

The Impact Centre (established 2013) spun out of the Institute for Optical Sciences, and research related to optics and various related areas (materials, devices, biological) remains a core focus, with emphasis on interdisciplinary aspects, applications, and industry collaboration. Researchers who have past involvement with the Centre come from the Departments of Chemistry, Physics, Cell and Systems Biology, Materials Science and Engineering, Electrical and Computer Engineering, Forestry, Dentistry, Civil Engineering, and Chemical and Physical Sciences (University of Toronto Mississauga).

The attainment of the EDU:C status will support and enhance the Impact Centre’s academic initiatives including a potential to offer courses in the important area of innovation. Moving to an EDU:C will allow the Centre to function more effectively within FAS with the possibility of holding non-budgetary cross-appointments of tenure and teaching stream faculty, and positions it—pending special permissions—to administer its research funds. EDU:Cs do not usually administer research funds as the director is not appointed under the Policy on Academic Administrative Appointments. The 2015 Guidelines for Extra-Departmental Units indicate if an EDU:C is to have this authority, this must be approved by the Dean in consultation with the Provost. The Office of Research must also be informed. Currently, the Impact Centre’s funds are administered through the Department of Chemistry because this constitutes the main
affiliation and home unit of the Director; but the Dean, the Provost, and the Office of Research have already been consulted and informed on the subject of research funds. If the EDU:C status is approved, the Impact Centre is to have the authority to administer its funds. This has been explicitly designated by the Dean in consultation with the Provost as described in the Consultation section below.

With a change in EDU status and an ability to operate under the administrative protocols of an EDU:C, the Impact Centre will also be better positioned to support broader strategic initiatives of FAS. The Faculty has listed the enhancement of the student experience, training of soon-to-be graduates as they prepare to participate more effectively in the world, and building stronger connections with the community among its strategic initiatives (as outlined in the Faculty of Arts and Science’s Academic Plan 2010-2015). The Impact Centre will strive to support this strategic direction through its activities and programming as an EDU:C.

**Course Offerings**

The Impact Centre **enhances the University’s education mission** through its course offerings (through the Faculty of Arts & Science), its experiential learning initiatives, and its short technical and non-technical workshops geared to bridge skills for industry. The Impact Centre’s entrepreneurial training activities, both curricular and extra-curricular, are important components of the Strategic Mandate Agreement between the University of Toronto and the Ministry of Training, Colleges and Universities (2014-17). The following courses are currently already offered and administered by the Impact Centre through FAS, having undergone the usual approvals process of the Faculty.:

- **IMC200H (Innovation and Entrepreneurship)** was first offered in 2013-14 to 200 students, and later to 400 students. In all cases, there was a long waiting list of students, indicating strong demand. While most students are from the sciences, the number of non-science students has risen from ~15% to ~30%. This course provides an excellent overall introduction that complements the different fields of specialization in the university. One important student comment is that this is the one course in which they meet and work with students in disciplines far from their own.

- **IMC390Y (Internship in New Ventures)** is offered during the academic year and in the summer, for students to work as interns in a start-up company, under the supervision of the Impact Centre. The students get exposure to various technical and business aspects of working in a company. Approximately 30 students are accepted to the course each time. The number is limited by the number of positions in the start-up companies, physical space, and our staff time. The student demand is now about 4 times higher than what we can accommodate. About half of the students accepted are non-STEM.

- **IMC299Y (Research Opportunity Program)** is offered to a small number of students to participate in a faculty-supervised research project.

- **IVP210H (Holography for 3D Visualization)** is a joint course with Victoria College, the Department of Physics, and the Impact Centre, taken by ~40 students per year. This course was initiated by the Institute for Optical Sciences and continued by the Impact Centre, which also houses a holography lab for this purpose.
All of these programs are intended to help produce graduates who are better equipped to participate in their communities. Courses will continue to be administered by the Impact Centre though the FAS. However, with a change in EDU status, the Impact Centre will have the option to expand its course offerings and offer graduate collaborative programs to further enhance the student experience at all levels of study.

Research Domain

- The Impact Centre is a multi-departmental, multidisciplinary unit that fosters research in areas in the natural sciences and engineering. The core strengths are in optics, materials, and synthetic biology with emphasis on technology development, innovation and applications of research results in order to tackle real-world challenges and to apply science to deliver positive impact to society. Commercialization and entrepreneurship are important pathways to bring science to society, and thus are the core to the Impact Centre’s mission. Concurrent with undertaking innovation, the Impact Centre also studies the process by which innovation happens, and the resulting outcomes and impact, thus reaching out from the natural sciences to the social sciences.
- The Impact Centre actively participates and facilitates the building of strong partnerships with the community. To that end, it involves researchers from a diverse range of departments who may participate in various ways, including multidisciplinary grants. The 2015 Guidelines for Extra-Departmental Units indicate that as an EDU:C, the Impact Centre may hold non-budgetary cross-appointments of tenure and teaching stream faculty and may transfer funds to support faculty who hold appointments elsewhere. This will allow the Impact Centre to meet its mandate and operate more effectively as a multi-departmental, multidisciplinary unit.

Other activity and programming

- Entrepreneurship training. The Impact Centre is the home to the Techno training program, which aims to help scientists and engineers translate their ideas and expertise to products that benefit society, and nucleate and nurture university start-up companies. The Techno training program is free to Canadian students and is primarily funded by government and private sector; The Impact Centre also provides entrepreneurial skills training to various science/engineering organizations, conferences and programs, for a fee to the organizations. These income are included in the pie chart in Appendix B as part of “entrepreneurship grants and sponsorships”.
- Industry-relevant technical training. Students receive strong training in the fundamentals in their academic courses, but many industry professionals feel they are not job-ready. The Impact Centre helps alleviate this issue by offering short workshops that provide students with technical skills the industry needs. These activities are free for University of Toronto students, although in some cases, a nominal materials fee may be charged. The Impact Centre actively seeks funding from various sources, such as government programs and private sector sponsors, to cover the expenses of the activities; such income is included in the pie chart in Appendix B as part of “teaching”.

• **Research readiness and experiential learning.** The Impact Centre offers science undergraduates a non-credit course that prepares them to do research, so that they can have more opportunity to join a research lab, and/or make them better qualified for laboratory-related jobs. The Impact Centre also coordinates a summer program of experiential learning for science students to work with faculty or start-up companies. This activity is free to University of Toronto undergraduate students. The Impact Centre applies for funding from FAS and from private sector to cover the program expenses.

• **Nurturing industry and research collaborations.** The Impact Centre cultivates and manages collaborative projects between its staff, industry, and university researchers to solve scientific, technical and process issues. The Centre leverages its strengths in natural sciences and engineering to address real-world problems.

Consultation

The Director has begun to engage in a deep and broad consultation process. The Research Office has been informed. The Dean of the Faculty of Arts and Science and the Provost’s office have been consulted regarding both the status change of the Impact Centre to an EDU:C and for the Impact Centre to be allowed to be the administrative home for research accounts. Both parties are in agreement for both the status change and the grant administration exception. The grant administration exception has been approved by the Department of Chemistry. The Director will also incorporate feedback from the upcoming Provost Advisory Group.

The Director has engaged her home unit, the Department of Chemistry, as well as existing faculty who have participated in the work of the Centre, as listed in the Appendix A. Consultation with Chairs of home units of these faculty are ongoing. The Director will continue to consult broadly with the Chairs of the Departments and the Deans of associated faculties or divisions regarding any individual faculty who elect to establish an association with the unit in the future. The Impact Centre is currently identifying potential members for the Executive Committee and Advisory Board. Members will be consulted on the subject as they are engaged.

Faculty Participation

Faculty involvement is primarily through collaboration in multidisciplinary grants, mentoring of student-entrepreneurs, meeting with visitors and speakers, and participation in non-academic activities such as networking events. The faculty listed in Appendix A have been actively engaged with the Impact Centre as an EDU:D, and are candidates to become non-budgetary cross-appointments to the Impact Centre as an EDU:C, conditional upon approval of this proposal. In addition, over 20 other faculty have occasionally participated in our past activities. The proposal complies with relevant workload policies, and the anticipated impact on current roles and responsibilities is reasonable and sustainable. The relationships of potential members to the EDU are consistent with the *University Guidelines for Extra-Departmental Units.*
Structure/Administration

The Director

The Impact Centre is currently under the leadership of Professor Cynthia Goh, the founding Director of the unit, having served since the establishment of the EDU:D in 2013.

Professor Goh has recently been appointed as the inaugural Academic Director of the Banting and Best Centre for Innovation and Entrepreneurship (BBCIE). The mandates of the BBCIE and the Impact Centre are related but different. The BBCIE is the coordinating office for the University’s entrepreneurial activities, including its nine campus-linked accelerators (CLAs), a group of incubators and accelerators that help students begin their entrepreneurial venture. The BBCIE is thus an umbrella dedicated to strengthening the entrepreneurial ecosystem across all campuses but it does implement programming itself.

As one of the CLAs within this ecosystem, the Impact Centre’s focus is on science- and technology-based start-ups. The Centre helps graduate students, researchers, and faculty build ventures based on innovations in the natural sciences and engineering. Although Impact Centre’s entrepreneurship programs support the University’s mandate on the subject of entrepreneurship, the Impact Centre’s mission includes other themes such as collaborations with industry, multidisciplinary grants, and research skills and experiential student training that are well outside of the scope of the BBCIE.

Upon approval of this proposal, a Director will be appointed to oversee all facets of the Impact Centre as an EDU:C. Professor Goh will remain Director of the Impact Centre as an EDU:D, or EDU:C pending approval of both the status change and her appointment as the Director by the Dean.

The Director’s responsibilities include providing academic leadership, establishing policies, budget, and all administrative operations. The Director’s appointment by the Dean will be for a fixed term of no longer than five years, renewable by the Dean. The Director will be responsible and accountable to the Dean for all operations. The Dean also has the responsibility of overseeing the termination of the appointment of the Director. Upon appointment, the name of the Director will be reported to the Office of the Provost.

As indicated in the Guidelines for Extra-Departmental Units (2015), EDU:C directors are not appointed under the Policy on Academic Administrative Appointments, and as such, they may not administer research funds without approval by the Dean in consultation with the Provost. The Office of Research must also be informed. As indicated above, The Impact Centre is to have the authority to administer research funds. The Director will be responsible and accountable to the Dean for the financial management of the unit and all its resources. The Director will provide oversight of the Impact Centre’s financial officer and of any individuals within the unit who are responsible for financial management activities. Each year, the Director will submit an annual accountability report to the Dean attesting to the proper completion of these financial management responsibilities. Signoffs from the academic unit head in which a principal investigator holds his or her primary budgetary appointment is required for research applications.

The Dean is responsible for overseeing the disbursement of any advancement funds to this unit.
The Director will be responsible for naming an Executive Committee and an Advisory Board and communicating with the Dean (or designate) with regards to these appointments. The Director will be responsible for managing the input of the Executive Committee and the Advisory Board in determining the direction of the unit.

**The Executive Committee**

To streamline the administrative structure of the Impact Centre, an Executive Committee comprised of faculty will be established and chaired by the Director. The Executive Committee will meet two to three times a year and will be responsible for the development and periodic review of the unit’s strategic plan, provide academic oversight to the unit, and to coordinate with the Dean’s Faculty-level strategic vision.

The Impact Centre is currently identifying candidates for the Executive Committee. The members of the Executive Committee will ideally be composed of:

- The Director
- The Vice-Dean, Research and Infrastructure, Faculty of Arts & Science
- The Chair of the Department of Chemistry or Physics
- Three other faculty members from three separate departments

**The Advisory Board**

The Impact Centre will establish an Advisory Board consisting of senior industry and policy experts to provide non-binding advice in accordance to the *Provost’s Statement on the Role of Advisory Bodies*. The role of the Advisory Board will be to provide the Director and the Executive Committee with advice and perspectives from outside the University, to provide connections between university researchers and industry to maintain the unit’s mandate to bring science to society, to maintain good relationships with government, and to assist the unit’s advancement plans.

The Director will be responsible for appointing members to the Advisory Board. The Impact Centre is currently identifying candidates for the Advisory Board, which will ideally be composed of:

- A representative from the University of Toronto’s Innovations & Partnerships Office
- A representative from the University of Toronto’s Office of the Vice President, International, Government, and Institutional Relations
- Three representatives from industry
- Three representatives with expertise in policy, government, and law

**Budget**

A draft budget has been included with this document as Appendix B. This is in line with the Impact Centre budget for the past 3 years, which has enabled growth of the unit to its current size with funding generated mainly from external sources (industry, government grants, services).
The Impact Centre receives funds from the FAS proportional to student enrolment in its entrepreneurship courses (IMC200H, IMC390Y), but it is primarily funded by contracts from industry, and matching grants from government programs and other multidisciplinary initiatives that are normally not accessible to individual faculty. This is expected to continue, and hence the request for the ability to administer research funds. The Faculty of Arts and Science has committed that 100% of the overhead in these grants will be given back to the Impact Centre. A percentage breakdown of the expected sources of funding is shown in Appendix B.

Research Funds
As indicated in the *Guidelines for Extra-Departmental Units (2015)* EDU: C directors are not appointed under the *Policy on Academic Administrative Appointments*, and as such, they may not administer research funds without approval by the Dean (in consultation with the provost). The Office of Research must also be informed. As indicated above, the Impact Centre is to have the authority to administer research funds. This has been explicitly designated by the Dean in consultation with the Provost as described in the Consultation section, above. The Centre will follow the financial accountability requirements identified for EDU:A’s and EDU:B’s, including signing financial accountability reports.

Review
The expectations regarding the review of the EDU:C are as outlined in the *University of Toronto Guidelines for Extra-Departmental Units*. In line with normal practice, an EDU: C is subject to periodic review (normally every 5 years) by the lead Dean. Any review would normally assess the EDU’s sustainability, performance and achievements relative to the goals set out at its establishment. Possible outcomes of the review could include closure. The Dean is responsible to lead periodic reviews of the unit in terms of its policies, budget, and administrative operations. This review process will occur every 5–7 years. Pending approval of the Impact Centre as an EDU:C, the earliest review date is July 1, 2021. This review will look at the sustainability, performance, and achievements of the Impact Centre as they relate to the goals laid out in this proposal above. The review will be used to assess merit for extension of term of the unit.
Appendix A: Faculty

Faculty who have actively engaged with the Impact Centre as an EDU:D unit through research and industry collaborations, entrepreneurship activities, student training.

- Ken Burch (Physics)
- Al-Amin Dhirani (Chemistry)
- M. Cynthia Goh (Chemistry)
- Young-June Kim (Physics)
- Anil Kishen (Dentistry)
- Kagan Kerman (Chemistry, UTSC)
- Zheng-Hong Lu (Materials Science and Engineering)
- David McMillen (Chemical and Physical Sciences, UTM)
- Sergio Peisajovich (Cells and Systems Biology)
- John E. Sipe (Physics)
- Douglas Stephan (Chemistry)
- G. Andrew Woolley (Chemistry)
Appendix B: Proposed Budget

<table>
<thead>
<tr>
<th>Budget Item</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<td>1. Administration</td>
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<td>a. salaries and benefits</td>
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<tr>
<td>b. operations</td>
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<td>2. teaching</td>
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<td>a. salaries and benefits</td>
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<td>$5K</td>
<td>$5K</td>
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<tr>
<td>c. travel/conferences</td>
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<td>$2K</td>
<td>$2K</td>
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<tr>
<td>3. research</td>
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<td>a. salaries and benefits</td>
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<td>b. minor equipment</td>
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<td>d. travel/conferences</td>
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<td>4. seminars and visitors (Distinguish Visiting Scientist, and Distinguish Visiting Entrepreneur Program)</td>
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<td>5. entrepreneurship</td>
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<td>a. salaries and benefits</td>
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<td>d. travel</td>
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<tr>
<td>e. space</td>
<td>$20k</td>
<td>$10K</td>
<td>$10K</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$1,782K</strong></td>
<td><strong>$1,816K</strong></td>
<td><strong>$1,940K</strong></td>
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Budget breakdown:

1. Administration:
   1a. salaries and benefits: business officer (1FTE), 2 administrative assistants (2FTE), receptionist (0.4FTE).
   1b. operations: basic office expenses including phone, photocopying, parking.

2. Teaching:
   2a. salaries and benefits: course coordinator for training programs (IMC390Y, Research Readiness, Summer Training Initiative for Scientists and Engineers) (1FTE); sessional lecturer (IMC200H, JVP210H, VicOne).
   2b. operations: consumables for Holography labs.
2c. travel for conferences to present research in teaching.

3. Research:

3a. salaries and benefits: senior research associates (3 to 4 FTE); research associates (5FTE); postdoctoral fellows (2 to 4); technical assistants (1FTE).
3b. minor equipment: test equipment, maintenance and upgrades.
3c. operations: consumables (chemicals, disposables, electricals), user fees for facilities.
3d. travel: trips to industry partners and collaborators, travel to conferences to present results.

4. Seminars and visitors: transportation, accommodations and events for Distinguish Visiting Scientists (1 or 2) and Distinguish Visiting Entrepreneur (1 or 2).

5. Entrepreneurship

5a. salaries and benefits: senior research associate (1FTE); research associate (1FTE); postdoctoral fellow (1)
5b. equipment: 3D printer, electronics prototyping, maintenance and upgrade.
5c. operations: printing, design, software; refreshments for events; awards/prizes; fees for conferences and related; consultants/contractors for legals and marketing.
5d. travel: meeting with partners and government, presentations and training sessions in other places.
5e. space: upgrade to existing furniture.