SENATE

NOTICE OF MEETING

October 27, 2023

Please be advised that the next regular meeting of Senate of Concordia University will be held on Friday, November 3, 2023, at 2 p.m., in the Norman D. Hébert, LLD Meeting Room (Room EV 2.260) on the SGW Campus.

The Agenda and documents for the Open Session meeting are now posted on the Senate webpage.

Please note that Closed Session documents and discussions are confidential.

Members of the University community who wish to view the Open Session meeting are invited to go to EV 2.301. You will be admitted to the observers' gallery following the Closed Session meeting.

Karan Singh
Secretary of Senate

AGENDA OF THE OPEN SESSION
OF THE MEETING OF SENATE

Friday, November 3, 2023
immediately following the Closed Session meeting
in the Norman D. Hébert, LLD Meeting Room
(Room EV 2.260) on the SGW Campus
and via Zoom Videoconferencing

Item	Presenter(s)	Action
1. Call to order	G. Carr	
1.1 Approval of the Agenda	G. Carr	Approval
1.2 Adoption of Minutes from the Open Session meeting of September 29, 2023	G. Carr	Approval
2. Business arising from the Minutes not included on the Agenda	G. Carr	
3. President's remarks	G. Carr	Information
4. Academic update (Document US-2023-6-D2)	A. Whitelaw	Information

CONSENT AGENDA

Item	Presenter(s)	Action
5. Tribunal Pool/Committee Appointments (Document US-2023-6-D3)		Approval
6. Distinguished Research Professor Award guidelines (Document US-2023-6-D4)		Approval
7. Mandate and Memberships of Senate Standing Committees (Document US-2023-6-D5)		Approval

REGULAR AGENDA

8.	Recognition of new research Unit - CICIEM (Document US-2023-6-D6)	G. Carr/ D. Bérubé	Ratification
9.	Question period (*maximum 15 minutes*)		
10.	Other business		
11.	Adjournment	G. Carr	

MINUTES OF THE OPEN SESSION
OF THE MEETING OF SENATE

Friday, September 29, 2023,
Following the Closed Session of Senate
in the Norman D. Hébert, LLD Meeting Room
(Room EV 2.260) SGW Campus
and via Zoom video conferencing

PRESENT

Voting members:

Anne Whitelaw (Chair)	Selvadurai Dayanandan	Christopher Moore
Angelica Antonakopoulos	Mourad Debbabi	Catherine Mulligan
Leslie Barker	Larry Deck	Xavier Ottenwaelder (zoom)
Sabine Bergler	Effrosyni Diamantoudi	Robert Padmore
Dominque Bérubé	Mehdi Farashahi (zoom)	Mireille Paquet (zoom)
Beverley Best	Ariela Freedman	Véronique Pepin
Theresa Bianco	Annie Gérin	Mahshid Rahbari
Amy Buckland	Bonnie Harnden	Rosemary Reilly (zoom)
Alexandrah Cardona	Steve Henle	Pascale Sicotte
Graham Carr (arrived 2:34)	Arnav Ishaan	Ahmed Soliman
Sally Cooke	Mehdi Kharazmi	Sofiène Tahar
Roy Cross	Raghulkanna Lakshmanan	Craig Townsend
Anne-Marie Croteau	Harley Martin (zoom)	Radu Grigore Zmeureanu

Non-voting members: Philippe Beauregard (arrived 2:36), Stéphanie de Celles, Isabel Dunnigan, Nadia Hardy, Frederica Jacobs, Stefana Nita, Carlos Santana, Olivia Ward

Also attending: Caroline Baril, Alison Beck, William Cheaib, Amy Fish, Lisa Ostiguy, Melodie Sullivan

ABSENT

Voting members:

Matthew Barker	Charles Rohinth Joseph	David Morris
Fabienne Cyrius	Moshe Lander	Ian Rakita

Dany-Ariel Ishimwe   Michael Lecchino   Roberto Viereck-Salinas

<u>Non-voting members:</u> Paul Chesser, Denis Cossette, Michael Di Grappa

1.   Call to order

A. Whitelaw called the meeting to order at 2:10 p.m.

1.1 Approval of the Agenda

R-2023-5-4 *Upon motion duly moved and seconded, it was unanimously resolved that the Agenda of the Open Session be approved.*

1.2 Adoption of May 19, 2023, Minutes

R-2023-5-5 *Upon motion duly moved and seconded, it was unanimously resolved that the Minutes of the Open Session meeting of May 19, 2023, be adopted.*

2.   Business arising from the Minutes not included on the Agenda

There was no business arising from the Minutes not included on the Agenda.

3.   Academic update (Document US-2023-5-D2)

A. Whitelaw noted that there was nothing to add to the written Academic Update that had been circulated with the meeting documentation.

CONSENT

4.   Tribunal Pool/Committee Nominations (Document US-2023-5-D3)

R-2023-5-6   *Upon motion duly moved and seconded, it was unanimously resolved that the Tribunal Pool and Committee appointments be approved.*

5.   Annual Report Academic Hearing Panels (Document US-2023-5-D4)

6.   Committee reports (Document US-2023-5-D5)

7.   Library Spectrum Report (Document US-2023-5-D6)

8.   Registrar's Report on Spring 2023 Graduation (Document US-2023-5-D7)

These reports were provided for information purposes only.

REGULAR

9. **Annual Report of the Ombudsperson** (Document US-2023-5-D8)

Amy Fish, the Ombudsperson, presented highlights of the annual report, including some key statistics. A. Fish was pleased to inform Senate that there were no major problems throughout the year and underlined the University's commitment to openness and fairness. While the number and complexity of files had changed since the pandemic started, there were signs that the number of complaints would fall back to pre-pandemic levels. There were 416 active files. A majority of the files were of students (64%) and faculty (14%). Staff requests related to questions about policies and procedures were also slightly rising.

The Ombuds Office had provided some recommendations to the University, some of which A. Fish shared with Senate.

When students in failed standing apply for re-admission to the University, they are required to apply to the department where they were originally registered. If they make a mistake and apply to the wrong department (or Faculty), they do not get a notification that they had applied to the wrong department and their application would not be processed. Upon recommendation from the Ombuds Office, the University was looking to change this process so that students re-applying to Concordia would be informed if they made an error.

The second scenario pertained to the transfer of credits for students applying to Concordia with a technical DEC. The Ombuds Office was asked to review a situation where a student was not granted the exemptions they thought they would receive with a technical DEC. To correct this, the University was looking into the Ombuds Office's recommendation to correctly evaluate and grant credits for technical DEC coursework, at the time of application.

In a third case, A. Fish described situations where staff had raised concerns about their pay. Due to the recent transition to UNITY, there were mistakes on T4 forms and when the Human Resources team was contacted, they were responsive and provided support to look into the errors.

As a final example, A. Fish spoke of parents who request access to personal information of their adult children in order to advocate on their behalf. This is not permitted unless the appropriate form has been completed. Some persistent parents went to the length of drafting documents themselves to gain access to their children's information. The Ombuds Office has recommended the use of proper documentation when a request for a student's personal records or information is received.

10. **New Accelerated MBA Program** (Document US-2023-5-D9)

A. Whitelaw introduced the amendment to the Investment MBA program, with the introduction of an accelerated option. Dean Croteau spoke to a few details of the program.

There were no questions related to this item.

R-2023-5-7   *Upon motion duly moved and seconded, it was unanimously resolved that,*
Senate approve the MBA in Investment Management – Accelerated Option program
as detailed in the attached document.

- **Question period**

During question period, a question was asked about the reporting of graduation statistics and the use of the gender binary in the report. The Registrar clarified that this was still as per the government requirement for reporting and that the law hadn't been changed to allow for non-binary reporting. The University allows for students to formally request the use preferred names but is unable to change this from a reporting standpoint until the law is changed.

Another question came up in relation to the use of AI and violations under the Academic Code. A. Whitelaw responded by providing a list of the initiatives that were in place at the University to provide support and tools to the community to understand and work with AI. The University was also working on bringing guidelines related to AI shortly. Other information could be found on the websites of the Centre for Teaching and Learning and the Library. Academic integrity workshops designed to respond to questions around AI were also being offered.

F. Jacobs clarified that under Article 19 of the Academic Code, any misuse of AI would still be covered and considered a violation of the code.

- **President's Remarks**

The President joined the meeting and delivered his remarks, which are summarized as follows:

- Dr. Carr began by apologizing for his late arrival to the meeting, noting that he had just come from an event with Éric Girard, Québec's Minister of Finance. He then congratulated the community on a high-energy beginning of semester, which included classes, events, activities in person. The orientation went very well on both the campuses and was a great start to the year.

- The 20th annual Concordia Golf Classic raised a record $600,000, bringing the total to more than $7.5 million since its inception. Sponsored by Canada's nine major banks, the event hosted 150 business leaders on September 5th.

- The 34th edition of Concordia's Shuffle raised $201,000 and counting, which various gifts continuing in until next week. More than 800 Concordians joined the fun in the 6.5-kilometre walkathon from Sir George Williams campus to Loyola Campus. The top fundraising team was The Pacemakers raising $14,553.

- Homecoming took place the previous week (from September 21 to 24) and included various events: a panel of experts discussing the future of artificial intelligence, a Stingers football tailgate, Sports Hall of Fame induction ceremony and others.

- This year is the first academic year with a fall reading week in the week of October 9 and it will also be the first year when Concordia moves from a 13-week teaching semester to a 12-week teaching semester. This will hopefully provide a welcome pause to everyone, including faculty who can use the time to work on their research proposals, for the fall deadlines.

- Dr. Carr spoke of the diplomatic station with India and noted that the University has a large cohort of faculty, staff and students who are of Indian origin. The previous year, the perception of Canada had suffered due to the delays in visas, so this damaged perception is going to continue to be worrisome. The University has reached out to the Indian students and reminded them that they have services to support them. The University hopes the diplomatic situation resolves quickly and avoids any major impact to higher education sector.

- Dr. Carr then went on to note various news of accomplishments in the community, including the awarding of the Mackenzie King Open Scholarship to Creative Arts Therapies MA student Madeline K. Montgomery. Only one open scholarship is awarded each year, in support of graduate study in Canada or internationally. M. K. Montgomery is the first-ever Concordian to receive this scholarship.

- Space Concordia's students won the student design challenge hosted by the American Institute of Aeronautics and Astronautics/Institute of Electrical and Electronics Engineers at the Electrified Aircraft Technologies Symposium.

- Another Concordia student team had a podium finish at the New Housing Division of the United States Department of Energy's Solar Decathlon, coming up with a very innovative design for northern housing. This competition and the competition won by Space Concordia are both competitions against the top international universities.

- He congratulated faculty member Deanna Bowen, whose art installation - a giant piece of installation art entitled *The Black Canadians after Cooke* - was displayed on the south wall of the National Gallery of Canada in Ottawa.

- Dr. Carr reminded Senators that September 30 is the National Day of Truth and Reconciliation. He invited everyone to walk around the two campuses to admire the spectacular orange lighting of the AD and EV buildings, which has become a University tradition for marking this day. He noted that the University has launched a five -year initiative to decolonize and Indigenize its curriculum and pedagogy. The initiative follows a commitment made in the Indigenous Directions Action Plan, which was released in 2019.

- The previous evening, Dr. Carr had the pleasure of attending an awareness evening at Kahnawà:ke for the imminent ground-breaking of a new cultural arts center and

museum. The event was hosted by Chief Sky Deer and several proud Concordia graduates were in attendance as well. At one point during the evening, G. Carr was pleased to listen in on a spontaneous conversation among guests about the great things that the University was doing through the Otsenhákta Student Center.

- Dr. Carr noted that as far as university rankings, Concordia's international reputation continues to soar. Earlier this summer, QS rankings service in London, UK released its global rankings of universities, and, while they cover more than 20,000 universities in the world, they focus on smaller, more select sample sizes. Concordia University jumped more than 160 spots to be placed at 387, the first time that Concordia broke the 400 ranks. The rank may not seem so high but given the number of universities in the world and the other universities in the group, it was a great community to be ranked with.

- He noted that part of what is driving this pattern are contributions of different departments, research areas, faculties. Last week, global computer science rankings were released, which measure the research output of hundreds of institutions world-wide: The Gina Cody School's Software Engineering program has been ranked 1st in Canada, 3rd in North America, and 5th in the world. At a time when computer science is one of the hottest talent development disciplines globally, this result should be a phenomenal statement for Québec.

- **Other business**

There was no other business to bring before the Open Session.

- **Adjournment**

The meeting was adjourned at 2:50 p.m.

K. Singh
Karan Singh
Secretary of Senate

Internal Memorandum

To: Members of Senate
From: Anne Whitelaw, Provost and Vice-President, Academic
Date: October 26, 2023
Re: Academic Update

Concordia has advanced to ninth place among 15 comprehensive universities in *Maclean's* magazine's annual Canadian university rankings. This represents Concordia's highest position since 2008 and is an improvement of one spot from last year. In *Maclean's* 2024 rankings, the university moved up in five of the 12 performance indicators. Concordia placed fourth, its highest rank, in two of the indicators: Social Sciences and Humanities Research Council of Canada (SSHRC) grants, for the second consecutive year; and Reputation Survey, climbing two spots.In the National Reputation Survey, Concordia ranked fourth, up from sixth last year, among the 15 comprehensive universities, and advanced two spots to 16th nationally for Best Overall among 50 universities across all categories.

Over the past few months, Concordia continued its solid placement in a number of rankings that compare universities across the country and around the world. In the recently released 2023 Computer Science Rankings (CSRankings), Concordia's software engineering researchers placed number one in Canada, third in North America and fifth in the world. The CSRankings identify international institutions and faculty actively engaged in research across several computer science areas. The rankings' placements are based on the number of publications by faculty that have appeared at the most selective computer science conferences. Software engineering is one of 12 "systems" identified by CSRankings.

The John Molson School of Business's MBA program was named fourth best in Canada, up two spots from last year, in *Bloomberg Businessweek*'s 2023-24 rankings. *Bloomberg* evaluates Canadian full-time graduate business programs based on four categories: Compensation, Learning, Networking and Entrepreneurship. The John Molson School moved up in Canada in three of the four categories: to second in entrepreneurship and learning and to third in compensation.

CEO Magazine's 2023 Global MBA Rankings named Concordia's John Molson Executive MBA program one of the best in the world. The program ranked 25th globally out of the 62 EMBA programs reviewed, up two spots from last year, and placed third in Canada. Additionally, the John Molson MBA program maintained its ranking as a tier 1 program internationally. The EMBA program — which was the first of its kind in Quebec — was among just four Canadian programs to receive recognition. John Molson also ranked as a "premier provider" for its PhD in Business Administration, one of three Canadian university programs to place.

Concordia placed highly in *Forbes* magazine's two best employers rankings in 2023. The university ranked in the top 20 on *Forbes*'s 2023 Canada's Best Employers list. *Forbes* placed Concordia 16th overall out of 300 organizations and second among those headquartered in Quebec. Concordia ranked fourth highest, and tops in Quebec in the education industry category, which includes 30 colleges, universities and school boards across the country. The ranking is based on *Forbes* and market research company Statista's survey of 12,000 Canadians working at companies and institutions with at least 500 employees. The government services sector was not included. Concordia was also included by *Forbes* as one of Canada's Best Employers for Diversity in 2023. The university placed 54th in the country overall and fifth in Quebec. In

the education category, the university placed ninth in Canada and first in Quebec. From the same survey of 12,000 workers, participants rated their companies based on criteria such as age, gender, ethnicity, disability and 2SLGBTQIA+ equality, as well as diversity overall.

Concordia is continuing its tradition of fostering research excellence with the appointment of 12 new Concordia University Research Chairs (CURCs) in 2023. The CURC program provides direct support for research aligned with the university's strategic areas and recognizes the chairholder's research excellence. Faculty appointed as CURCs undertake innovative work on a broad range of topics that impact people, communities and economies. The future of alternative-intelligence applications in health care, lower-back-pain treatment, Indigenous healing knowledge, decolonizing museums, immigration policies and cybersecurity are only a handful of topics that this year's new CURCs will advance in the coming years. Funded through the Office of the Vice-President of Research and Graduate Studies, and selected by the University Research Committee, the chairholders represent multiple faculties and disciplines. The new CURCs are:

- Mohsen Farhadloo, Concordia University Research Chair in Business Analytics for Public Health and Safety (New Scholar),Supply Chain and Business Technology Management
- Maryse Fortin, Concordia University Research Chair in Low Back, Spine Imaging and Musculoskeletal Health Interventions (New Scholar), Health, Kinesiology and Applied Physiology
- Yiming Xiao, Concordia University Research Chair in Intelligent and Intuitive Surgical Technology (New Scholar), Computer Science and Software Engineering
- Kregg Hetherington, Concordia University Research Chair in Environmental Ethnography (Tier 2), Sociology and Anthropology
- Mireille Paquet, Concordia University Research Chair in Politics of Immigration (Tier 2), Political Science
- Hassan Rivaz, Concordia University Research Chair in Medical Imaging with Deep Learning (Tier 2), Electrical and Computer Engineering
- Angélique Willkie, Concordia University Research Chair in Ecologies of B/black Performance (Tier 2), Contemporary Dance
- Jun Yan, Concordia University Research Chair in Artificial Intelligence in Cybersecurity and Resilience (Tier 2), Concordia Institute for Information Systems Engineering
- Nizar Bouguila, Concordia University Research Chair in Applied Artificial Intelligence (Tier 1), Concordia Institute for Information Systems Engineering
- Bianca Grohmann, Concordia University Research Chair in Consumer Psychology of Gender (Tier 1), Marketing
- Alice Ming Wai Jim, Concordia University Research Chair in Critical Curatorial Studies and Decolonizing Art Institutions (Tier 1), Art History
- Catherine Richardson Kineweskwêw, Concordia University Research Chair in Indigenous Healing Knowledge (Tier 1), School of Community and Public Affairs

Karim Zaghib from the Department of Chemical and Materials Engineering and CEO of Volt-age has been named chair of the 15th International Conference on Advanced Lithium Batteries for Automobile Application (ABAA). Hosted in Montreal in 2024, the conference is one of the most influential events in the field of electric vehicle batteries and brings together high-level policy makers from the United States, China, Europe, Japan and Korea, along with world-renowned scientists, automakers and battery manufacturers.

[Bruno Lee](#) from the Department of Building, Civil and Environmental Engineering received $630,000 from the Natural Sciences and Engineering Research Council of Canada (NSERC). Funded over three years, the grant supports his research project in partnership with [JLL](#) to develop a multidisciplinary decarbonization framework to revamp existing commercial buildings so they use less energy, thus decreasing total emissions.

[Elena Kuzmin](#) (Biology; Canada Research Chair (Tier 2) in Synthetic and Functional Genomics) received the Gairdner Early Career Investigator award from the Gairdner Foundation. On October 26th, Dr. Kuzmin will present "Complex genetic networks in yeast and human health" as part of Gairdner Science Week in Toronto.

On September 1, Space Concordia's Rocketry Division placed first in the technical demonstration category of Launch Canada's competition. The team successfully demonstrated the testing of a liquid fuel rocket engine and their engine test stand, the largest ever built and tested by a university team.

Jalal Rahmatinejad, PhD candidate in the Department of Chemical and Materials Engineering, has been recognized by the Fonds de recherche du Québec (FRQ). His recent paper, "Embedding amorphous MoSx within hierarchical porous carbon by facile one-pot synthesis for superior sodium ion storage," has been honoured with September's Prix Relève étoile Louis-Berlinguet from the Fonds de recherche du Québec – Nature et technologies (FRQNT).

Madeline Montgomery, a master's student in the Department of Creative Arts Therapies, is this year's recipient of the Mackenzie King Open Scholarship. Montgomery is the first Concordian to ever win. Madeline is completing a Master of Arts in Creative Arts Therapies, Drama Therapy option, and hopes to use theatre to promote positive changes in mental health.

On September 26, [Headlight Anthology](#), a graduate student magazine from [Concordia's Department of English](#), won an important funding contest: the [Force Avenir award](#).

Graduate students, Ceyda Yolgörmez, Patil Tchilinguirian, and Zeph Thibodeau, completed their residency at the [Goethe Institut Montreal](#). This residency resulted from a collaboration between local organizations [Goethe Institut Montreal,](#) [Milieux Institute](#), [Hexagram](#), and [Eastern Bloc.](#) The three artists-researchers spent the summer with a NAO robot exploring relationships of care between humans and machines. In a concurred soirée at Eastern Bloc gallery, they [presented their findings](#) to the public.

[Bridget Huh,](#) an undergraduate student in the English Department, [won the 2023 Vallum poetry prize](#)

In September, numerous Concordians received prestigious Gémeaux awards with the [top prize going to postdoctoral researcher and filmmaker Léa Clermon-Dion](#). Notable recipients include André Turpin (Best Cinematography), Alexis Durand-Brault (Grand Prix from the Canadian Academy of Cinema and Television), Catherine Emmanuel Brunet (Best Documentary Program or Series Script), Éric Piccoli (Best Direction and Best Script in a Digital Media Program or Series, and Best Digital Media Series), Léa Clermont-Dion (Best Direction in a Documentary Program or Series: Society, History, Politics and Economy, and Best Research in a Documentary Program or Series and Gémeaux Award for Best Documentary: Biography or Portrait, Arts and Culture), Guillaume Lonergan (Gémeaux Award for Outstanding International Production).

Author and alumna (BA 09) Sarah Bernstein's *Study for Obedience* was shortlisted for Booker Prize .The book was also longlisted for Canada's Giller Prize.

Concordia welcomed Ghislain Picard and Geoff Kelley as experts-in-residence. Picard is Chief of the Assembly of First Nations Quebec-Labrador (AFNQL), and Kelley was a long-serving Member of the National Assembly of Quebec and worked together extensively over more than 30 years. Students will benefit from the pair's wealth of governance experience through lectures, workshops, strategic guidance and more. They began their two-year residencies in early September.

The Homeroom program (Dean of Students Office) has launched a new pod for Francophone students to build community, develop skills and participate in social events in French. The Francophone pod is also working closely with the newly launched Centre pour étudiant·es francophones.

On October 11, Volt-age was officially launched. This world-leading research program will apply novel technologies to create innovative energy sources, secure critical infrastructure and deliver affordable, green energy under diverse conditions in municipalities and communities across Canada. Volt-age was previously known as Electrifying Society: Towards Decarbonized Resilient Communities and is funded through a seven-year Canada First Research Excellence Fund (CFREF) grant of $123,160,035. Presenters included the Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry of Canada and Pierre Fitzgibbon, Minister of Economy and Innovation of Québec

Following the launch of the pilot Advocacy and Action Fund, SHIFT has received a total of 19 applications. This program specifically targets groups, coalitions and collaboratives that are tackling systemic change through public policy advocacy and direct action. A selection committee of three community members from within and beyond Concordia was formed to assess the applications and disburse the funds.

A second new source of funding was launched in September: The In-Kind Capacity Fund. Project teams who have previously received funding from SHIFT can apply to receive up to $2,000 to invest in building capacity, skills, and knowledge to support their socially transformative efforts. SHIFT's internship program has facilitated experiential learning opportunities for 27 Concordia students for the Fall 2023 term.

This semester, the Office of Experiential Learning launched the Beat the Odds (BTO) Academy, a 10-hour pre-internship training program for students in the BTO program. 123 students applied, 67 were accepted into the program, and 50 students are in the process of completing the program. Students will complete 8 hours of training and reflection activities on skills for workplace success. They also attended the *Fireside Chat*, an informal discussion event where they connected with and heard from 3 local Montreal professionals from the business & community sectors about their career journeys and experiences.

 The Connect Concordia mentorship program received 115 (94 or 81% from equity groups) undergrad mentee applications and paired 59 (50 or 85% from equity groups) to mentors for Fall 2023. Mentors include faculty, staff and graduate students – 285 CU community members applied in the fall to mentor undergraduates over the coming year (262 or 92% are grad students).

COOP is providing international work-terms through RISE (Research Internships in Science and Engineering) offers Undergraduate Students the opportunity to complete a summer research internship at top German universities and research institutions. RISE PROFESSIONAL (Research Internships in Science and Engineering)/DAAD (German Academic Exchange Service) offers unique internship opportunities to science and engineering graduate students and RISE alumni, as well as serious practical experience career

creation in Germany. The RISE AND RISE PROFESSIONAL work term opportunities has reached over 771 Institute students on Tuesday and so far, 6 students have already indicated that they are participating for Summer2024.

On September 12, Concordia Centre for Continuing Education hosted the 2022-2023 graduation ceremony for participants in the Lise Watier Foundation Let's Start Up program. This program supports women who are looking to achieve a professional project related to entrepreneurship, the pursuit of higher education or the search for a more fulfilling job. A total of 137 women earned their program certificates.

Career Management Services (CMS) team hosted their annual Career Fair for John Molson students on September 18, the first edition that was sponsored by Desjardins. The event was another great success and was highly attended, featuring 68 employers and welcoming more than 700 students.

On September 26, the GCS community celebrated the 5th anniversary of the faculty's official renaming as the Gina Cody School of Engineering and Computer Science, in recognition and thanks of Gina Cody's historic $15-million donation. The breakfast event and Student Club Showcase planned for the celebration both had an excellent turnout.

From October 2 to 6, the Zen Dens (Campus Wellness and Support Services) presented their annual Wellness Week, in-person and online. Activities included workshops on topics such as self-care in racialized and Indigenous communities, code-switching, and strategies for managing anxiety, perfectionism and procrastination, as well as interactive movement and mindfulness activities. 221 students attended Wellness Week activities.

SHIFT Centre for Social Transformation's first Lunch and Learn event of the academic year took place on October 3, featuring SHIFT funded projects Buckskin Babes and Kapwa Rising. The event focused on the theme "Tending the roots of Indigenous and Filipinx community movements with intergenerational wisdom".

Rosa Caporicci, in collaboration with Dr. Rosemary Reilly of Concordia University's Department of Applied Human Sciences, hosted *The (Un)Expected Project: An Art Exhibition on Perinatal Mourning* an exhibition of artwork created by parents who have suffered a perinatal loss .The exhibition took place both at the CHU Sainte-Justine library and the St-Henri Library. It got media coverage, including this Gazette article.

The Ellen Gallery presented first North American exhibition of Korean artist siren eun young jung, curated by Ji-Yoon Han, THE YEOSEONG GUKGEUK PROJECT: HIJACK THE GENDER!. Public programming and educational activities surrounding the exhibition took place throughout the months of September and October, 2023, including a screening of the documentary LIFE UNREHEARSED, 2022, a film by JIEUN BANPARK. The screening, which took place on September 26, was followed by a discussion moderated by artist and researcher Mi-Jeong Lee (director of Arts East-West / Korean Film Festival Canada. A lecture by Camille (Ji-Eun) Sung (post-doctoral fellow University of Toronto), A MASQUERADING BODY: PERFORMED GENDER IN CONTEMPORARY KOREAN ART was presented on October 11.

Concordia's first Fall reading week was a great success in the Student Success Centre. Workshops offered by Career Advising and Professional Success, Career Counselling and Educational Transitions and Student Learning Services were well attended. Within FutureBound's Innovation and Entrepreneurship module, undergraduates developed their curiosity, creativity and critical thinking skills through a Design Challenge, working on multi-disciplinary teams to produce creative solutions to challenges impacting students' daily

lives. Students also had the opportunity to take an extended Public Speaking bootcamp through FutureBound's Communication and Digital Capabilities module. Feedback from students across the board was that they were appreciative to have the time available through reading week to dedicate to these support offerings.

Career Advising and Professional Success (CAPS) (Student Success Centre) also offered an Engineering and Computer Science Career Fair (virtual) during reading week, with an unprecedented number of students attending. For the second time in a row, the number of students has broken previous records, with 1000 students joining the February 2023 fair and close to 2300 students registered for the most recent fair.

Following the successful launch of Dewemaagannag/My Relations: Principles and values to decolonize engagement with Indigenous communities in late September, the OCE hosted a follow-up workshop on October 19 with Dr. Monica Mulrennan. Using Monica's long standing research relationship with the James Bay Cree as an example, the workshop encouraged participants to reflect on three of the guide's key principles: listening, respecting Indigenous expertise, and compensating. Approximately 25 people participated with faculty members present from all four faculties.

So far this fall, the OCE has hosted 3 public conversations through the University of the Streets Café. Topics covered include decolonization, accessibility, and inclusive histories. Four more conversations are planned for the months ahead.

Textiles and Materiality co-director Kathleen Vaughan inaugurated the "The Future is Wool" project, emphasizing the benefits of wool as a sustainable material in arts and crafts. The project resumed on September 27, 2023, with hybrid (Zoom/in-person) events continuing throughout fall, focusing on Canadian wool. An event on October 4th featured a talk with wool advocate Jane Underhill with attendants from the university and local community organizations. The following event on October 18th featured British artist and author Celia Pym discussing the significance of repair, accompanied by a drop-in mending circle led by local artists Selina Latour and Mea Bissett. Participants had the opportunity to learn about wool maintenance and engage in hands-on mending activities.

The Jurist-in-Residence program welcomed Marc Lemieux, on September 13, and The Honourable Jean Charest, on October 19.

Concordia Library hosted a series of workshops and events as a part of Open Access Week (October 23-29). Open Access initiatives make relevant and up-to-date scholarly information more accessible and affordable to the public worldwide.

On October 25, Harambec and the Simone de Beauvoir Institute hosted a special evening to launch *Flame Keeping!* - a constellation of events marking the 40th anniversary of Canada's first accredited university course in Black Women's Studies, *Black Women: The Missing Pages from Canadian Women's Studies*. On this occasion, Concordia University awarded to Dr. Esmeralda M.A. Thornhill the Simone de Beauvoir Institute Prize in recognition of her groundbreaking contributions to education, equality and social justice. Dr. Thornhill also delivered a Keynote Address that will inaugurate the Black Feminist Speaker Series in her name. Dr. Thornhill is a trailblazing pioneer. Subject of multiple firsts, she is a founding member and subsequent national President of the Congress of Black Women of Canada, a groundbreaking anti-racism educator, and recognized Human Rights advocate, both within and beyond Quebec.

On October 25, the Faculty of Arts and Science hosted its Scholars Evening, welcoming its top 130 students in the Oscar Peterson Concert Hall.

Campus Wellness and Support Services and the Student Success Centre are collaborating to present Thriving and Learning in Action, a flexible, four-part series that brings together mental health, wellbeing, equity and learning strategies in a unique intervention to help students feel more hopeful, resilient and successful. The program is based on the Thriving in Action program developed by Dr. Diana Brecher and Dr. Deena Kara Shaffer at Toronto Metropolitan University, adapted to Concordia. Sessions will take place Wednesdays, from October 25 – November 15, in-person at the Student Success Centre.

To mark John Molson School Day, October 30, the Faculty hosted the Investing for impact workshop.From effective global leadership to sustainable finance, Lucas Pontillo, BComm 97, and Andrea Kilibarda, BComm 21, shared their vision for harnessing the power of business to create a better world and how experiential learning opportunities at the John Molson School of Business helped form and enhance their professional growth. The evening was hosted by Amr Addas, director of Concordia's Van Berkom Investment Management Program and Sustainable Investing Practicum. The day also included a Power Lunch on the MB 9th floor. This event gave students the chance to sit with prominent John Molson alumni to learn from their experience, ask industry-related questions and get career advice.

Several events took place at 4TH SPACE this Fall including Concordia International's Global Learning Day and series of talks in support of the many Field Schools on offer, giving students an opportunity to hear from recent travelers, the faculty organizers and a discussion on the long term impacts of developing research networks. Flexing the Grid saw Mohammed Ouf (BCEE) invite student researchers, colleagues from Carleton University and collaborators from Hydro Quebec working to shift the technology and culture of electricity use in Quebec to respond to increases demand in a focused conversation. Milieux Institute for a week-long residency and exhibition at 4TH SPACE. A class of grade six students attended Alice Jarry's pop-up laboratory to learn about creative potentials of graphene oxide. The week ended with a close look at how to foster research-creating practices between researchers and between institutions. And finally, Math Beyond The Numbers was a discussion on encouraging more EDI in Mathematics, hosted by the magnificent local drag queen Misty Waterfalls.

The Grey Nuns Reading Room re-opened on Tuesday October 10, 2023 following successful conservation work on the floors.

Health Services' (Campus Wellness and Support Services) flu vaccination campaign will be taking place throughout November. Students, staff and faculty can get vaccinated on campus. More details are available at concordia.ca/flu

SHIFT's Coworking Days are continuing during fall with a new schedule of Tuesdays and Thursdays, from 10 a.m. to 4 p.m. Concordians and community members are welcome to make use of the SHIFT collaborative space to advance their work and meet with peers.

And finally, the first Fall Reading week took place from Tuesday, October 10 to Sunday, October 15 as part of the move to a 12-week term at Concordia. Activities for students were offered throughout the break by various student services departments and faculties. Anyone who has feedback on the Fall break may write to the twelveweekterm@concordia.ca.

SENATE
OPEN SESSION
Meeting of November 3, 2023

AGENDA ITEM: Tribunal Pool/Committee Appointments

ACTION REQUIRED: For approval

SUMMARY: Senate is being asked to approve the following Committee and Tribunal Pool appointments:

Committee	Appointee	Term
Academic Planning and Priorities	Jean-Claude Bustros (FOFA)	2023-24
	Angelica Antonakopoulos (CSU)	2023-24
Academic Programs	Robert Padmore (CSU)	2023-24
Library	Mohsen Farhadloo (JMSB)	2023-26
	Robert Padmore (CSU)	2023-24
Research	Mireille Paquet (Faculty Senator)	2023-24
	Dany Ariel Ishimwe (CSU)	2023-24
Special Graduation Awards	Ariela Freedman (Faculty Senator)	2023-24
	Sally Cooke (Faculty Senator)	2023-24
	Julie Foisy (Student Services Director)	
Steering	Mahshid Rahbari (CSU)	2023-24

Appointments requiring Senate ratification	Appointee	Term
Student Tribunal Pool	Valerie Baker (CSU)	2023-25
	Aniket Galhotra (CSU)	2023-25
	Mehdi Kharazmi (GSA)	2023-25
	Yordanos Mengesha (CSU)	2023-25
	Kiara Nunes-Mancini (CSU)	2023-25
	Duraichelvan Raju (GSA)	2023-25
	Masoumeh Zaare (GSA)	2023-25

DRAFT MOTION:

That the Committee and Tribunal Pool appointments be approved.

PREPARED BY:

Name: Karan Singh
Date: October 27, 2023

UNIVERSITÉ Concordia UNIVERSITY

**SENATE
OPEN SESSION
Meeting of November 3, 2023**

AGENDA ITEM: Revisions to the Distinguished Research Professor Award (the "Award")

ACTION REQUIRED: For approval

SUMMARY: Senate approval is sought for the revisions to the Award program.

BACKGROUND:

The Award was set up to recognize a select number of full professors who have demonstrated outstanding and sustained distinction in research over the course of their careers.

The following modifications are being made to the nomination process for the Award:

- The clause that allowed nominees to automatically be forwarded for consideration, dossiers submitted to the Royal Society of Canada ("RSC") was removed. Differences between the requirements for the Award dossiers and the RSC dossiers introduced confusion for the committee. Nevertheless, letters obtained within the past 3 years for RSC dossiers can be recycled in the process. Clarification that narrative CVs are acceptable, is also being added.
- Faculty Research Committees are now limited to a maximum number of nominations they can forward to the Senate Research Committee for adjudication.
- The clause that indicated that the Award dossiers "will be automatically forwarded to the University's Distinguished Professor Emeritus Committee" was removed as there is an obligation of confidentiality for the *Conferral of the Title of Distinguished Professor Emeriti or Distinguished Librarian Emeriti* ([US-3](US-3)).

All of the above are annotated in the attached documentation and were approved by the Senate Research Committee on September 29, 2023.

DRAFT MOTION:

That the revisions to the Distinguished Research Professor Award, outlined in Document US-2023-6-D4, be approved.

PREPARED BY:

Name: Karan Singh
Date: October 20, 2023

INTERNAL MEMORANDUM

To:	Karan Singh, Associate Secretary-General, University Secretariat
From:	Dominique Bérubé, Vice-President, Research and Graduate Studies, Chair, Research Committee of Senate
Date:	October 19, 2023
Subject:	**Distinguished Research Professor (DRP) – Proposed modifications for the nomination process**

The Research Committee (of Senate) met on September 29, 2023, and reviewed the proposed modifications to the nomination process for the **Distinguished Research Professor (DRP)** title.

The following modifications were made:
- The clause that allowed nominees to automatically forward for consideration dossiers submitted to the Royal Society of Canada (RSC) was removed. Differences between the requirements for the DRP dossiers and the RSC dossiers introduced confusion for the committee. Nevertheless, letters obtained within the past 3 years for RSC dossiers can be recycled in the process. Clarification that narrative CVs are acceptable was added.
- Faculty Research Committees are now limited to a maximum number of nominations they can forward to the University Research Committee for adjudication.
- The clause that indicated that DRP dossiers "will be automatically forwarded to the University's Distinguished Professor Emeritus Committee" was removed as there is an obligation of confidentiality for the *Conferral of the Title of Distinguished Professor Emeriti or Distinguished Librarian Emeriti* (US-3).

The Senate Research Committee recommends to Senate that it approves the modifications to the nomination process for the Distinguished Research Professor title.

Proposal to modify the nomination process for
Distinguished Research Professor

In order to be named *Distinguished Research Professor*, nominees must be full professors who over the course of their careers have demonstrated outstanding and sustained distinction in research (including research-creation). Nominees must also be recognized nationally and internationally for their contributions, impact and leadership in their fields.

The title of *Distinguished Research Professor* is the most prestigious form of recognition for research achievements awarded by the University. Individuals will retain the title until retirement.

The status of *Distinguished Research Professor* is conferred in title only with no additional compensation or course release.

Eligibility is restricted to full professors. This is a career recognition: as a general guideline (though there may be exceptions), nominees would be a minimum of 25 years post-PhD (or terminal degree). Nominations may only be made and seconded by tenured faculty members. No self-nominations will be accepted.

Concordia's *Distinguished Research Professor* program adheres to the principles of equity, diversity and inclusion in the evaluation of nominations, and is intended to honour the full diversity of the University's outstanding senior faculty. Nominations of members of the four federally designated groups (women, persons with disabilities, racialized groups and Indigenous peoples) and other under-represented communities such as 2SLGBTQI+ are strongly encouraged, particularly given the significant underrepresentation of these groups at the academic career-level honoured by the DRP program. Non-traditional and traditional career paths and contributions are both recognized by this program, just as community and industrial collaborations share the same gravity within it. Both fundamental and applied research are valued, with applied contributions understood as comprising the full social, political, and technological range of possible impact-areas of research.

A complete *Distinguished Research Professorship* nomination dossier will contain:

1. A **letter of nomination**, signed by the nominator and seconded by one co-nominator (**maximum 3 pages**). The letter of nomination should focus heavily on the nominee's research achievements, and their national and international contributions. Highly technical language should be avoided or explained, such that a multidisciplinary committee can assess the merits and significance of achievements.
2. **Three external letters of reference**. Referees should themselves be internationally recognized for their achievements in their fields. Referees should be arms-length: if a referee has published or received grants with the nominee (particularly in the previous six years), supervised the nominee's dissertation, or been supervised by the nominee, they should not act as a referee. Letters of reference submitted in support of prior nominations for other equivalent distinctions within the past three years (such as Fellowship of the Royal Society of Canada and other

prestigious societies and academies), may be submitted unchanged as components of the *Distinguished Research Professor* dossier.

3. A condensed (**maximum 10-page**) version of the nominee's **career CV** that highlights their most significant research contributions, impact and leadership in advancing the field through discoveries, publications, exhibitions, exceptional contributions to training/mentorship and service to the research community. Aside from the 10-page limit there is no mandatory format; narrative CVs are acceptable.

The OVPRGS is available to provide guidance to nominators and nominees on how to craft the letter of nomination, select appropriate referees, and organize the nominee's CV. Nominators are advised to begin preparing the dossier at least three months prior to deadline for submission.

All nominations will be considered first by the Faculty Research Committee, which will forward the dossiers of recommended nominees to the University Research Committee for adjudication and subsequent recommendation to Senate for final approval. Dossiers forwarded by the Faculty Research Committee should be supported by a one-page justification and appraisal of the nominee's research describing the nominee's contributions so that they may be understood by those outside the discipline, to the University Research Committee for consideration and subsequent recommendation to Senate for final approval.

Barring exceptional circumstances, no more than three *Distinguished Research Professorships* will be awarded in any year. Each Faculty Research Committee is therefore asked to forward a maximum number of nomination dossiers to the University Research Committee. Given relative differences in size between the Faculties, the Faculty of Fine Arts and John Molson School of Business, **two** each; Gina Cody School and Faculty of Arts and Science, **three** each.

Proposal to modify the nomination
process for
Distinguished Research Professor

In order to be named *Distinguished Research Professor*, nominees must be full professors who over the course of their careers have demonstrated outstanding and sustained distinction in research (including research-creation). Nominees must also be recognized nationally and internationally for their contributions, impact and leadership in their fields.both impact and leadership in their fields. As the level of achievement recognized by this honour is on par with the level of achievement recognized by Fellowship of the Royal Society of Canada (RSC), nomination dossiers for RSC Fellowships will, with nominees' permission, be forwarded to the Faculty Research Committee to be considered for *Distinguished Research Professor;*[1] having been modified to meet the criteria set out below.

Available to only a select few, tThe title of *Distinguished Research Professor* is the most prestigious form of recognition for research achievements awarded by the University. Individuals will retain the title until retirement, following which their dossiers will be automatically forwarded to the University's Distinguished Professor Emeritus Committee..

The status of *Distinguished Research Professor* is conferred in title only with no additional compensation or course release.

Eligibility is restricted to full professors. This is a career recognition: as a general guideline (though there may be exceptions), nominees would be a minimum of 25 years post-PhD (or terminal degree). Nominations may only be made and seconded by tenured faculty members. No self-nominations will be accepted.

Concordia's *Distinguished Research Professor* program adheres to the principles of equity, diversity and inclusion in the evaluation of nominations, and is intended to honour the full diversity of the University's outstanding senior faculty. Nominations of members of the four federally designated groups (women, persons with disabilities, racialized minorities groups **and Indigenous peoples) and other under-represented communities such as** LGBTQ22SLGBTQI+ **are strongly encouraged, particularly given the significant underrepresentation of these groups at the academic career-level honoured by the DRP program. Non-traditional and traditional career paths and contributions are both recognized by this program, just as community and industrial collaborations share the same gravity within it. Both fundamental and applied research are valued, with applied contributions understood as comprising the full social, political, and technological range of possible impact-areas of research.**groups such as LGBTQ2+ are strongly encouraged.

A complete *Distinguished Research Professorship* nomination dossier will contain:

1. A **letter of nomination**, signed by the nominator and seconded by one co-nominator (**maximum 3 pages**). The letter of nomination should focus heavily on the nominee's research achievements, and their national and international impactscontributions. Highly technical language should be avoided or explained, such that a multidisciplinary

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[1] n.b. This applies only to nominations for RSC Fellowships, and does not apply to nominations to the RSC College of New Scholars, Artists and Scientists.

committee can assess the merits and significance of achievements. *[In the case of a nomination following from an RSC Fellowship nomination, the RSC nomination letter and detailed appraisal will serve as the letter of nomination for* Distinguished Research Professorship*; the RSC detailed appraisal may be submitted as is, or expanded to the 3-page limit.]*

2. **Three external letters of reference**. Referees should themselves be internationally recognized for their achievements in their fields. Referees should be arms-length: if a referee has published or received grants with the ~~candidate~~nominee (particularly in the previous six years), supervised the ~~candidate~~nominee's dissertation, or been supervised by the ~~candidate~~nominee, they should not act as a referee. Letters of reference submitted in support of prior nominations for other equivalent distinctions within the past three years (such as Fellowship of the Royal Society of Canada and other prestigious societies and academies), may be submitted unchanged as components of the *Distinguished Research Professor* dossier.*[In the case of a nomination following from an RSC Fellowship nomination, three letters of reference may be selected from the RSC dossier, without modification, to submit.]*

3. A condensed (**maximum** 10-page) version of the nominee's **career CV** that highlights their most significant research contributions, ~~and~~ impact and leadership in advancing the field through discoveries, publications, exhibitions, exceptional contributions to training/mentorship and service to the research community. Aside from the 10-page limit there is no mandatory format; narrative CVs are acceptable.*[In the case of a nomination following from an RSC Fellowship nomination, the nominee's CV must be condensed to 10 pages.]*

The OVPRGS is available to provide guidance to nominators and nominees on how to craft the letter of nomination, select appropriate referees, and organize the nominee's CV. Nominators are advised to begin preparing the dossier at least three months prior to deadline for submission.

All nominations will be considered first ~~at~~ by the Faculty Research Committee, which will forward the dossiers of recommended ~~candidate~~nominees to the University Research Committee for adjudication and subsequent recommendation to Senate for final approval. Dossiers forwarded by the Faculty Research Committee should be supported by ~~along with~~ a one-page justification and appraisal of the ~~candidate~~nominee's research describing the ~~candidate~~nominee's contributions so that they may be understood by those outside the discipline, to the University Research Committee for consideration and subsequent recommendation to Senate for final approval.

Barring exceptional circumstances~~Normally~~, no more than three *Distinguished Research Professorships* will be awarded in any year. Each Faculty Research Committee is therefore asked to forward a maximum number of nomination dossiers to the University Research Committee. Given relative differences in size between the Faculties, the Faculty of Fine Arts and John Molson School of Business, **two** each; Gina Cody School and Faculty of Arts and Science, **three** each.

SENATE
OPEN SESSION
Meeting of November 3, 2023

AGENDA ITEM: Revisions to the Membership and Functions of Senate Standing Committees

ACTION REQUIRED: For approval

SUMMARY: Senate is being asked to approve revisions to the Membership and Functions of the Senate Standing Committee related to the Special Awards Committee.

BACKGROUND: As per the Concordia University By-laws (the "By-laws"), Senate has eight standing committees (the "Committees"). The Committee structure has as its objective to facilitate debate on the floor of Senate itself and to make that debate as pertinent, concise and efficient as possible while ensuring that the responsibilities of Senate are fully carried out.

As provided for Article 76 of the By-Laws, the Committees shall have specific membership, mandates and responsibilities which have been assigned to them by Senate, the whole as more fully set out in the document entitled Membership and functions of Standing Committees of Senate.

Periodic review of the Committees' mandate and membership is carried out to ensure that the Committees adequately respond to their role and mandate to support Senate work.

The Special Graduation Awards Committee at its meeting of May 10, 2023 approved the amendments provided in the attached document.

DRAFT MOTION:

That, following recommendation of the Special Graduation Awards Committee, Senate approve the modifications to the Membership and Functions of Standing Committee of Senate related to the Special Graduation Awards Committee.

PREPARED BY:

Name: Karan Singh
Date: October 13, 2023

MEMBERSHIP AND FUNCTIONS OF SENATE STANDING COMMITTEES

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Nature and Role of Senate Standing Committees

The Senate standing committee structure has as its objective to facilitate debate on the floor of Senate itself and to make that debate as pertinent, concise, and efficient as possible while ensuring that the responsibilities of Senate are fully carried out. Standing committee reports allow Senators to familiarize themselves as completely as possible with the matters to be discussed and to satisfy themselves that necessary questions have been asked and that answers have been obtained. A functioning standing committee structure of this nature supposes that in those cases where, on the floor of Senate, there is a feeling that questions remain unanswered, the matter should be referred back to the appropriate standing committee for the work to be carried out to the satisfaction of Senators.

The Senate standing committees will from time to time need technical and administrative expertise in the matters under study and this service will be provided for Senate and its standing committees by an appropriate sector of the University Administration. The appropriate Vice-President is responsible for ensuring that technical and administrative expertise is available where necessary.

Circulation of Documentation

Every effort shall be made to ensure that all documentation for consideration by Senate standing committees shall reach the members of the standing committee in sufficient time to permit due consideration prior to the meeting. Under normal circumstances, the agenda and supporting documents shall be circulated no later than one week prior to the meeting.

Senate Standing Committees

The standing committee structure is as follows:

1. Steering Committee
2. Academic Planning and Priorities Committee (APPC)
3. Academic Programs Committee (APC)
4. Distinguished Professor Emeriti and Distinguished Librarian Emeriti Committee
5. Ethics Committee
6. Library Committee
7. Research Committee
8. Special Graduation Awards Committee

The voting and quorum-determination status of the Provost and Vice-President, Academic, and the Vice-President, Research and Graduate Studies vary according to their roles and direct report representation on each standing committee and is outlined below.

- Non-voting members of Senate standing committees shall not be counted in the determination of quorum.

- *Committee members marked with an asterisk are voting members who are not included for the purposes of determining quorum.

- All standing committee positions filled by nomination shall be ratified by Senate.

- The eligibility requirements under Article 64 of the Concordia University By-Laws shall apply to the members of the standing committees of Senate.

1. Steering Committee

1.1 Membership:

- The President and Vice-Chancellor - Chair;
- The Provost and Vice-President, Academic;
- The Vice-President, Research and Graduate Studies;
- Two faculty Senators who are full-time faculty members from the Faculty of Arts and Science;
- One faculty Senator who is a full time-faculty member from each of the Faculty of Fine Arts, the Gina Cody School of Engineering and Computer Science, the Faculty of Fine Arts, and the John Molson School of Business;
- One faculty Senator who is a part-time faculty member;
- Two undergraduate student Senators, normally from different faculties;
- One graduate student Senator.

The Secretary of Senate acts Secretary (non-voting) of the Committee.

Faculty Senators who are full-time faculty member representatives on Steering Committee shall be nominated by their respective Faculty Councils for a given academic year no later than May 31. The faculty Senator who is the part-time faculty member representative shall be nominated by the part-time faculty association for a given academic year no later than May 31. All faculty Senators on Steering Committee shall have served on Senate in a previous year. Student Senators shall be nominated by their respective student associations. All appointments to Steering Committee are for a one-year term.

1.2 Mandate:

- Consider and recommend the agenda for Senate meetings;
- Assign all matters deemed routine and uncontroversial to the consent agenda;
- Review resolutions and recommendations submitted to Senate by Faculty and School Councils;
- Ensure that reports and recommendations arising out of different standing committees of Senate are submitted in a form permitting effective debate;
- Monitor the work of the standing committees of Senate;
- Prepare such reports and other documentation as Senate may require of it;
- Meet on a regular basis with the Executive Committee of the Board of Governors to discuss matters of mutual concern and report to Senate on the outcome of such meetings;
- Make any recommendations to Senate that it judges appropriate.

2. Academic Planning and Priorities Committee (APPC)

2.1 Membership:

- The Provost and Vice-President, Academic - Chair;
- The Vice-President, Research and Graduate Studies (or delegate);
- The Dean of the School of Graduate Studies (or delegate);
- The University Librarian (or delegate)
- The Dean, School of Health (or delegate);
- Four faculty members, one each from the Faculty of Arts and Science, the Faculty of Fine Arts, Gina Cody School of Engineering and Computer Science, , and the John Molson School of Business;
- Two undergraduate students, normally from different Faculties;
- One graduate student;
- The Chief Financial Officer, (or delegate) (non-voting);
- The Associate Vice-President, Integrated Planning (or delegate) (non-voting);
- The Deputy-Provost, (or delegate) (non-voting).

Faculty member representatives on APPC shall be nominated by their respective Faculty Councils. Faculty member appointments are for a three-year term. In order to ensure robust representation at Senate of discussions held in APPC, an attempt will be made to have two of the four faculty member representatives at any given time be Senators by inviting Faculties to nominate Senators to open seats. Student representatives shall be nominated by their

respective student associations, which are encouraged to designate their nominees from among Senators. Student appointments are for a one-year term.

APPC is empowered to nominate, on an annual basis, up to two additional faculty Senators as members-at-large to fill a perceived gap in either expertise or representation.

2.2   Mandate:

- Review planning priorities and provide input as appropriate, considering their implications;
- Consult Faculties and other academic units concerning proposals regarding academic planning and priorities;
- Support the academic planning function of the University;
- Make reports and recommendations to Senate on academic planning and academic priorities;
- Undertake any other function that may be delegated to it by Senate; and
- Make any recommendations to Senate that it judges appropriate within the scope of its mandate.

3.   Academic Programs Committee (APC)

3.1   Membership:

- The President and Vice-Chancellor*;
- The Vice-Provost, Teaching and Learning - Chair;
- The Associate Deans responsible for curriculum from each Faculty;
- The Associate Dean responsible for curriculum from the School of Graduate Studies;
- The University Librarian;
- Four faculty members, one each from the Faculty of Arts and Science, the Faculty of Engineering and Computer Science, the Faculty of Fine Arts, and the John Molson School of Business;
- Two undergraduate students, normally from different Faculties;
- One graduate student;
- The Director, Centre for Continuing Education (non-voting);
- The University Registrar (non-voting).

Faculty member representatives on APC shall be nominated by their respective Faculty Councils. Faculty member appointments are for a three-year term. In order to ensure robust representation at Senate of discussions held in APC, an attempt will be made to have two of the four faculty members at any given time be Senators by inviting Faculties to nominate Senators to open seats. Student representatives shall be nominated by their respective student associations, which are encouraged to designate their nominees from among Senators. Student appointments are for a one-year term.

3.2 Mandate:

In the area of credit programs:

- Coordinate all activities pertaining to new program curricula;
- Study the academic implications of proposals for new program curricula and for modifications to existing curricula and make appropriate recommendations to Senate;
- Study the operation of existing program curricula, ensure their coordination, and make appropriate recommendations to Senate;
- Make recommendations to Senate concerning the revision of undergraduate academic regulations;
- Develop policy with regard to all prizes based on academic achievement, review the academic implications of proposals for establishing such prizes and make appropriate recommendations to Senate;
- Undertake any other function that may be delegated to it by Senate;
- Make any recommendations to Senate that it judges appropriate within the scope of its mandate.

In the area of non-credit programs, receive for information the detailed description of any new program curricula and any modifications to existing curricula to ensure that there is no conflict with credit programs.

4.   Distinguished Professor Emeriti and Distinguished Librarian Emeriti Committee

4.1   Membership:

- The Provost and Vice-President, Academic - Chair;
- The Vice-President, Research and Graduate Studies;
- Three faculty members from the Faculty of Arts and Science, one each from the Social Sciences, Humanities and Sciences disciplines;
- Two faculty members from the Gina Cody School of Engineering and Computer Science, one each from the Engineering and Computer Science disciplines;
- One faculty member from each of the Faculty of Fine Arts and the John Molson School of Business; and
- One librarian.

The faculty member representatives on the Distinguished Professor Emeriti and Distinguished Librarian Emeriti Committee shall hold the rank of Professor and shall be nominated by their respective Faculty Councils, and the librarian shall hold the rank of Senior Librarian and shall be elected among all librarians.

Their appointments are for a three-year term.

4.2   Mandate:

- Assess the nominations for the title of Distinguished Professor Emeriti or Distinguished Librarian Emeriti submitted by the Faculty Councils or the Library, in accordance with the criteria set out in the *Policy on the Conferral of the title of Distinguished Professor Emeriti and Distinguished Librarian Emeriti* (US-3); and

- Select from among the nominees the retiring faculty members or librarians whom it deems merit the designation Distinguished Professor Emeriti or Distinguished Librarian Emeriti and make recommendations to Senate accordingly.

5. Ethics Committee

5.1 Membership:

- The President and Vice-Chancellor;
- One Senator who is a senior academic administrator;
- One faculty Senator;
- One student Senator.

The Secretary of Senate is Secretary (non-voting) of the Committee.

The Committee may invite any other member of the University to a meeting to provide input on a particular issue. Nominations for the members of the Committee shall be made by Steering Committee from among Senators from the relevant constituency. All appointments to the Committee are for a one-year term.

The Chair shall be selected by and from among the members of the Committee on an annual basis.

5.2 Mandate:

The Committee's mandate is to oversee and enforce the application of the *Code of Ethics and Conduct Applicable to Members of Senate and Members of Committees Established by Senate* (US-1) as provided for in the Code.

6. Library Committee

6.1 Membership:
- An Associate Vice-President, nominated by the Vice-President, Research and Graduate Studies*;
- The University Librarian - Chair;
- The Associate University Librarian, Collection Services, who shall act as Chair in the absence of the University Librarian;
- Three faculty members from the Faculty of Arts and Science, one each from the Social Sciences, Humanities and Sciences disciplines;
- One faculty member from each of the Faculty of Fine Arts, Gina Cody School of Engineering and Computer Science, and the John Molson School of Business;
- One librarian;
- Two undergraduate students from different faculties;
- One graduate student.

Faculty member representatives on the Library Committee shall be nominated by their respective Faculty Councils. Faculty member appointments are for a three-year term. Student

representatives shall be nominated by their respective student associations, which are encouraged to designate their nominees from among Senators. Student appointments are for a one-year term.

The librarian shall be nominated by and from among the corps of librarians. This appointment is for a three-year term.

6.2 Mandate:

- Act as an advisory body of the Senate to the University Librarian and the Senate with particular regard to:
  - o library objectives, policies, and budget; and
  - o the development of Library services and collections to meet the teaching, learning, research and cultural needs of the University;
- Act as a vehicle for two-way communication between academic units and the Library;
- Review University policies that affect the Library; and
- Consider any matters submitted to it by the Senate;

7. Research Committee

7.1 Membership:
- The Provost and Vice-President, Academic *;
- The Vice-President, Research and Graduate Studies - Chair;
- The Associate Deans responsible for research from each Faculty;
- The Dean Graduate Studies (or delegate);
- The Dean, School of Health (or delegate);
- Four faculty members, one each from the Faculty of Arts and Science, the Faculty of Fine Arts, Gina Cody School of Engineering and Computer Science, and the John Molson School of Business;
- Two faculty Senators;
- One undergraduate student;
- Two graduate students, normally from different Faculties;
- The Associate Vice-Presidents, Research (non-voting);
- The Director, VPRGS sector (non-voting).

Faculty member representatives on the Research Committee shall be nominated by their respective Faculty Councils. Faculty member appointments are for a three-year term. Faculty Senators shall be nominated by Steering Committee from among the faculty Senators. Faculty Senators appointments are for a one-year term. Student representatives shall be nominated by their respective student associations, which are encouraged to designate their nominees from among Senators. Student appointments are for a one-year term.

The Research Committee is empowered to nominate, on an annual basis, up to two additional tenured or tenure-track faculty members as members-at-large to give a balanced representation to important research areas.

7.2   Mandate:

-    Identify current research issues and propose ways and means of responding to these challenges;
-    Study and make recommendations to Senate concerning:
     o   the development of research in the University, and internal resources to support research;
     o   the creation and/or revision of all research-related policies under the Office of the Vice-President, Research and Graduate Studies;
-    the revision of institutional and government-mandated plans related to research; Undertake any other function that may be delegated to it by Senate; and
-    Make any other recommendations to Senate that it judges appropriate within the scope of its mandate.

8.   Special Graduation Awards Committee

8.1   Membership:

-    The Dean of Students - Chair;
-    Two faculty Senators;
-    One undergraduate student;
-    One graduate student;
-    A member of the alumni (non-voting);
-    A Student Services Director (non-voting);
-    The Senior Director Alumni Engagement (non-voting).

The University Registrar, or representative, is Secretary (non-voting) of the Committee.

Faculty Senators on the Special Graduation Awards Committee shall be nominated by Steering Committee from among the faculty Senators. Student representatives shall be nominated by their respective student associations, which are encouraged to designate their nominees from among Senators. The alumnus or alumna shall be nominated by the Concordia University Alumni Association. The Student Services Director shall be nominated by the Vice-Provost, Strategic Enrolment and Student Experience. All appointments to the Special Graduation Awards Committee are for a one-year term.

8.2   Mandate:

The Committee's mandate is to solicit and review nominations and to recommend recipients to Senate for the following Special Graduation Awards:

-    The Concordia Medal
-    The Malone Medal
-    The O'Brien Medal
-    The Stanley G. French Award
-    The Provost's Medal for Outstanding Achievement
-    The Dean of Students Medal

as approved by the Board of Governors on September 6, 1973; and revised by the Board of Governors on March 20, 1986 (effective July 1, 1986) and June 15, 2023;

and as amended by Senate on September 26, 1986; December 19, 1986; May 8, 1987; May 29, 1987; December 18, 1987; January 22 , 1988; May 6, 1988; September 13, 1991; December 4, 1992; October 28, 1994; September 15, 1995; September 13, 1996; February 7, 1997; March 7, 1997; June 9, 2000; January 18, 2002; December 8, 2006; February 12, 2010 (effective June 1, 2010); May 21, 2010 (effective June 1, 2010), April 15, 2011; February 17, 2012; September 14, 2012, April 17, 2015 (effective June 1, 2015), December 9, 2016, March 16, 2018, December 11, 2019; September 21, 2021; May 20, 2022; May 19, 2023; [insert date].

MEMBERSHIP AND FUNCTIONS OF SENATE STANDING COMMITTEES

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Nature and Role of Senate Standing Committees

The Senate standing committee structure has as its objective to facilitate debate on the floor of Senate itself and to make that debate as pertinent, concise, and efficient as possible while ensuring that the responsibilities of Senate are fully carried out. Standing committee reports allow Senators to familiarize themselves as completely as possible with the matters to be discussed and to satisfy themselves that necessary questions have been asked and that answers have been obtained. A functioning standing committee structure of this nature supposes that in those cases where, on the floor of Senate, there is a feeling that questions remain unanswered, the matter should be referred back to the appropriate standing committee for the work to be carried out to the satisfaction of Senators.

The Senate standing committees will from time to time need technical and administrative expertise in the matters under study and this service will be provided for Senate and its standing committees by an appropriate sector of the University Administration. The appropriate Vice-President is responsible for ensuring that technical and administrative expertise is available where necessary.

Circulation of Documentation

Every effort shall be made to ensure that all documentation for consideration by Senate standing committees shall reach the members of the standing committee in sufficient time to permit due consideration prior to the meeting. Under normal circumstances, the agenda and supporting documents shall be circulated no later than one week prior to the meeting.

<u>Senate Standing Committees</u>

The standing committee structure is as follows:

1. Steering Committee
2. Academic Planning and Priorities Committee (APPC)
3. Academic Programs Committee (APC)
4. Distinguished Professor Emeriti and Distinguished Librarian Emeriti Committee
5. Ethics Committee
6. Library Committee
7. Research Committee
8. Special Graduation Awards Committee

The voting and quorum-determination status of the Provost and Vice-President, Academic, and the Vice-President, Research and Graduate Studies vary according to their roles and direct report representation on each standing committee and is outlined below.

- Non-voting members of Senate standing committees shall not be counted in the determination of quorum.

- *Committee members marked with an asterisk are voting members who are not included for the purposes of determining quorum.

- All standing committee positions filled by nomination shall be ratified by Senate.

- The eligibility requirements under Article 64 of the Concordia University By-Laws shall apply to the members of the standing committees of Senate.

1. Steering Committee

1.1 Membership:

- The President and Vice-Chancellor - Chair;
- The Provost and Vice-President, Academic;
- The Vice-President, Research and Graduate Studies;
- Two faculty Senators who are full-time faculty members from the Faculty of Arts and Science;
- One faculty Senator who is a full time-faculty member from each of the Faculty of Fine Arts, the Gina Cody School of Engineering and Computer Science, the Faculty of Fine Arts, and the John Molson School of Business;
- One faculty Senator who is a part-time faculty member;
- Two undergraduate student Senators, normally from different faculties;
- One graduate student Senator.

The Secretary of Senate acts Secretary (non-voting) of the Committee.

Faculty Senators who are full-time faculty member representatives on Steering Committee shall be nominated by their respective Faculty Councils for a given academic year no later than May 31. The faculty Senator who is the part-time faculty member representative shall be nominated by the part-time faculty association for a given academic year no later than May 31. All faculty Senators on Steering Committee shall have served on Senate in a previous year. Student Senators shall be nominated by their respective student associations. All appointments to Steering Committee are for a one-year term.

1.2 Mandate:

- Consider and recommend the agenda for Senate meetings;
- Assign all matters deemed routine and uncontroversial to the consent agenda;
- Review resolutions and recommendations submitted to Senate by Faculty and School Councils;
- Ensure that reports and recommendations arising out of different standing committees of Senate are submitted in a form permitting effective debate;
- Monitor the work of the standing committees of Senate;
- Prepare such reports and other documentation as Senate may require of it;
- Meet on a regular basis with the Executive Committee of the Board of Governors to discuss matters of mutual concern and report to Senate on the outcome of such meetings;
- Make any recommendations to Senate that it judges appropriate.

2.   Academic Planning and Priorities Committee (APPC)

2.1   Membership:

- The Provost and Vice-President, Academic - Chair;
- The Vice-President, Research and Graduate Studies (or delegate);
- The Dean of the School of Graduate Studies (or delegate);
- The University Librarian (or delegate)
- The Dean, School of Health (or delegate);
- Four faculty members, one each from the Faculty of Arts and Science, the Faculty of Fine Arts, Gina Cody School of Engineering and Computer Science, , and the John Molson School of Business;
- Two undergraduate students, normally from different Faculties;
- One graduate student;
- The Chief Financial Officer, (or delegate) (non-voting);
- The Associate Vice-President, Integrated Planning (or delegate) (non-voting);
- The Deputy-Provost, (or delegate) (non-voting).

Faculty member representatives on APPC shall be nominated by their respective Faculty Councils. Faculty member appointments are for a three-year term. In order to ensure robust representation at Senate of discussions held in APPC, an attempt will be made to have two of the four faculty member representatives at any given time be Senators by inviting Faculties to nominate Senators to open seats. Student representatives shall be nominated by their

respective student associations, which are encouraged to designate their nominees from among Senators. Student appointments are for a one-year term.

APPC is empowered to nominate, on an annual basis, up to two additional faculty Senators as members-at-large to fill a perceived gap in either expertise or representation.

2.2   Mandate:

- Review planning priorities and provide input as appropriate, considering their implications;
- Consult Faculties and other academic units concerning proposals regarding academic planning and priorities;
- Support the academic planning function of the University;
- Make reports and recommendations to Senate on academic planning and academic priorities;
- Undertake any other function that may be delegated to it by Senate; and
- Make any recommendations to Senate that it judges appropriate within the scope of its mandate.

3.   Academic Programs Committee (APC)

3.1   Membership:

- The President and Vice-Chancellor*;
- The Vice-Provost, Teaching and Learning - Chair;
- The Associate Deans responsible for curriculum from each Faculty;
- The Associate Dean responsible for curriculum from the School of Graduate Studies;
- The University Librarian;
- Four faculty members, one each from the Faculty of Arts and Science, the Faculty of Engineering and Computer Science, the Faculty of Fine Arts, and the John Molson School of Business;
- Two undergraduate students, normally from different Faculties;
- One graduate student;
- The Director, Centre for Continuing Education (non-voting);
- The University Registrar (non-voting).

Faculty member representatives on APC shall be nominated by their respective Faculty Councils. Faculty member appointments are for a three-year term. In order to ensure robust representation at Senate of discussions held in APC, an attempt will be made to have two of the four faculty members at any given time be Senators by inviting Faculties to nominate Senators to open seats. Student representatives shall be nominated by their respective student associations, which are encouraged to designate their nominees from among Senators. Student appointments are for a one-year term.

3.2 Mandate:

In the area of credit programs:

- Coordinate all activities pertaining to new program curricula;
- Study the academic implications of proposals for new program curricula and for modifications to existing curricula and make appropriate recommendations to Senate;
- Study the operation of existing program curricula, ensure their coordination, and make appropriate recommendations to Senate;
- Make recommendations to Senate concerning the revision of undergraduate academic regulations;
- Develop policy with regard to all prizes based on academic achievement, review the academic implications of proposals for establishing such prizes and make appropriate recommendations to Senate;
- Undertake any other function that may be delegated to it by Senate;
- Make any recommendations to Senate that it judges appropriate within the scope of its mandate.

In the area of non-credit programs, receive for information the detailed description of any new program curricula and any modifications to existing curricula to ensure that there is no conflict with credit programs.

4.   Distinguished Professor Emeriti and Distinguished Librarian Emeriti Committee

4.1   Membership:

- The Provost and Vice-President, Academic - Chair;
- The Vice-President, Research and Graduate Studies;
- Three faculty members from the Faculty of Arts and Science, one each from the Social Sciences, Humanities and Sciences disciplines;
- Two faculty members from the Gina Cody School of Engineering and Computer Science, one each from the Engineering and Computer Science disciplines;
- One faculty member from each of the Faculty of Fine Arts and the John Molson School of Business; and
- One librarian.

The faculty member representatives on the Distinguished Professor Emeriti and Distinguished Librarian Emeriti Committee shall hold the rank of Professor and shall be nominated by their respective Faculty Councils, and the librarian shall hold the rank of Senior Librarian and shall be elected among all librarians.

Their appointments are for a three-year term.

4.2   Mandate:

- Assess the nominations for the title of Distinguished Professor Emeriti or Distinguished Librarian Emeriti submitted by the Faculty Councils or the Library, in accordance with the criteria set out in the *Policy on the Conferral of the title of Distinguished Professor Emeriti and Distinguished Librarian Emeriti* (US-3); and

- Select from among the nominees the retiring faculty members or librarians whom it deems merit the designation Distinguished Professor Emeriti or Distinguished Librarian Emeriti and make recommendations to Senate accordingly.

5. Ethics Committee

5.1 Membership:

- The President and Vice-Chancellor;
- One Senator who is a senior academic administrator;
- One faculty Senator;
- One student Senator.

The Secretary of Senate is Secretary (non-voting) of the Committee.

The Committee may invite any other member of the University to a meeting to provide input on a particular issue. Nominations for the members of the Committee shall be made by Steering Committee from among Senators from the relevant constituency. All appointments to the Committee are for a one-year term.

The Chair shall be selected by and from among the members of the Committee on an annual basis.

5.2 Mandate:

The Committee's mandate is to oversee and enforce the application of the *Code of Ethics and Conduct Applicable to Members of Senate and Members of Committees Established by Senate* (US-1) as provided for in the Code.

6. Library Committee

6.1 Membership:
- An Associate Vice-President, nominated by the Vice-President, Research and Graduate Studies*;
- The University Librarian - Chair;
- The Associate University Librarian, Collection Services, who shall act as Chair in the absence of the University Librarian;
- Three faculty members from the Faculty of Arts and Science, one each from the Social Sciences, Humanities and Sciences disciplines;
- One faculty member from each of the Faculty of Fine Arts, Gina Cody School of Engineering and Computer Science, and the John Molson School of Business;
- One librarian;
- Two undergraduate students from different faculties;
- One graduate student.

Faculty member representatives on the Library Committee shall be nominated by their respective Faculty Councils. Faculty member appointments are for a three-year term. Student

representatives shall be nominated by their respective student associations, which are encouraged to designate their nominees from among Senators. Student appointments are for a one-year term.

The librarian shall be nominated by and from among the corps of librarians. This appointment is for a three-year term.

6.2   Mandate:

-       Act as an advisory body of the Senate to the University Librarian and the Senate with particular regard to:
    o   library objectives, policies, and budget; and
    o   the development of Library services and collections to meet the teaching, learning, research and cultural needs of the University;
-       Act as a vehicle for two-way communication between academic units and the Library;
-       Review University policies that affect the Library; and
-       Consider any matters submitted to it by the Senate;

7.   Research Committee

7.1   Membership:
-       The Provost and Vice-President, Academic *;
-       The Vice-President, Research and Graduate Studies - Chair;
-       The Associate Deans responsible for research from each Faculty;
-       The Dean Graduate Studies (or delegate);
-       The Dean, School of Health (or delegate);
-       Four faculty members, one each from the Faculty of Arts and Science, the Faculty of Fine Arts, Gina Cody School of Engineering and Computer Science, and the John Molson School of Business;
-       Two faculty Senators;
-       One undergraduate student;
-       Two graduate students, normally from different Faculties;
-       The Associate Vice-Presidents, Research (non-voting);
-       The Director, VPRGS sector (non-voting).

Faculty member representatives on the Research Committee shall be nominated by their respective Faculty Councils. Faculty member appointments are for a three-year term. Faculty Senators shall be nominated by Steering Committee from among the faculty Senators. Faculty Senators appointments are for a one-year term. Student representatives shall be nominated by their respective student associations, which are encouraged to designate their nominees from among Senators. Student appointments are for a one-year term.

The Research Committee is empowered to nominate, on an annual basis, up to two additional tenured or tenure-track faculty members as members-at-large to give a balanced representation to important research areas.

7.2   Mandate:

-    Identify current research issues and propose ways and means of responding to these challenges;
-    Study and make recommendations to Senate concerning:
     o   the development of research in the University, and internal resources to support research;
     o   the creation and/or revision of all research-related policies under the Office of the Vice-President, Research and Graduate Studies;
-    the revision of institutional and government-mandated plans related to research; Undertake any other function that may be delegated to it by Senate; and
-    Make any other recommendations to Senate that it judges appropriate within the scope of its mandate.

8.   Special Graduation Awards Committee

8.1   Membership:

-    The President and Vice-Chancellor*;
-    The Dean of Students - Chair;
-    Two faculty Senators;
-    One undergraduate student;
-    One graduate student;
-    A member of the alumni (non-voting);
-    A Student Services Director (non-voting);
-    The Senior Director of Alumni Affairs Engagement (non-voting).

The University Registrar, or representative, is Secretary (non-voting) of the Committee.

Faculty Senators on the Special Graduation Awards Committee shall be nominated by Steering Committee from among the faculty Senators. Student representatives shall be nominated by their respective student associations, which are encouraged to designate their nominees from among Senators. The alumnus or alumna shall be nominated by the Concordia University Alumni Association. The Student Services Director shall be nominated by the Associate Vice-PresidentProvost, Strategic Enrolment and Student ServicesExperience. All appointments to the Special Graduation Awards Committee are for a one-year term.

8.2   Mandate:

The Committee's mandate is to solicit and review nominations and to recommend recipients to Senate for the following Special Graduation Awards:

-    The Concordia Medal
-    The First Graduating Class Award
-    The Malone Medal
-    The O'Brien Medal

-     The Stanley G. French Award
-     ~~The Lieutenant Governor's Award~~
-     The Provost's Medal for Outstanding Achievement
-     The Dean of Students Medal

as approved by the Board of Governors on September 6, 1973; and revised by the Board of Governors on March 20, 1986 (effective July 1, 1986) and June 15, 2023;

and as amended by Senate on September 26, 1986; December 19, 1986; May 8, 1987; May 29, 1987; December 18, 1987; January 22 , 1988; May 6, 1988; September 13, 1991; December 4, 1992; October 28, 1994; September 15, 1995; September 13, 1996; February 7, 1997; March 7, 1997; June 9, 2000; January 18, 2002; December 8, 2006; February 12, 2010 (effective June 1, 2010); May 21, 2010 (effective June 1, 2010), April 15, 2011; February 17, 2012; September 14, 2012, April 17, 2015 (effective June 1, 2015), December 9, 2016, March 16, 2018, December 11, 2019; September 21, 2021; May 20, 2022; May 19, 2023; [insert date].

UNIVERSITÉ Concordia UNIVERSITY

SENATE
OPEN SESSION
Meeting of November 3, 2023

AGENDA ITEM: Recognition of the Centre for Innovation in Construction and Infrastructure Engineering and Management ("CICIEM") as a research unit

ACTION REQUIRED: For approval

SUMMARY: Senate approval is sought for the recognition of CICIEM as a research unit under the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8) (the "Policy").

BACKGROUND:

Research Units and Infrastructure Platforms are recognized and funded in order to support groups of Concordia faculty members in expanding their research and/or research-creation activities by connecting and collaborating using shared resources.

The Policy authorizes Senate to recognize a research unit upon recommendation of the Senate Research Committee. Per its letter dated October 3, 2023, the Senate Research Committee confirmed having approved and recommended the recognition of CICIEM as a research unit, as detailed in the attached documentation.

DRAFT MOTION:

That, on recommendation of the Senate Research Committee, Senate approve the recognition of the Centre for Innovation in Construction and Infrastructure Engineering and Management ("CICIEM") as a research unit.

PREPARED BY:

Name: Karan Singh
Date: October 20, 2023

INTERNAL MEMORANDUM

To: Karan Singh, Associate Secretary-General, University Secretariat

From: Dominique Bérubé, Vice-President, Research and Graduate Studies, Chair, Research
             Committee of Senate

Date: October 03, 2023

Subject: **University Recognition of Research Unit –**
             Centre for Innovation in Construction and Infrastructure Engineering and Management

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The Research Committee (of Senate) met on September 29, 2023, to review the submission dossier of the *Centre for Innovation in Construction and Infrastructure Engineering and Management (CICIEM),* for University recognition. A research unit, recognized by the University, is expected to meet a set of criteria before it can be deemed "recognized". Committee members agreed that CICIEM met the criteria outlined in the Policy for Research Units.

Research Unit	Category	Director	Faculty
Centre for Innovation in Construction and Infrastructure Engineering and Management (CICIEM)	Emerging Research Centre	Dr. Osama Moselhi (Building, Civil and Environmental Engineering)	Gina Cody School of Engineering and Computer Science

The Research Committee is therefore pleased to recommend to Senate that it grant University-recognized status to the *Centre for Innovation in Construction and Infrastructure Engineering and Management (CICIEM)* in accordance with the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8).

The director will be informed of the Senate decision and will be reminded of the requirement to submit an annual report describing its operations and financial status to the VPRGS, as set out in the *Procedures* document accompanying VPRGS-8.

Thank you.

May 3, 2023

Dr. Dominique Bérubé
Vice-President, Research and Graduate Studies
Concordia University

Dear Dr. Bérubé,

The Gina Cody School of Engineering and Computer Science (GCS) conveys its strongest support for the application to establish the Centre for Innovation in Construction and Infrastructure Engineering and Management (CICIEM) as an Emerging Research Centre at the university level.

Distinction from Other Centres and Research Units
The CICIEM is a unique research centre with the goal to provide world-class research for innovation in construction automation and civil infrastructure engineering, sustainability, and management. It aims to be a flagship for Concordia and the Canadian construction industry.

The interdisciplinary nature of the Centre encompasses various departments within GCS, specifically the Department of Building, Civil and Environmental Engineering, the Concordia Institute for Information Systems Engineering, and the Centre for Engineering and Society. The Centre is open to collaboration with other institutes and has already established a connection with the Applied AI Institute, the Next Generation Cities Institute, and the Centre for Zero Energy Building Studies (CZEBS). The construction industry in Canada is one of its leading pillars and the Centre aims to use the diverse background of its members to meet the Canadian government's recent environmental commitments and to increase innovative integrative solutions for sustainability, resilience, and quality of service of civil infrastructure systems.

Fit with the Concordia Strategic Research Plan
The CICIEM platform fits directly into three areas of the University's Strategic Research Plan: enabling and disruptive technologies and their foundations, advanced materials and their applications, and natural systems and sustainability. More specifically, the research of CICIEM aims to satisfy the following objectives:
• Recognition of the importance of maintaining the quality of our natural systems and adopting sustainable human systems and technology to minimize environmental impacts.
• Design and support energy-efficient and resilient buildings.
• Sustainable civil and transportation infrastructure.
• Artificial intelligence, cyber-physical systems, data analytics, design, internet of things, and ICT applications in construction and infrastructure management.

Resources

The CICIEM has a variety of dedicated space and equipment available for its use in the EV and Hall buildings. This includes the following:

• The **CFI Construction Automation Lab** has a variety of Non-Destructive Testing (NDT) and automated construction monitoring equipment and hardware devices. This includes UAVs, a wide range of wireless sensors and IoT devices, ground penetrating radar (GPR), 3D laser scanners, infrared and digital cameras, radiofrequency identification (RFID) capabilities (RFID printer, and hand-held receivers), and software systems for decision support, planning and scheduling, cost estimating and computer simulation including discrete event simulation, agent-based simulation, and system dynamics.

• The **Cyber-Physical Construction and Infrastructure Systems Lab** has a variety of PTZ and spherical cameras, several real-time location tracking systems, virtual reality systems, and a wide range of software for modeling and simulating construction and infrastructure systems.

• The **Sustainable Energy & Infrastructure Systems Engineering (SEISE) Lab** is equipped with a variety of optimization, simulation, and life cycle modeling and computational tools and software including SimpaPro, GAMS, AnyLogic, Vensim DSS, etc. The lab aims to investigate systems-level solutions by developing optimization and simulation models to address sustainability, reliability, and resilience issues in the design, engineering, and operation of complex-built environment systems such as built facilities and infrastructure.

• The **CFI Structure Safety Simulation Labs** are equipped with software packages covering the following research areas: Nonlinear Finite Element Analysis; Simulation of the response of structures to dynamic and blast excitations; Seismic hazard simulations. Specifically, the labs have the following specialized software: ABAQUS, ANSYS, HyperWorks, OpenSees, Perform3D, VicTor, and others. In addition, the lab has highly specialized equipment, instrumentation, and software packages for onsite monitoring, non-destructive assessment, and field measurements for various existing infrastructures.

• The **CFI Structures and Infrastructure Testing Laboratory Lab** is equipped with a state-of-the-art structural testing facility. The facility is capable of testing different structural elements and assemblages, including columns, bridge girders, frames, and walls that are made of concrete, masonry, steel, or their combinations. The testing mode could be static, cyclic, dynamic (to simulate wind or seismic forces), or fatigue (to represent multi-million cyclic loads from traffic on bridges).

The Gina Cody School will offer the Director of CICIEM an annual one-course remission for assuming this important role. This is in accordance with the Policy on Research Units and Infrastructure Platforms (VPRGS-8), with the cost of the course release assumed by the School.
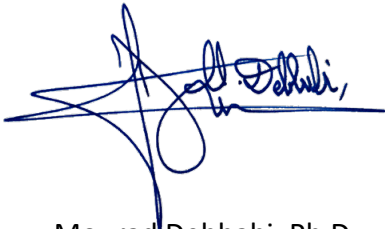
Performance of the Current Centre

The CICIEM was unanimously recommended by the GCS Faculty Research Committee on March 21, 2019, with Dr. Osama Moselhi as Director since its inception. Over time, the Centre has shown itself to be productive in both research funding and innovation. The number of publications from its core members increased exponentially between 2019 and 2022, as compared to 2012 to 2018. This is also reflected in the amount of external research funding obtained, with over $26M in funding received from all levels of government and internationally. The core team of the Centre is currently supervising over 90 graduate students and have supervised to completion over 120 Ph.D. and MASc students since 2019.

The CICIEM has established a successful workshop and seminar series. This has included collaborations with industry partners and Concordia's 4th Space. Due to the pandemic, many of the workshops were held virtually, which encouraged global attendance. Of note was the workshop on Smart Management of Construction Waste, held jointly with the CICIEM and 4th Space in May 2021. The workshop brought in external partners from Recyc-Quebec, LafargeHolcim, Dialog, and Devimco who participated in specialized discussions. The recording of the event was subsequently posted online and has been viewed about 330 times.

The CICIEM has shown remarkable achievement since 2019, moreover with the exceptional circumstances that the pandemic presented them with. I commit my strongest support to the recognition of the Centre for Innovation in Construction and Infrastructure Engineering and Management as an Emerging Research Centre.

Sincerely yours,

Mourad Debbabi, Ph.D.
Professor and Dean
Gina Cody School of Engineering and Computer Science

Proposal for Establishing the Centre for Innovation in Construction and Infrastructure Engineering and Management (CICIEM) as a University Research Centre

1.1 CATEGORY

CICIEM was formally established in 2019 as a research center at Gina Cody School of Engineering and Computer Science. However, the collaboration between the members started more than 10 years ago. Therefore, this application is for establishing CICIEM as a University Research Centre at the category "emergent".

The website of CICIEM is available at: https://www.concordia.ca/ginacody/research/ciciem/about.html

1.2 MEMBERS

- The *Center* has 28 members, 14 professors as core members, 5 Concordia professors as affiliated members, 6 professors as external academic members, and 3 members from industry and government organizations. Appendix 2 has CICIEM membership policy.
- **Director:** Dr. Osama Moselhi (BCEE, GCSENCS)
- **Associate Director:** Amin Hammad (CIISE, GCSENCS)
- **Communication and Outreach Director:** Dr. Mazdak Nik-Bakht (BCEE, GCSENCS)
- **Media Director:** Dr. Sang Hyeok Han (BCEE, GCSENCS)
- **Five officers – special projects:** Drs. Po-Han Chen, Fuzhan Nasiri, Rebecca Dziedzic, Ahmed Soliman, Yunping Liang (BCEE, GCSENCS)
- The multidisciplinary membership includes core members from BCEE, CIISE, ECE, MIE, and CES.
- New members from the Faculty of Art and Science (e.g. Dr. Carmela Cucuzzella) and John Molson Business School will be invited in the near future to become core members.

Core Members
- Dr. Osama Moselhi, Professor, BCEE
- Dr. Amin Hammad, Professor, CIISE
- Dr. Kash Khorasani, Professor and Tier I Concordia Research Chair, ECE
- Dr. Rajamohan Ganesan, Professor, MIE
- Dr. Po-Han Chen, Professor, BCEE
- Dr. Ketra Schmitt, Associate Professor, CES
- Dr. Luis Amador Jimenez, Associate Professor, BCEE
- Dr. Fuzhan Nasiri, Associate Professor, BCEE
- Dr. Mazdak Nik-Bakht, Associate Professor, BCEE
- Dr. Sang H. Han, Associate Professor, BCEE
- Dr. Ahmed Soliman, Associate Professor, BCEE
- Dr. Rebecca Dziedzic, Assistant Professor, BCEE
- Dr. Yunping Liang, Assistant Professor, BCEE
- Dr. Jong Ma, Assistant Professor, BCEE

Affiliated Members
- Dr. Ashutosh Bagchi, Professor and Chair of BCEE
- Dr. Khaled Galal, Professor, BCEE
- Dr. Anjan Bhowmick, Associate Professor, BCEE
- Dr. Anjali Awasthi, Professor and Concordia Research Chair, CIISE
- Dr. Shahin Karimidorabati, Lecturer & Director of Master of Engineering Program, BCEE

External Academic Members
- Dr. Sabah Alkass, Emeritus Professor, BCEE, Concordia University
- Dr. Mohamed Al-Hussein, Professor, NSERC Industrial Research Chair in the Industrialization of Building Construction, Dept. of Civil & Environmental, University of Alberta
- Dr. Mohamed Marzouk, Professor and Director of Construction Engineering Technology Lab, Cairo University
- Dr. Zhenhua Zhu, Assistant Professor, Dept. of Civil and Environmental Engineering, University of Wisconsin Madison.
- Dr. Ali Motamedi, Professor, ETS
- Dr. Ivanka Iordanova, Professor, ETS

External Members – Industry and Government
- Mr. Sedat Akkaya BEng, PMP Head of Project Management Office Toronto Transit Commission| Toronto, ON
- Dr. Mojtaba Valinejadshoubi, BIM Specialist/BIM Developer, NouvLR (REM Construction)
- Dr. Mohammadjavad Roghabadi, Risk Manager, Hatch

Centre Personnel
(a) Directors
1. Director: Dr. Osama Moselhi
2. Associate Director: Dr. Amin Hammad
3. Director of Communication and Outreach: Dr. Mazdak Nik-Bakht
4. Media Director: Dr. Sang Hyeok Han

(b) Administrative Support Team
1. Officer - Special Projects in Construction Automation: Dr. Po-Han Chen
2. Officer – Special Projects in Facilities Management: Dr. Fuzhan Nasiri
3. Officer – Special Projects in Asset Management of Civil Infrastructure : Dr. Rebecca Dziedzic
4. Officers – Planning and Organization of Research-related Events: Dr. Ahmed Soliman and Dr. Yunping Liang

(C) Technical Support Team
1. Research Professional (research management and development): To be hired.
   The qualified candidate for this position shall have knowledge of leading research in the domain of the Center and ability to do liaison with industry.
2. IT Technical and Administrative Support: To be hired

The qualified candidate for this position shall have experience and knowledge in IT to support researchers in matters related to programming. The candidate is to provide administrative support in the day-to-day operations of the Center. As well, the candidate shall be capable of providing support to the Director of Communication and Outreach and the Media Director in preparation of the newsletters of the center and preparation of media related announcements of workshops and seminars.

1.3 ABSTRACT

The mission of CICIEM is to develop world-class excellence in research, training and technology transfer activities to enhance the quality, productivity, safety and competitiveness of the construction industry, and to provide innovative integrated solutions for sustainability, resilience and quality of service of civil infrastructure systems. The research activities of the *Center* will address timely needs of the construction industry and civil infrastructure management within its mandate at provincial, national and international levels as well as providing solutions to meet emerging challenging, including Government regulations that impact industry performance. CICIEM promotes and initiates innovative research and knowledge-based solutions for improving quality, productivity, safety and competitiveness of the Canadian construction industry through a wide range of advanced methods and technologies including: automation and robotics in construction, modular and offsite construction, digitalization of construction, remote sensing technologies, AI, virtual and augmented reality (VR&AR), Digital Twin, and Internet of Things (IoT) applications in construction/ infrastructure, as well as optimization, computer simulation and visualization. In performing its research and outreach activities the *Center* shall comply with EDI requirements and those related protection of the environment, embracing circular economy issues.

1.4 VISION

The construction industry is the locomotive of the Canadian economy, employing more than 1.2 million workers with annual revenues of $73.8B (6% of Canada's GDP). Construction projects of civil infrastructure systems, such as transportation, water supply and sewer networks; housing; energy generating stations and power distribution grids, provide essential services, which have significant impact on public safety and wellbeing. The need to preserve the value of these critical assets, while maintaining targeted levels of service, requires considerable research efforts, particularly in an environment where allocated budgets pose serious constraints. As well, the ever-increasing complexity of infrastructure mega-projects caused by an accelerating rate of urbanization growth poses major challenges. These challenges are further augmented by the new constraints of climate change coupled with the lack of innovation and low efficiency of the construction industry, its high rates of failures and accidents, and the wasted resources on construction sites. The vision of CICIEM is to be a world leader in addressing these challenges by providing solutions that meet the needs of the industry and the society at large, embracing protection of the environment, equity, diversity and inclusion (EDI).

1.5 MISSION

CICIEM aims to meet the challenges of the construction industry by leveraging the nationally and internationally recognized critical mass and diverse knowhow of its members and by conducting research activities under the mandate outlined below, embracing the advancements stipulated in the leading directions of *Industry 4.0*, which can bring sizable improvements to the construction industry, and addressing the recent Canadian Government commitments to (1) reduce total GHG emissions by 40-45% below 2005 levels by 2030, and (2) achieve net-zero emissions by 2050. As such, CICIEM will amplify and bring to light Concordia University's position as a pioneer and national leader in construction automation and infrastructure engineering and management.

Innovation in CICIEM is generating new business dedicated to technology transfer in collaboration with industry. Members of CICIEM are building on their strong research relationships and ties with their

industrial partners. The strong cooperation and complementarity among its members is fully utilized through the collaborative work environment in *Centre,* leading to improvements in the creation of strategic alliances, and in improvement in success rates for funding opportunities and research support to its members nationally and internationally. This is vivid in the recent grant applications, publications and launching of successful research ad taring events.

1.6 OBJECTIVES

The main objectives of the Center are to:

- Operate CICIEM as a world-class research center that serves as Concordia University's flagship for innovation in construction automation and civil infrastructure engineering and management.
- Promote, support and lead research in digitization of construction and sustainable and resilience civil infrastructure.
- Provide a forum for collaborative research of its members and those of national and international research establishments, as well as individual researchers within its mandate and targeted objectives.
- Provide value-driven integrated solutions to critical sector of the Canadian economy that impact public safety and wellbeing.
- Establish integrated network of industry leaders and government agencies that focuses on providing solutions that improve safety, productivity and competitiveness of the construction industry as well as solutions to optimized budget allocation for maintenance, rehabilitation and/or renewal of civil infrastructure assets to meet public demands for targeted levels of service.
- Develop and implement diverse, equitable and inclusive outreach policies, events and agreements that support its mission.
- Create a rich and unique research and training environment for graduate and undergraduate students supervised by its members, benefiting from co-supervisions and shared research facilities.
- Provide valuable resources and expertise for Quebec and Canada as they move in digital transformation of the construction industry toward lean, smart, human-centric and cost-effective delivery, operation and maintenance of constructed facilities. And provide solutions to meet the Canadian Government commitment of decarburization of the construction sector.

1.7 MANDATE

The prime mandate of the proposed CICIEM is to promote excellence in research and initiate innovative research and knowledge-based solutions for improving quality, productivity, safety and competitiveness of the Canadian construction industry. Accordingly, the Center shall have the following responsibilities:

(1) Plan and conduct a wide range of leading research in:

- Automation and robotics in construction, addressing *Industry 4.0* trends toward automation and related data exchange and processing;
- Utilization of sensing technologies and IoT applications in construction/infrastructure engineering and management;
- Computer vision, 2D and 3D imaging, point-cloud analysis and data fusion;
- Big data analytics and data science applications in the context of construction and smart cities;
- Industrialization of construction, including optimized modular and off-site construction;
- Reliability analysis, condition assessment and rating of infrastructure for optimized maintenance and intervention plans and value-driven budget allocation;
- Smart material and circular economy in planning and delivery of constructed facilities; and
- AI application in construction and asset management of civil infrastructure.

(2) Plan, organize and lead research and training workshops, seminars and conferences within its mission.

(3) Secure external research funding by its individual members and their collaborative teams within Concordia University and externally.

(4) Build and expand upon the earlier work of its teams in preparation of policies to support industry and government agencies in the digital transformation process.

(5) Disseminate and share findings of its members on its website, newsletter, publications and conference presentations.

(6) Plan and secure agreements of collaboration with recognized research centers, within the same domain of CICIEM, in Canada and abroad.

(7) Train and mentor highly qualified personnel (HQP) including graduate and undergraduate research students as well as PDF; benefiting from teaming up with professors in the BCEE department, GCS and collaborating faculty within and outside Concordia. In this respect, the Center is expected to significantly increase the potential for attracting high caliber HQP along with external funding opportunities and outreach activities within its mandate.

(8) Provide a recognized training hub for industry professions on leading applied methods and emerging technologies to enhance current practices and to prepare them for professional certification by organizations such as PMI (Project Management Institute) and AACEi (the Association for the Advancement of Cost Engineering International).

1.8 MANAGEMENT STRUCTURE

Governance:

The Directors supported by members of the administrative and technical teams, outlined in Section 1.2, will manage the day-to-day activities of the CICIEM. The whole team will work in a collegial and professional manner. An excellent synergy exists among members of the *Centre* to drive growth and sustain success of CICIEM. The directors have management knowhow and administrative experience. The management structure of CICIEM is shown in Figure 1.
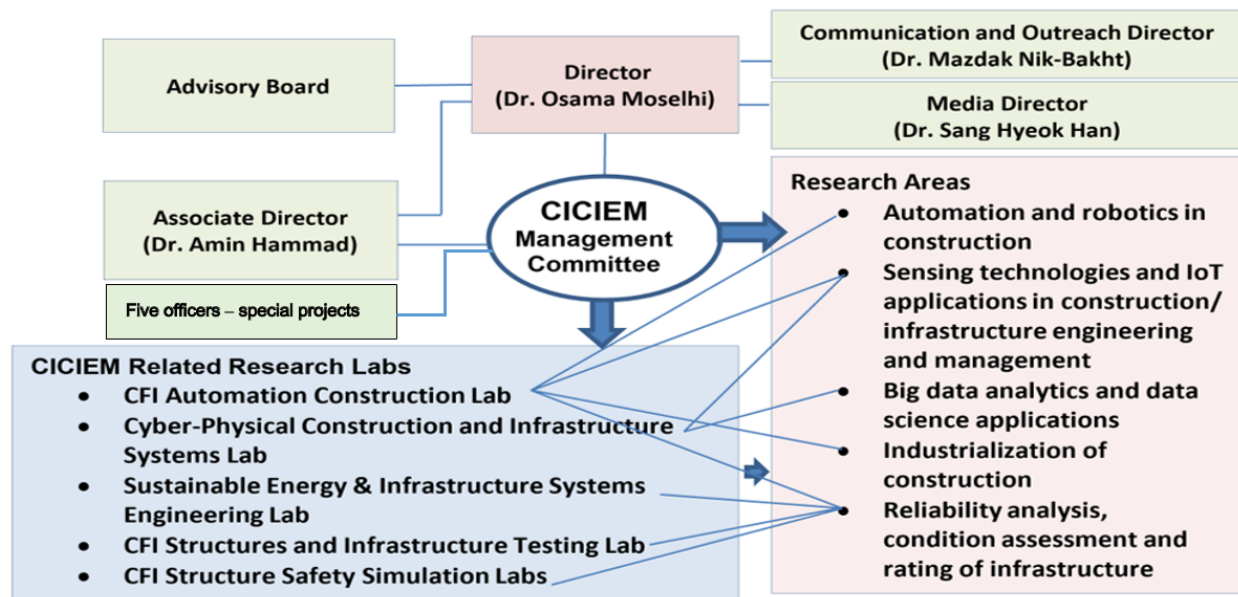

Figure 1. Management Structure and research themes of CICIEM

1.9 ADVISORY BOARD

The advisory board has members from the supporting companies. Its primary role is to provide direction, guide and support research initiatives of the Centre. It also facilitates and supports efforts of members seeking collaborative research with industry. The members are:

- Ms. Chantale Germain, ing, Chief of planning and estimating group at Hydro-Quebec -HQIESP
- Mr. Tony Bégin, P.Eng., MASc., CDP, FCSCE, Senior Director, Canam Group
- Mr. Les McMullan, PMP, FAACE, Global Director Project Controls / PDG, Hatch Group
- Mr. Hagire Emrani, PMP, MBA, BSc., Senior Director, Project Controls, Infrastructure Construction, SNC Lavalin
- Mr. Éric Lessard, VP Innovation and Technology, Chief Digital Officer, Pomerleau
- Ms. Marie-Josée Lambert, ing., M.B.A., Chef de projets, Direction Expertise en gestion de projet de construction, HQ
- Dr. Mohamed Al-Hussein, Professor, NSERC Industrial Research Chair in the Industrialization of Building Construction, Dept. of Civil & Environmental, University of Alberta

Term of Appointment: The number of terms and the length of each time are compliant with the policy for the university unit.

1.10 EDI CONSIDERATIONS

Construction is a male-dominated career. This is evident in the low level of enrolment and retention in construction and civil engineering programs at all Canadian universities. Therefore, we will make special efforts to recruit and respond to the needs of female students and students from other minority groups, and to insure the healthy level of diversity of the research team. We strongly believe that CICIEM should provide role models and potential mentors from minority groups to the trainees. This focus will facilitate integrating gender-inclusive language, unconscious bias training, and gender-based analysis plus (GBA+) training. Diversity is linked to increased creativity, productivity, engagement, and innovation. Therefore, providing equitable and inclusive research and work environment is expected to increase the pool of diverse talent and create multiple pathways for growth and the likelihood of retention of students. We will implement the following specific actions and policies to support equity and inclusion in recruitment practices, mentorship approaches and initiatives aimed at ensuring an inclusive research and training environment:

- We will strive to ensure gender equity during the recruitment and selection of our students by specifically targeting promising female students in our recruitment efforts. In addition, the recruitment will target fair representation of students from first nation and other minority groups to insure the diversity of the research team.
- We will also organize seminars, which address institutional gender and diversity biases and practices that create or maintain barriers for under-represented groups. For example, we will invite inspirational female leaders in engineering to talk about their personal and professional experience during the annual symposia (e.g. Dr. Gina Cody, the former CEO of CCI Group Inc., the first woman ever to be awarded a PhD in Building Engineering at Concordia in 1998, and one of Canada's Top Women Entrepreneurs).
- We will be also active in outreach activities (annual symposia, NSERC Science Odyssey, Montreal Eureka Festival, and Concordia Open House), where we will be targeting a younger audience and involving a majority of female students. Concordia has also special events for celebrating women contributions to engineering (Concordia's Women in Faculty summits) and workshops to introduce

high school girls to some of the engineering research aspects at Concordia (GirlSET program). We will actively participate in these events.

- From the point-of-view of the research contents, some new technologies that are promising in construction automation can encourage more females and physically challenged individuals to select the construction domain as a feasible domain. For example, using AI and mixed reality in decision-making analyzing and visualizing alternative solutions. Furthermore, using robots and exoskeletons will allow more females and elders to work in construction, a domain that is dominated by young, male workers

2. PROJECTED DELIVERABLES AND EVALUATION METRICS

The short-term priorities of the CICIEM in its 2023-2027 plan is to lead collaborative research in the identified emerging areas of construction automation and infrastructure engineering and management, training of highly qualified students and researchers.

YEARS 1-3: ENHANCING THE ESTABLISHED STATUS OF THE CENTRE
Milestones:
- Fostering collaboration and partnerships with industry
- Attracting external research and development funding from various public and private sources including NSERC, FRQNT, and NRC.
- Develop and establish collaboration with related centers and research establishments in Canada and abroad.
- Expand and enrich membership

Evaluation Metrics:
- External funding
- Originality of the research to address the topic and the potential for generating new scientific knowledge
- Training of Highly Qualified Personnel (HQP), undergraduates, graduates (15 PhD students and 15 MASc student per year), and two postdoctoral fellows per year.
- Co-publications: Each co-supervised PhD student is expected to publish at least 2 journal papers and 3 conference papers. Each co-supervised MASc student is expected to publish at least 1 journal or conference paper.
- Consideration of equity, diversity and inclusion in the training of HQP and management of the *Centre*

YEARS 4-5: EXPANSION PHASE
Milestones:
- Establishing funded national strategic network
- Fostering international collaboration
- Organizing workshops and international conferences in specialized areas

Evaluation Metrics:
- External funding
- Originality of the research to address the topic and the potential for generating new scientific knowledge
- Training of Highly Qualified Personnel (HQP), undergraduates, graduates, postdoctoral fellows
- Consideration of equity, diversity and inclusion in the training of HQP and management of the Centre
- National and international outreach, considering MOU agreements with overseas universities and international organizations

- Significance of the intended outcomes and of the economic, social and/or environmental benefits for Canada
- Opportunities for enriched training experiences for research trainees (undergraduates, graduates, postdoctoral fellows) to develop relevant research and professional skills such as leadership, communication, collaboration and entrepreneurship

3. RESEARCH OPPORTUNITIES FOR THE CENTRE

As one of the largest construction research groups in Canada, Concordia has been at the forefront of construction research. The main mission of the Centre is to bring to fruition the long well-established reputation of Concordia in this area, and expand its outreach and visibility nationally and internationally. The research initiatives and activities will be conducted within three main research clusters; (1) Smart Materials & Circular Economy, (2) Automation & Data Analytics, and (3) Policy Making & Asset Management, supported by research projects in nine themes as shown in Figure 2 and described below. It is clear from this figure that CICIEM has a strong multidisciplinary research scope spanning several areas in construction and infrastructure management, industrial engineering, automation and robotics, finance, material science, data science, AI, etc. The diverse expertise of the core members is also clear from the biography section (Section 3.2)
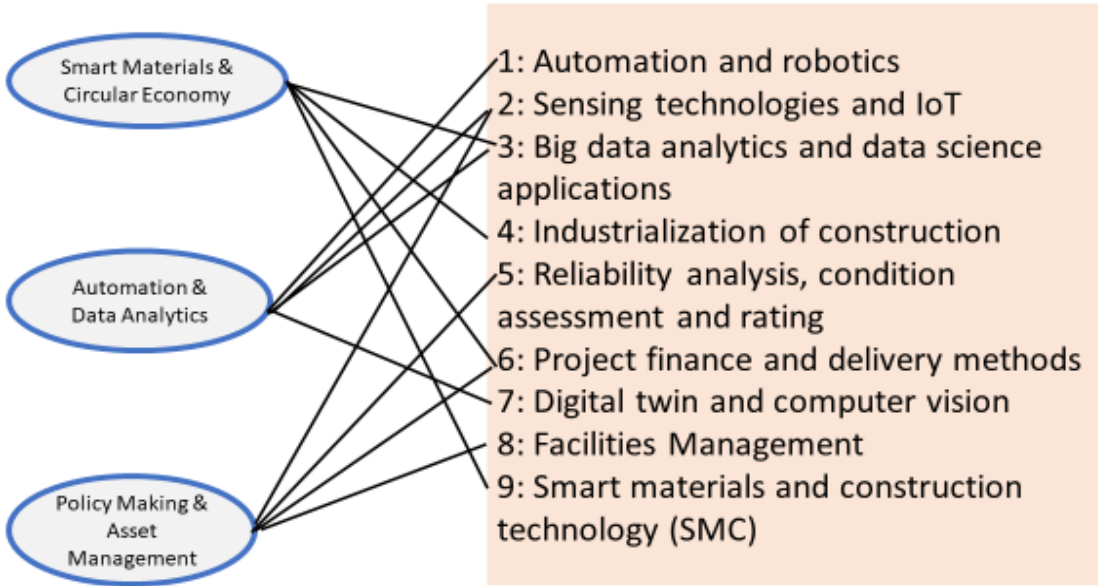
Figure 2: Research clusters and themes

3.1 RESEARCH PROGRAMS

The following is a summary of the proposed research projects in the coming five years. The projects span a wide spectrum of fundamental-to-applied research focusing on promoting large-scale interdisciplinary research, training of highly qualified personnel, technology transfer and interaction with industry and related government agencies. The research activities fall in nine themes:

- **Theme #1: Automation and robotics in construction**, addressing *Industry 4.0* trends toward automation and related data exchange and processing. *Example projects*: deep learning computer vision for detecting and classifying construction activities; robotic applications in construction

operations using multi-agent systems.
- o Collaborating Members:
  - ▪ Dr. Osama Moselhi (leader)
  - ▪ Dr. Amin Hammad
  - ▪ Dr. K. Khorasani
  - ▪ Dr. Po-Han Chen
  - ▪ Dr. Mazdak Nik-bakht
  - ▪ Dr. Jong Ma

- **Theme #2: Sensing technologies and IoT applications in construction/infrastructure engineering and management:** New algorithms will be developed by extending the recent advancements in sensing and telemetries while considering the challenging requirements of construction projects. *Example projects*: Automated site data acquisition and utilization in productivity modeling and in tracking progress reporting; intelligent identification of construction performance variances; autonomous systems for improving worker safety; sensory data fusion for intelligent decision-making in construction projects.
  - o Collaborating Members:
    - ▪ Dr. Osama Moselhi (leader)
    - ▪ Dr. K. Khorasani
    - ▪ Dr. Amin Hammad
    - ▪ Dr. Jong Ma

- **Theme #3: Big data analytics and data science applications in the context of construction and smart cities:** While digitalization is the main driver towards smart cities, the drive is not limited to the digital aspect. Analysis of the city big data can create a new discourse for planning, construction, and operation of the physical urban infrastructure. *Example projects:* developing deterioration models for urban infrastructure assets via machine learning and deep learning; evaluating user-driven levels of service for urban infrastructure through text mining, computational linguistics, and social network analysis; urban information modeling and urban computation for demand detection and decision making to support emerging technologies (such as infrastructure for electric and autonomous vehicles, urban energy sheds, etc.); using infrastructure end-users to create human sensor networks for measuring performance via pervasive computation and crowdsourcing.
  - o Collaborating Members:
    - ▪ Dr. Mazdak Nik-Bakht (leader)
    - ▪ Dr. Fuzhan Nasiri
    - ▪ Dr. K. Khorasani
    - ▪ Dr. Rebecca Dziedzic
    - ▪ Dr. Yunping Liang
    - ▪ Dr. Jong Ma

- **Theme #4: Industrialization of construction:** The knowledge from industrial engineering and supply chain management will be used to advance the research and practice in off-site and modular construction and construction 3D printing considering productivity, quality, logistics, and ergonomic issues. *Example projects*: Optimization of planning and manufacturing of modular and off-site construction; developing manufacturing-centric, BIM-based solutions to improve the level of automation of design, drafting, and quantity takeoff; framework for the implementation of smart factory concepts for logistics and on-site assembly in construction manufacturing; continuous productivity and safety improvement measures for construction manufacturing based on biomechanical and ergonomic studies.

- o Collaborating Members:
    - ▪ Dr. Sang Hyeok Han (leader)
    - ▪ Dr. Osama Moselhi
    - ▪ Dr. Fuzhan Nasiri
    - ▪ Dr. Po-Han Chen

- **Theme #5: Reliability analysis, condition assessment and rating of infrastructure for optimized maintenance and intervention plans and value-driven budget allocation (**Value-driven asset management systems for sustainable and resilient civil Infrastructure**):** Innovative methods will be developed to support efficient condition assessment and rating, tracking performance and optimized measures/interventions for maintenance and rehabilitation of civil infrastructure for long-term sustainability and networks resilience plans. *Example projects:* computer vision for rapid screening of deteriorating infrastructure; statistical pattern recognition method for assessing infrastructure condition; data fusion and artificial intelligence technologies for structural health monitoring; optimization of maintenance planning for sustainable infrastructure systems; risk analysis for capacity enhancement of resilient transportation infrastructure networks; bridge inspection using UAV-mounted LiDAR and other technologies such as ground penetrating radar (GPR), digital imaging and infrared technology; optimizing budget allocation for networks of municipal asset.
    - o Collaborating Members:
        - ▪ Dr. Osama Moselhi (leader)
        - ▪ Dr. Fuzhan Nasiri
        - ▪ Dr. Rajamohan Ganesan
        - ▪ Dr. K. Khorasani
        - ▪ Dr. Ahmed Soliman
        - ▪ Dr. Rebecca Dziedzic
        - ▪ Dr. Ketra Schmitt, Associate Professor, CES
        - ▪ Dr. Luis Amador
        - ▪ Dr. Yunping Liang
        - ▪ Dr. Po-Han Chen
        - ▪ Dr. Amin Hammad

- **Theme #6: Project finance, construction economics, and project delivery methods:** this research theme aims at addressing the financial and economic issues arising from infrastructure development, with focus on economic, financial, and societal sustainability. In particular, this theme focuses on risk management, stakeholder alignment, financial management, econometric modeling and forecasting, and innovative project delivery methods. *Example projects:* Enhancing the reinvestment decision-making of infrastructure systems to achieve better climate resilience; Understanding the dynamics between public opinions and policy decision-making in terms of infrastructure development policies: consistency, salience, and leading parties; Empirical analysis on private investment in North America infrastructure development via Public-Private Partnerships: leverage, demand, and performance
    - o Collaborating Members:
        - ▪ Dr. Yunping Liang (leader)
        - ▪ Dr. Osama Moselhi
        - ▪ Dr. Amin Hammad

- **Theme #7: Digital twin and computer vision application in construction**: 3D and 4D simulation can be used in the planning phase of a project for constructability analysis, which aims to optimize construction processes and improve safety management. The same 4D simulation can be used as a digital twin in the construction phase for progress monitoring and identifying potential safety issues

based on micro-schedules. A micro-schedule is a schedule listing tasks of short durations (i.e. days or hours) with the information of the resources assigned to each task (i.e. workers, equipment and materials). The site data can be collected using Computer Vision (CV) or Real-Time Location Systems (RTLS) to identify and recognize the activities of construction resources, as well as to capture the progress of the project. This theme aims to explore the possibility of developing near real-time digital twins of construction sites.
- o Collaborating Members:
  - ▪ Dr. Amin Hammad (leader)
  - ▪ Dr. Osama Moselhi
  - ▪ Dr. Po-Han Chen
  - ▪ Dr. Mazdak Nik-Bakht
  - ▪ Dr. Jong Ma

- **Theme #8: Facilities Management**
  Facilities management (FM) aims at establishing management practices for optimal design and operation of built/physical environment including *indoor spaces*, *buildings* and *infrastructure*. In particular, FM focuses on investigating systems-level solutions to address cost, time, and resource efficiency issues. Also, the analysis of the interactions between facilities, occupants and the natural environment is of a growing attention in FM provided the Pandemics (emphasizing the design and operation of indoor spaces and social distancing requirements) as well as climate change (with buildings as major contributors to energy consumption and GHG emissions). In this regard, minimizing the health and safety risks for the occupants in indoor spaces and minimizing the environmental impacts of facilities operation are increasingly targeted.
  - o Collaborating Members:
    - ▪ Dr. Fuzhan Nasiri (leader)
    - ▪ Dr. Ahmed soliman
    - ▪ Dr. Amin Hammad
    - ▪ Dr. Rebecca Dziedzic

- **Theme# 9: Smart materials and construction technology (SMC):** SMC aims at strengthening the linkage between materials science and construction technology. It emphasizes the roles of selecting and constructing materials in facilitating different construction tasks in a cost-effective way. This also covers maintenance operations for infrastructure by providing responsive materials, data and interpretation models that help decision makers. An example of a project includes sensing materials that can generate warning signals as the stresses exceed predetermined critical levels. Also, responsive materials can react autonomously to external environmental loadings. Reducing the risk of failure and extending the service life for infrastructure will reduce the demand on natural resources leading to ecological and environmental benefits.
  - o Collaborating Members:
    - ▪ Dr. Ahmed Soliman (leader)
    - ▪ Dr. Ashutosh Bagchi
    - ▪ Dr. Rajamohan Ganesan
    - ▪ Dr. Rebecca Dziedzic
    - ▪ Dr. Yunping Liang

3.2 RESEARCH EXCELLENCE OF THE MEMBERS

Dr. Osama Moselhi, FASCE, FCSCE, FAACE, FCAE is a Professor in the BCEE Department. His research interest encompasses optimized project delivery systems, including modular and offsite construction, construction automation, value driven smart tools for efficient asset management of civil infrastructure, tracking and control of construction projects, with a focus on risk management, productivity analysis, and development of decision support systems embracing information technology, remote sensing, web-enabling and spatial technologies. He has over 40 years of professional and academic experience in construction and he is a recipient of numerous awards and recognitions, including the prestigious CSCE *Walter Shanly Award*, the CSCE *Casimir Gzowski Gold Medal* and ISARC *Tucker-Hasegawa Award.* He supervised to completion more than 100 graduate students.

Dr. Amin Hammad, is a Professor at the Concordia Institute for Information Systems Engineering (CIISE). His research is recognized internationally in the areas of automation in construction and infrastructure management systems. His current research areas are: modeling, simulation and visualization in construction; robotic and cyber-physical construction systems; smart infrastructure systems and integrated municipal asset management; smart buildings and IoT applications for enhanced building energy use, safety and security; and mixed reality applications in construction and asset management. He has published more than 200 papers in top peer-reviewed journals and conferences in his area. His research has attracted about $3M from external and internal funding. He has supervised 70 graduate students and PDFs.

Dr. Khashayar (Kash) Khorasani is a Professor and Tier I Concordia Research Chair in the Department of Electrical and Computer Engineering of Concordia. He has a strong track record of collaborative research with other researchers, as well as with industry and governmental organizations. His expertise is in the areas of nonlinear and adaptive control; computationally intelligent systems; intelligent control, fault diagnosis, prognosis, and health management; and protection/resilient control of cyber-physical systems. Since 2013, his projects have been funded to the tune of more than $15M, with support from the Department of National Defence, NATO, Thales Canada, Canadian Space Agency, NSERC, and MITACS, among others. He has supervised more than 110 graduate students and PDFs. **He is listed among the Top 2% Scientists of the World, 2020 (https://data.mendeley.com/datasets/btchxktzyw/2).**

Dr. Rajamohan Ganesan is a Professor at MIAE department. His research interests include Structural Safety and Reliability, Probabilistic/Stochastic Modelling and Analysis, Structural Dynamics, Random and Non-linear Vibrations Applications, Composite Materials and Structures, Computational Methods including FEM and BEM, in Construction & Infrastructure Engineering and Management research. He has authored/co-authored more than 100 Journal publications, more than 10 book chapters, and more than 150 Conference publications, and supervised more than 60 graduate students. He has directed many industrial projects in the areas of Composite Materials and Structures, High-velocity impact, Automotive Composites, and Fatigue of materials. He has been appointed to a Concordia Research Chair (Tier 2) for the period 2001 - 2007.

Dr. Po-Han Chen is a Professor in the BCEE Department. His research expertise includes intelligent automated image recognition, artificial intelligence applications in construction, virtual reality (VR), augmented reality (AR) and mixed reality (MR) applications, optimization of construction operations, integration of building information modeling (BIM) and green building design, and drone-based infrastructure surface inspection. He has attracted research grants with a total worth of C$5,417,390 from the public and private sectors in Singapore, Taiwan, and Canada in the past two decades. Also, he has authored or co-authored more than 180 research articles in refereed research journals and conference proceedings, and has supervised 92 Master's graduates and 12 PhD graduates.

Dr. Ketra Schmitt is an Associate Professor in the Centre for Engineering in Society. She founded the Systems Risk Laboratory to conduct technology policy research using systems models to evaluate social-technical problems. The Systems Risk Laboratory uses agent-based models to act as a policy laboratory so the potential economic and social impacts of policies can be understood prior to implementation. She also develops online systems to facilitate stakeholder engagement in technology assessment. Her research has been funded by NSERC, FQRSC, Public Safety Canada and Natural Resources Canada. She supervises students in the Concordia Institute for Systems Engineering (where she is also an associate member) and in Industrial Engineering, and co-supervises students throughout the engineering faculty. Before joining Concordia, she worked as a research scientist and Battelle Memorial Institute, leading an interdisciplinary team to develop a method to estimate economic impacts of biological, chemical, nuclear and radioactive terrorism as well as underlying systems models.

Dr. Luis Amador-Jimenez is an Associate Professor at BCEE department. His research concentrates on novel concepts for road infrastructure management. Luis has conducted research on the optimal planning of pavements to increase the resiliency and the effects of climate change on pavement deterioration. He also has developed a maturity model to measure the state of advancement of worldwide practices on road safety and business competitiveness and to identify best practices as part of his consulting to foreign governments. His research has been funded by Quebec's Ministry of Transportation, NSERC, and the Government of Ecuador. He is the author of 3 books and 33 journal articles and 48 conference papers.

Dr. Fuzhan Nasiri is a strategic hire Associate Professor at the BCEE Department. He is interested in developing systems-level facilities management solutions, using optimization and simulation models, to address sustainability, reliability, and resilience issues in design, engineering, and operation of complex physical systems such as infrastructure and buildings. Dr. Nasiri has published over 100 publications as journal (63) and conference (47) papers, book chapters, and editorials. He has supervised over 30 graduate students since 2011. His research has been funded by NSERC, MITACS, FRQNT, and several industrial partners. Before joining Concordia, he worked at University College London (UCL) as a faculty member (2011-2014), at Yale University as a research scientist (2009-2011), and at GERAD research group as a postdoctoral fellow (2007-2009).

Dr. Mazdak Nik-Bakht is an Associate Professor of Construction Engineering & Management in the Department of Building, Civil, and Environmental Engineering at Concordia University, Montréal. He earned his first PhD and MSc in Structural Engineering, as well as his BSc in Civil Engineering, all from the Iran University of Science and Technology (IUST). He received his second PhD in Construction Engineering & Management from the University of Toronto in 2015. With more than 80 published journal articles, conference papers, and book chapters, Dr. Nik-Bakht's scholarly works have been focused on the automation and digital transformation of the built environment. Areas of his expertise include big data analytics for smart infrastructure, social network analysis and knowledge management for construction, digital twinning of the built environment, and applied Artificial Intelligence in the AEC/FM (Architecture, Engineering, Construction & Facility Management) industry. Mazdak is a licensed Professional Engineer with PEO (Professional Engineers Ontario) and has years of experience as a structural designer and project manager in structural & infrastructure rehabilitation projects. He is currently the Chair of the Construction Division of CSCE (Canadian Society of Civil Engineering), as well as the director of Compleccity Lab at Gina Cody School of Engineering and Computer Science.

Dr. Sang Hyeok Han is an Associate Professor at the BCEE Department. His research interest is in the continuous and intelligent improvement of modular construction using lean manufacturing, optimization, simulation, 3D visualization and point-cloud technologies. His works include a physical demand-driven workplace design system, automated drafting, quantity take-off, smart inventory and procurement management, automated planning and scheduling of modular construction, noise level control, and

equipment operation and management for on-site modular assembly. He has published more than 30 papers in high-quality journals, conference proceedings and books, and supervised more than 16 graduate students.

Dr. Ahmed Soliman is an Associate Professor at the BCEE Department. He is interested in the behaviour of cementitious materials and composites, civil infrastructure performance including its durability, strengthening and rehabilitation, sustainable and green constructional materials, applications of nano-technology in civil engineering, and the use of artificial intelligence and other emerging modeling techniques in construction materials research. Dr. Soliman has published over 60 publications as journal and conference papers. He has supervised/co-supervised over 12 graduate students since 2011. He also has obtained a patent for a sustainable construction material for geotechnical applications. Before joining Concordia, he worked at Western university as a postdoctoral fellow and an instructor (2011-2016).

Dr. Rebecca Dziedzic is an Assistant Professor in the BCEE Department**.** Her research expertise lies in developing decision support methods for smart and sustainable infrastructure, particularly water distribution systems. Her research group has developed methods combining hydraulic modeling, machine learning and optimization techniques to predict water main deterioration, detect leaks, optimize pipe design, optimize energy recovery and optimize pump operations in water distribution systems. Her research has been funded by NSERC, MITACS, Independent Electricity System Operator of Ontario, and other industrial partners.

Dr. Yunping Liang is an Assistant Professor in Construction Engineering and Management at Concordia University since May 2022. Liang's research interests are at the intersections of Civil Engineering, Operations Research, Behavioral Economics, and Public Policy. Currently, Liang's research focuses on economic and financial issues emerging from sustainable infrastructure development, with goals to enhance decision-making and to promote the economic, social, and environmental sustainability of infrastructure systems. Dr. Liang's research work has been sponsored by the National Science Foundation (USA), Georgia Department of Transportation (USA), and Young Professionals in Infrastructure (USA).

Dr. Jong Won Ma is (newly hired and expected to join in September 2022) an Assistant Professor at the BCEE Department. His research expertise is the areas of automation in construction, building information modeling, computer vision, artificial intelligence, advanced work packaging, and sustainable systems. Before joining Concordia, he worked as a postdoctoral fellow at CEPM group at the University of Texas at Austin.

The team members have published extensively (Table 1) in the areas of the proposed research.

Table 1: Summary of publication records of the core team members

	Publications		
	Journals	**Conferences**	**Book chapters**
2012 – 2018	223	339	11
2019 – 2022	231	185	17
Total	453	524	28
Submitted	24	12	2

The core team members where particularly successful in acquiring high level of external research funding from all levels: federal, provincial, industry, and international sources. The team members were involved,

as PI / Co-PI, in projects that were funded with more than $26 million in the past as shown in Table 2. As can also be seen from the attached CVs, the team secured its external research funding from different research support programs in Canada, such as: NSERC, FRQNT, CFI, Infrastructure Canada, and MITACS as well as international research programs, such as: IC-IMPACTS (the India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability). This is in addition to research funding from industry and internal funding.

Table 2: Details of funding of the core team members ($)

	Individual grants				Team grants			
	Federal	Provincial	Internal	Other	Federal	Provincial	Internal	Other
2012 – 2018	2,729,171	364,144	827,500	285,210	4,400,000	7,430,000	200,000	1,048,520
2019 – 2022	3,250,056	235,800	558,332	157,750	3,835,570	3,370,500	160,000	0
Applied for	90,000	0	0	0	3,337,975	0	0	0

Affiliated members:

Dr. Ashutosh Bagchi is a Professor and Chair of the Department of Building, Civil and Environmental Engineering (BCEE) at Concordia. He is internationally recognized for his expertise in infrastructure engineering, sensor-based SHM, data-driven and hybrid methods for SHM, smart infrastructure, and the application of pattern recognition, image processing and cloud-based techniques for infrastructure condition assessment. He is associated with the IC-IMPACTS Research Network on Canada-India Collaborative Research, and a Steering Committee Member of the *Advanced Bridge Monitoring Systems of Transportation Development Centre* at Transport Canada. He has supervised more than 50 graduate students.

Dr. Khaled ElMandooh Galal is a Professor at the BCEE Department. He specializes in Structural Engineering. He has experimental and analytical research expertise in the areas of: reinforced concrete and masonry structures; earthquake engineering; highway and railway bridge infrastructure; rehabilitation of structures; applications of new FRP composite materials in structures; and mitigation of progressive collapse of structures. Dr. Galal joined the BCEE Department as an Assistant Professor in 2004 and was promoted to Associate Professor in 2008 and to Professor in 2014. Dr. Galal obtained his Ph.D. degree from McMaster University, Canada (2002), followed by two years as Postdoctoral Fellow in the Earthquake Engineering Research Group and the Centre for Effective Design of Structures at McMaster University (2002-2004). He obtained his M.Sc. (1998) and B.Sc. (1993) degrees from Ain Shams University in Egypt.

Dr. Anjan Bhowmick is an Associate professor in the BCEE Department. His research interests include Seismic design and analysis of steel structures, Stability of steel structures, Behaviour of structures under fire, Seismic retrofit and rehabilitation of existing buildings and bridges. His research has been funded by NSERC, FRQNT, and CISC (Canadian Institute of Steel Construction). He has published several articles in reputed Journals including ASCE Journal of structural Engineering, Journal of Constructional Steel Research, Engineering Structures, Thin-Walled Structures, Canadian Journal of Civil Engineering etc. He is an active member of AISC, ASCE, and CSCE.

Dr. Anjali Awasthi is Concordia Research Chair at Concordia Institute for Information Systems Engineering (CIISE). She received a PhD in industrial engineering and automation from INRIA Rocquencourt & University of Metz, France. Prior to Concordia, Dr. Awasthi worked at Centre for Operations Excellence (COE), Sauder School of Business at University of British Columbia, where she was involved in several projects on industrial applications of operations research. At University of Laval,

she worked on wood supply chains. In France, she was involved in several European projects aimed at improving urban mobility in cities, city logistics and on cybernetic transportation systems. Dr. Awasthi has several years of industry and research experience in areas of automated transportation, sustainable mobility, sustainable supply chain management, quality assurance in supply chains, sustainable city logistics planning, and applied operations research. She is the author of several journal and conference papers on these topics.

Dr. Shahin Karimidorabati is a lecturer in construction engineering and management and the Director of Master of Engineering Program of BCEE department. He received his PhD in Electronic Product and Process Management (EPPM) Systems from the University of Waterloo. Dr. Karimidorabati's research interests include process discovery and process improvement in construction mega projects with the aid of process mining techniques, stakeholder management, and 3D printing in construction projects. He has published 6 journal and conference papers.

3.3 RESEARCH OPPORTUNITIES DEVELOPED THROUGH COLLABORATIONS

Recent years marked notable achievements for the Center on collaborative research work, industry partnerships and successful grant applications, organization of international seminars and workshops, including a well-received students' competition on leading-edge research adjudicated by a panel of experts from industry and academia. These achievements resulted from the active role of the members and affiliate members of the Center and to the support received from members of the *Center's* Advisory Board.

- **New collaboration opportunities**

Brainstorming sessions were initiated and hosted by the Centre, which led to the formation of several workgroups focusing on circular economy, digital transformation in construction, robotics and exoskeleton in construction, PPP and other financing mechanism, and modular off-site construction. These efforts are expected to result in several grant applications in the near future. This was achieved by a wide and active participation not only of members of the center, but with members from Nest Gen Cities and *CZEBS* over a number of sessions. The Center accordingly and after careful consultation with its members established three research clusters as shown in Figure 3.

For example, in the area of *Circularity of Construction and Built Environment*, these research clusters were utilized in a dedicated workshop in that area. Collaborations among the members of this workgroup resulted in co-authoring several papers, hosting a workshop, and starting an industry partnership for a research grant, as will be explained later in Section 7.
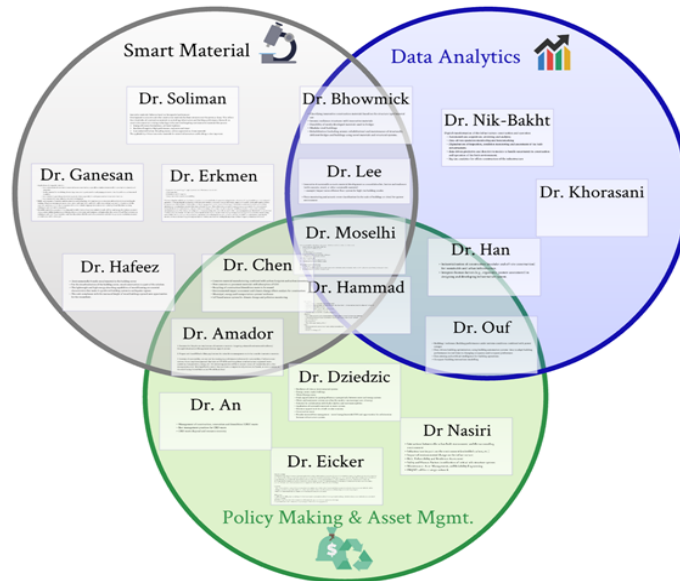
Figure 3. Research clusters at CICIEM: (1) Smart Materials & Circular Economy, (2) Automation & Data Analytics, and (3) Policy Making & Asset Management

- **Organization of International Workshops and Seminars**

(1) Workshop on Smart Management of Construction Waste (2021-05-20)

This initiative taken by one of the Centre's three research clusters, titled "Asset Management and Policy for Long Term Sustainable and Resilient Infrastructure" organized a workshop entitled "*Smart Management of Construction Waste*", hosted jointly with Concordia University's 4th Space. Dr. Rebecca Dziedzic moderated the workshop, which was divided into two parts, a panel and specialized discussions. The panel brought together the perspective of five professionals from different areas, Mr. Nicolas Bellerose from Recyc-Québec, Dr. Abdu Lofty from LafargeHolcim, Ms. Stephanie Dalo from Dialog, Mr. Michel Bouchard from Devimco and Dr. Ahmed Soliman from CICIEM. The subsequent specialized discussions were carried out in breakout rooms and focused on three areas: (1) Design, maintenance, rehabilitation and deconstruction; (2) Recycling & reuse at the material level; and (3) Environmental impacts and management of CRD (Construction, Renovation, and Demolition) waste. The discussions identified key barriers to the smarter management of CRD materials, as well as opportunities for future research. A recording of the workshop is available through 4th Space YouTube Channel, as is a summary of the event. The recording has been viewed about 330 times following the event.


(2) Workshop on Digital Transformation of the Construction Industry (2021-12-08)

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Continuing with CICIEM Workshop Series, CICIEM and AACEI Montréal (International Association for Advancement of Cost Engineering) held a panel discussion on digitalization and digitization of the construction industry. Panelists from different sectors of the industry met and discussed with representatives from academia about the current outstanding questions ahead of the construction industry through its digital transformation. Those questions included the best (and worst) practices; main challenges, opportunities and needs; the current return on investment for digitalization and digitization; and the immediate, medium and long-term expectations of the industry from academia (and vice versa) to support the digital transformation of the construction industry. The industry panelists included Mr. Andy Hares, Global Director of Information Management at HATCH, as a representative of consultants; Mr. Darren Nelson, the CTO of AedoAI as a representative of construction project management digitalization companies; and Dr. Mani Golparvar, the CTO and co-founder of Reconstruct, to represent digital twinning in construction. The panelist from academia included Dr. Osama Moselhi, Dr. Amin Hammad; and Dr. Mazdak Nik-Bakht, who moderated the panel. The event was hosted in a hybrid format by Concordia 4th Space, and was attended by about 150 online audiences (from Canada, the US, East Asia, and the Middle East) as well as 15 in-house attendees (reduced capacity due to the Pandemics HSE provisions). The recording of the panel, accessible through YouTube channel of 4th Space, has been viewed about 500 times following the event.

(3) Seminar on Automation and Robotics in Construction (2022-4-27)
In collaboration with the Construction Innovation Centre (CIC) of the University of Alberta, CICIEM organized an online seminar (first in a series of joint online events) about automation and robotics in construction. Research and industry experts are joining forces to present this seminar on automation and robotics in construction. The seminar included the following presentations: (1) Main Applications of Robotics in Construction (Dr. Osama Moselhi and Dr. Amin Hammad, CICIEM), (2) Improving Construction through Robotics: Use Cases and Lessons Learned (Ramtin Attar, Co-Founder & CEO, Promise Robotics, Dr. Nenad Gucunski, Professor and Department Chair, Rutgers University, Sina Karimi, R&D Specialist, Pomerleau Construction), and (3) Panel Discussion: Opportunities and Challenges of Robotics in Construction from an Industrial Perspective. The event was attended by about 90 online audiences. The recording accessible through YouTube has been viewed about 160 times following the event.

Robotics in Construction
Applications, Opportunities, Challenges

April 27th
10 am - 12 pm MT
12 pm - 2 pm ET
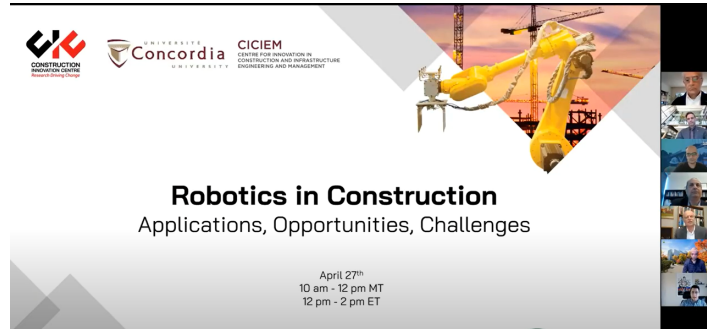
(4) CICIEM-AACE Montreal Section workshops and discussion Panel (2022-11-11)

CICIEM in collaboration with AACE (the association for advancement of cost engineering) Montreal Section organized one-day paid for event. The events took place at GCS on November 11 and it included 3 workshops and a discussion panel with members from industry. The workshops and the panel were fully booked and paid for. The event was in-person and online.

AACE SEMINAR DAY
WORKSHOPS & DISCUSSION PANEL

Turner & Townsend   POMERLEAU   WSP

EVENT AGENDA (NOVEMBER 11, 2022)

WORKSHOPS
(November 11, 2022; 9:30 AM-3:30 PM)

#	Start – End	Time (Min)	Activity
			WSP- PLANNING AND COST CONTROL INTERCONNECTIVITY
01		15	Registration Check (9:15 AM-9:30 AM)
02		5	Greeting & Introducing Presenter (s) (9:30 AM-9:35 AM)
03	9:30 AM – 11:00 AM	75	Presentation and Training (9:35 AM-10:50 AM)
04		5	Short Q/A (10:50 AM-10:55 AM)
05		5	Closing Session (10:55 AM-11:00 AM)
			Pomerleau- ROBOTICS & AI IN CONSTRUCTION
06		15	Registration Check (11:15 AM-11:30 AM)
07		5	Greeting & Introducing Presenter (s) (11:30 AM-11:35 AM)
08	11:30 AM – 13:00 PM	75	Presentation and Training (11:35 AM-12:50 PM)
09		5	Short Q/A (12:50 PM-12:55 PM)
10		5	Closing Session (12:55 PM-13:00 PM)
			T&T- POST-CONTRACT COST MANAGEMENT
11		15	Registration Check (13:45 PM-14:00 PM)
12		5	Greeting & Introducing Presenter (s) (14:00 PM-14:05 PM)
13	14:00 PM – 15:30 PM	75	Presentation and Training (14:05 PM-15:20 PM)
14		5	Short Q/A (15:20 PM-15:25 PM)
15		5	Closing Session (15:25 PM-15:30 PM)

4. Links with the Applied AI Institute, the Next Generation Cities Institute and the CZEBS

The center has direct links with the Applied AI Institute and the established the Next Generation Cities Institute the links with these 2 institutes are based on complementarity in research and value creation. The relation with these 2 institutes is organic, emanating from the nature and scope of their respective research domain of research domain and those of the center.

Nine (9) of CICIEM members are members of the **applied AI institute's "AI + Science Cluster Meeting"**. We develop a wide range of AI applications in the domain of CICIEM research, well before the establishment of the institute. This includes application in cost estimating, construction biding, and condition assessment and rating of bridges, tunnels as well as detection and classification of defects in water distribution networks, sewer networks and road networks. We just received approval of a large-scale collaborative AI-based project ($2,700,000+) with Canam group (the largest structural steel

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fabricator in Canada). The project name: "Automated structural steel connection design and estimation system". The project team include, in addition to project leader (Canam), Moov AI (a Montreal-based consulting firm specialized in development of AI applications, and one member of CICIEM (Dr. O. Moselhi). The project was recently approved by Scale AI (Canada's artificial intelligence (AI) supercluster dedicated to building the next-generation supply chain and boosting industry performance by leveraging AI technologies).

Member of the center collaborated with **Next Gen Cities institute** since its inception and participated in a number of its events, and had members of that institute and its director joining wide range discussions in two of CICIEM research clusters, and we jointly published together as well. This is primarily attributed to the search interest of CICIEM members in sustainable development, asset management of civil and municipal infrastructure such as water distribution networks, sewer networks and road networks.

The link to **CZEBS** is not as natural as in the case of the 2 institutes in view of the research focus, except in facility management of the built environment. Even when there is apparent similarities in research topics, the treatment and the methods used are different. For example, while CZEBS focuses on zero-net energy, CICIEM focuses on resilience and sustainability of civil infrastructure using different methods. We were invited by NRC to discuss and strategize about decarbonization in construction and how the industry can meet Government of Canada's commitments to (1) reduce total GHG emissions by 40-45 % below 2005 levels by 2030 and (2) achieve net-zero emissions by 2050. Two members of the *Center* (Drs. Hammad and Nasiri) work and teach in the area of facilities management. Possible collaboration can be explored in finance and economics.

5. CENTRE'S KEY BENEFITS

• Visibility
Construction automation and efficient value-driven management of civil infrastructure represent a key strength of the BCEE department and GCS. CICIEM and its research activities will raise the profile of this key research. The areas covered by the mandate of the *Center* are rapidly developing over the last decade and in need for novel research and smart management tools. With the experience gained over the past years in these areas, the research team will be able to position Concordia for "*national leadership in innovative construction and smart infrastructure engineering and management*".

A number of Québec/Canadian universities have developed clusters in the areas of construction/infrastructure engineering and management (e.g. University of Alberta, ETS, University of Toronto and UNB), while Concordia University is lagging behind despite of its nationally recognized, capable and well established critical mass of researchers in that field. CICIEM aims at addressing this gap, attract well-deserved recognition, and raise the research profile of Concordia University in this critical field to economy and public safety and welfare in Quebec and Canada. Infrastructure renewal is a priority area for governments of Québec and Canada. Consequently, many private companies are actively involved in public infrastructure projects. The proposed Center will help Concordia to demonstrate and amplify its strength in this area and benefit from governments' current focus on sustainable and resilient civil infrastructure.

CICIEM established a biannual newsletter. The first issue was published in April 2022 and is available on CICIEM website.
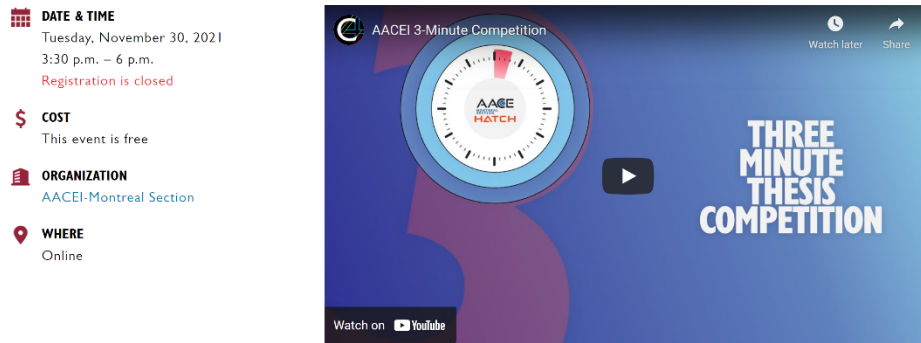
• Student Participation
Students have special membership status at CICIEM. They are also invited to present their research findings is regular seminars. In addition, special events and competitions are organized for students such as the following event.

- **[3MT Competition for Students in Construction Engineering & Management](#)** (2021-11-30)

The 2022 Concordia/AACEI 3 Minute Thesis (3MT) competition was performed in a collaboration between the Centre, the AACEI Montréal Section, and AACEI Montréal Student Board at Concordia University. In this year's competition, thirty-two (32) candidates applied from top-notch graduate programs in Canada and the US (i.e. Concordia, ETS, University of Toronto, UBC, Texas A&M, Pennsylvania State Universities, Georgia Institute of Technology, etc.). From this pool, twenty (20) finalists got qualified in two streams, i.e., the presentation competition (10 competitors) and the poster competition (10 competitors). The presentations were hosted in a hybrid format at Concordia 4th Space, and covered a variety of topics including Cost Engineering, Project Planning and Control, Construction Automation and Robotics, and Sustainable Construction. The event was attended by around 50 online and in-house audiences, and the recording is available through 4th Space YouTube channel. The three top winners of the presentation competition, selected by the judging panel, were invited to the AACEI Montreal board for an extended technical presentation of their work, followed by a panel discussion in February 2022. Winners of both the presentation and poster competitions received recognition and cash prizes, totaled at $3,850, sponsored by AACE Montreal, HATCH and SNC-Lavalin.

AACEI 3-Minute Thesis Competition

DATE & TIME
Tuesday, November 30, 2021
3:30 p.m. – 6 p.m.
Registration is closed

COST
This event is free

ORGANIZATION
AACEI-Montreal Section

WHERE
Online

• **Synchronization with Concordia's Research Strategy**

The University Strategic Research Plan (SRP) 2018-2023 was designed around several themes related to the areas of CICIEM. The research activities of CICIEM directly fit with the following three themes:
(1) Enabling and Disruptive Technologies and their Foundations
(2) Advanced Materials and their Applications
(3) Natural Systems and Sustainability

More specifically, the research of CICIEM aims to fulfill the following goals of the SRP:
(1) Recognition of the importance of maintaining the quality of our natural systems and adopting sustainable human systems and technology to minimize environmental impacts.
(2) Design and support of energy efficient and resilient buildings.
(3) Sustainable civil and transportation infrastructure.
(4) Artificial intelligence, cyberphysical systems, data analytics, design, internet of things, and ICT applications in construction and infrastructure management.

Meanwhile, the Gina Cody School of Engineering and Computer Science promotes "strategic leadership in the development of research activity to capitalize upon the expertise, interests and resources of the Faculty and to ensure alignment with the University's research strategy". Both plans promote the urgent

need for establishing CICIEM as a university research center. The development in the field of construction and infrastructure engineering and management will offer opportunities for new research that will benefit the society by providing innovative solutions to achieve sustainable infrastructure development and more competitive construction industry. Technology and sustainability are major focuses of these clusters and the proposed Center. The proposed research focuses on sustainability of civil infrastructure elements and networks by utilizing a spectrum of field inspection technologies as well as IT-based enabling technologies. The research is interdisciplinary and contributes to the development of integrated innovative solutions to construction and infrastructure engineering and management, embracing a wide range of technologies.

• Training of highly qualified personnel
Training of highly qualified personnel will enable the society to renew its technical workforce in several vital and critical areas to public safety and welfare. CICIEM will prepare students to engage in independent and collaborative research in university, government and industrial contexts.

• Creation of opportunities for inter-university research collaborations and research partnerships with industrial and governmental organizations
CICIEM is conducting research in collaboration with other universities and in tight partnerships with industrial corporations. Recently, CICIEM signed an MOU with the Construction Innovation Centre of the University of Alberta (see appendix 5). In addition, discussion is ongoing for a national-level collaboration among all major construction research centers in Canada including CICIEM. Other initiatives to collaborate at the international level (France, Hong Kong, China, and Japan) are in the preparation phase.

Our group of researchers are highly networked with collaborators from industry (e.g. Aecon, Canam Group Inc., Pomerleau, CIMA+, Hydro-Quebec, SNC-Lavalin, Globvision) and government (e.g. City of Montreal, as well as cities of Laval-QC, Hamilton-ON, and London-ON, Ministry of Transport of Quebec).

6. RESEARCH SPACE AND EQUIPMENT

The BCEE and CIISE Departments houses several laboratories that support research and training in the areas outlined in the mandate of CICIEM. This will facilitate sharing of resources and foster collaborative research in a cost effective manner.

6.1 DEDICATED SPACE OF THE CENTRE
- *CFI Construction Automation Lab (EV-11-255)*
- *Cyber-Physical Construction and Infrastructure Systems Lab (EV-8-415)*
- *Sustainable Energy & Infrastructure Systems Engineering (SEISE) lab (EV-9-412)*
- *CFI Structures and Infrastructure Testing Laboratory (H-23)*
- *CFI Structure Safety Simulation Labs (EV Building)*

6.2 DEDICATEDINFRASTRUCTURE & EQUIPMENT OF THE CENTRE
- *The CFI Construction Automation Lab* has a variety of Non-Destructive Testing (NDT) and automated construction monitoring equipment and hardware devices. This include UAVs, a wide range of wireless sensors and IoT devices, ground penetrating radar (GPR), 3D laser scanners, infrared and digital cameras, radiofrequency identification (RFID) capabilities (RFID printer, and hand-held receivers), and software systems for decision support, planning and scheduling, cost estimating and computer simulation including discrete event simulation, agent-based simulation and system dynamics.

- *The Cyber-Physical Construction and Infrastructure Systems Lab* has a variety of PTZ and spherical cameras, several real-time location tracking systems, virtual reality systems, and a wide range of software for modeling and simulating construction and infrastructure systems.
- *The Sustainable Energy & Infrastructure Systems Engineering (SEISE) lab is* equipped with a variety of optimization, simulation, and life cycle modeling and computational tools and software including SimpaPro, GAMS, AnyLogic, Vensim DSS, etc. The aim of the lab is to investigate systems-level solutions through developing optimization and simulation models to address sustainability, reliability, and resilience issues in design, engineering, and operation of complex built environment systems such as built facilities and infrastructure.
- *The CFI Structures and Infrastructure Testing Laboratory* lab is equipped with state-of-the art structural testing facility. The facility is capable of testing different structural elements and assemblages, including columns, bridge girders, frames, and walls that are made of concrete, masonry, steel, or their combinations. The testing mode could be static, cyclic, dynamic (to simulate wind or seismic forces), or fatigue (to represent multi-million cyclic loads from traffic on bridges).
- *The CFI Structure Safety Simulation Labs* are equipped with software packages covering the following research areas: Nonlinear Finite Element Analysis; Simulation of response of structures to dynamic and blast excitations; Seismic hazard simulations. Specifically, the labs have the following specialized software: ABAQUS, ANSYS, HyperWorks, OpenSees, Perform3D, VicTor, and others. In addition, the lab has highly specialized equipment, instrumentation, and software packages for on-site monitoring, non-destructive assessment, and field measurements for various existing infrastructures.

6.3 SHARED RESEARCH SPACE OF THE CENTRE
- The following labs are shared spaces that host students working on CICIEM related research and development under the supervision/co-supervision of the Centre members:
  - *CFI Construction Automation Lab (EV-11-255):* This large lab has a space for organizing meetings and seminars for the members and students of CICIEM.
  - *Computer labs in the Hall Building and EV Building:* These labs have specialized software for CAD, planning and scheduling, cost estimation, simulation, visualization, etc. (e.g., Autodesk Revit, Navisworks, Primavera, etc.).

7. BUDGET PLAN

7.1 OPERATING COSTS
The annual operating costs of the *Centre* are estimated to be $120,000/year, which include:

- Administrative Officer:
  $70,000/year for one full-time administrative and IT technical supports. In charge of the facilities of the Centre. Support of Directors and officers of CICIEM in organizing research events, including seminars, workshops and conferences. The candidate is expected to assist members of the Center in procurement, regular updates of the Center's webpage, communications with research centers and establishments, organization of the Advisory Board meetings, preparation of the annual progress report of the Center. The candidate shall also be responsible in keeping in good order and maintaining all administrative correspondences and financial records.

- Research Officer:
  $50,000/year for one research professional (PDF or research associate) in charge of research management and support of CICIEM members in preparation of research grants, work closely

with and assist researchers including graduate students in IT and experimental work, update the status of the research infrastructure in the labs within the Center. This includes software and hardware systems and related equipment. The candidate is expected to assist in preparation of research related surveys, organization of CICIEM's annual open house, and in record keeping of research related grants, publications and industry collaborators.

7.2 REVENUE SOURCES

Currently, operation costs of the Centre have been supported by the research grants of the core members. Please refer to Table 2 for details of funding of the core team members and Table 5 for Successful recent research team grants.

The projected budget of the *Center* for the first five-year period is estimated to be $5 million including operating and infrastructure funds from external funding sources. The sources of funds and estimated amounts are identified in Table 3. Apart from the projected funds as shown in Table 3, there is a potential to leverage these funds to secure substantial scholarships to students and in-kind support from industry and other sources including industry sponsorships of events organized by the Center, paid-for workshops and seminars (estimated to be $2 million cash-equivalent). Table 4 shows the projected expenditure.

Table 3: Potential funding sources

Potential Funding source	Expected amount
NSERC Alliance grants	$2,700,000
FQRNT Équipe and Strategic grants	$600,000
Industrial Research Contracts	$200,000
International Collaborative Research Funds	$500,000
CFI and other infrastructure/equipment funds	$1,000,000
Total	$5,000,000

Table 4: Expected expenditure

Item	Expenditure
Salary of Students and Research Personnel	
15 Ph.D. students (@20,000/yr for 4 years)	$1,200,000
15 M.A.Sc. students (@18,000/yr for 2 years)	$ 540,000
2 Postdoctoral Fellows (@40,000/yr for 5 years)	$400,000
40 undergraduate research trainees (@2500/trainee)	$100,000
1 Technical Assistant (part-time) (@20,000/yr for 5 yrs)	$100,000
Materials and supplies	$540,000
Conferences & Research related travel	$100,000
Dissemination cost, Workshop, Conferences & Administration	$220,000
Field work	$200,000
Equipment and Infrastructure	$1,600,000
Total	$5,000,000

In addition to the in-cash external research support, the team members are actively involved with industry-driven research with significant in-kind support in terms of specialized technical assistance, data sharing for design, development and validation of generated methods and algorithms. Sample of the industrial partners that the researchers have established strong ties with are:
- Le Ministère des Transports du Québec (MTQ)
- City of Montreal
- Hydro Quebec
- SNC-Lavalin

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- Pomerleau
- Canam Goup Inc.
- Globvision Inc.
- BBA Inc.
- BMA Ltd.
- LGS Fortis Inc.
- NC Service Group Ltd.

8. EVIDENCE OF TEAM COHESION IN JOINT RESEARCH FUNDING

Liaising with the greatest and most active industry players in the areas of construction and infrastructure, the Centre has had successful research team grants during the years of 2020 and 2021 (Table 5).

Table 5: Successful recent research team grants

Applicants (First is PI)	Organization, Type of Support, Title of Project	Year	Amount ($)
Bouferguene, Al-Hussein, Lei, Han (Theme #4)	**NSERC Alliance Grant** Crane operation assisted planning and optimization	2021-2023	300,000
Nik-Bakht, Moselhi (Theme #2)	**NSERC Alliance COVID-19 Grant** Construction Workspace Management under Covid-19 and Forthcoming Pandemics	2020-2021	50,000
An, Soliman, Bagchi,, Zhibin (Theme #9)	**NSERC- PRIMA** Degradation, Resynthesis and Recycling of Disposable Masks for Achieving Sustainable Manufacturing and Design	2022	397,000
Soliman, Nasiri, Gelber, Cucuzzella (Theme #9)	**Concordia-Team fund** Mycelium-Composite Materials: Performance and Socio-Environmental Potential Impacts in the Construction Sector for aesthetics and a sustainable Future	2022	50,000
Soliman, An, Dziedzic, Nik-Bakht (Theme #9)	**Mitacs-NSERC** Feasibility assessment of recycled aggregate use in Quebec roadway	2022	40,000
Soliman, Nasiri, Cucuzzella, Hamouda (Theme #9)	**Submitted to Gina Cody Research and Innovation Fellowship Program** 5G-Friendly Eco-Building Materials for Smart Cities,	Applied for	
Soliman, Nasiri, Gelber, Cucuzzella	**Fonds de recherche du Québec – Nature et technologies team's Team Research Project program.**	Applied for	

(Theme #9)	Mycelium-Composite Materials: Performance and Socio-Environmental Impacts in the Construction Sector for a Sustainable Future		
Al-Hussein, Han, Moselhi, Iordanova, Ivanka, Lei (Theme #4)	**NSERC Alliance - Industrialization and Decarbonization of the Construction Process** Alberta Innovates (Canada) and industrial organizations from Canada, France, and Brazil.	Applied for	

Below are examples of these team grants.

- **Title:** Construction workspace management under COVID-19 and forthcoming pandemics
  Team: Dr. Nik-Bakht (PI), Moselhi
  Industry Partners: SNC-Lavalin, ReelyActive
  Funding agency: NSERC, Alliance COVID-19 Grant
  Amount/years: $50,000, 2020-2021
  Abstract: While many construction operations are considered essential services and must be maintained ongoing during (and following) pandemics, the health and safety for construction crews and site workers are of paramount importance. The restoration (and continuation) of construction operations under the crisis of COVID-19 pandemic required enforcement of specific Health, Safety and Environmental (HSE) provisions in construction sites. This made essential changes to work processes and affected the production rate of various construction activities (particularly the labor-intensive ones). This collaboration advanced and extended the software tool formerly developed by the Co-PIs at Concordia University, to help with updating construction schedules with requirements of social/physical distancing, and other HSE provisions. A cloud-based Software and a hardware infrastructure were developed for tracking workers on construction jobsites, through Bluetooth Low Energy (BLE) sensors and integrating the results in 4D BIM (Building Information Models). The team at Concordia partnered with two industry leaders: SNC-Lavalin, as one of the largest Canadian contractors with a wide presence in the international construction market; and ReelyActive, a pioneer in BLE-based human tracking. The proposed project trained three HQP and took 18 months.

- **Title:** Feasibility assessment of recycled aggregate use in Quebec roadway infrastructure
  Team: Soliman (PI), Dziedzic, An, and Nik-Bakht
  Industry Partners: Lafarge Canada
  Funding agency: Mitacs-NSERC
  Amount/years: $40,000, 2022
  Abstract: The project focuses on construction, renovation and demolition waste, which represents about 30 - 35% of total solid waste worldwide, and examines the feasibility of using such wastes as recycled aggregate in Quebec roadway infrastructure. Four dimensions were considered: (1) materials-structural performance, (2) environmental impacts, (3) circularity, and (4) financial and regulatory constraints. This detailed analysis will advance federal Canadian goals to make the Canadian construction sector more sustainable and resilient in the years to come. Furthermore, meeting performance-based standards and valorizing such recycled aggregate will lead to direct and indirect economic benefits.

9. EVIDENCE OF TEAM COHESION IN JOINT STUDENTS SUPERVISION

In our drive for collaborative research, we focus on *Training of Highly Qualified Personnel* (HQP). Members of the *Center* are motivated to create a research environment that embraces values of integrity, equity, diversity, professional and ethical behavior, creativity and kindness. Despite the relatively recent affiliation with Concordia University for many core members, the members (core members only) supervised to completion more than 240 M.A.Sc and Ph.D. students during 2021-2022. The team is currently supervising/co-supervising more than 90 graduate research students. The details of HQP training are shown in Table 6. Appendix 2 shows the student co-supervision with members of CICIEM.

Table 6: HQP details for core team members

	M.A.Sc.		Ph.D.		PDF
	Sole	Co-supervised	Sole	Co-supervised	
Total Graduated (2012-2018)	82	4	19	22	6
Total Graduated (2019-2022)	63	14	18	18	5
In progress	22	8	35	24	4

During the course of their research work, the HQP are trained on a wide range of construction/infrastructure related technologies and knowledge areas including automated construction methods and techniques, applications of remote sensing, non-destructive inspection technologies, and computer vision technologies to facilitate civil infrastructure inspection and management, facilities management in northern communities, maintenance management in healthcare facilities, reliability analysis of civil infrastructure assets, optimized maintenance planning for built facilities, water distribution network resilience assessment, comfort assessment for transit networks, lean construction management, management tools for sustainable built facilities, and risk management. They are also trained on preparation of journal publications and conference presentations.

10. EVIDENCE OF TEAM COHESION IN JOINT PUBLICATIONS

CICIEM members have produced some publications that were specifically originated from the Centre's initiatives. Based on the collaborations among the members of the three clusters mentioned in Section 3.3, three papers on strategic research directions were prepared, where each is expected to serve as a white paper, providing directions on major research questions needed to be addressed for each of the three areas stated above. Thanks to participating members and to the leadership of the senior authors of the following publications.

- Soliman, A., Hafeez, G, Erkmen, E., Ganesan, R., Ouf, M., Hammad, A., Eicker, U and Moselhi, O. (2022), " Innovative construction material technologies for sustainable and resilient civil infrastructure" Materials Today: Proceedings, https://doi.org/10.1016/j.matpr.2022.01.248.
- Dziedzic, R., Amador, L., An, C., Chen, Z., Eicker, U., Hammad, A., Nasiri, F., Nik-Bakht, M., Ouf, M. and Moselhi, O. (2021) "A framework for asset management planning in sustainable and resilient cities", IEEE International Symposium on Technology and Society (ISTAS), 2021, pp. 1-10, doi:10.1109/ISTAS52410.2021.9629158.,
- Nik-Bakht, M., An, C., Ouf, M., Hafeez, G., Dziedzic, R., Han, S., Nasiri, F., Eicker, U., Hammad, A. and Moselhi, O.(2021) "Value Stream Mapping of Project Lifecycle Data for Circular

Construction", 2021 Proceedings of the 38th ISARC, Dubai, UAE.
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- Construction, renovation, and demolition waste in landfill: a review of waste characteristics, environmental impacts, and mitigation measures
- Chen, Z., Feng, Q., Yue, R., Chen, Z., Moselhi, O., Soliman, A., Hammad, A., An, C. (2022). Journal of Environmental Science and Pollution Research, volume 29, pp. 46509–46526.
- Yashar Bezyan, Mazdak Nik-Bakht, Fuzhan Nasiri, Dynamic Fault Detection and Diagnosis, CSCE2023-Construction Specialty Conference.
- Dziedzic, R., Schmitt, (2022), K. Social Vulnerability in The Context of Water Infrastructure Management. IEEE International Symposium on Technology and Society (ISTAS) (Accepted)

Other joint publications, co-authored by the members of the Centre, are included in Appendix 1 (CICIEM members are underlined).

Appendix 1: Joint Publications

Journal papers

2022

Bhatia, A. P. S., <u>Han, S.H.</u>**,** <u>Moselhi, O.</u> (2022). "A simulation-based statistical method for planning modular construction manufacturing" Journal of Information Technology in. Construction, 27, 130-144.

Chen, Z., Feng, Q., Yue, R., Chen, Z., <u>Moselhi</u>, O., <u>Soliman</u>, A., <u>Hammad</u>, A., An, C. (2022). Construction, renovation, and demolition waste in landfill: a review of waste characteristics, environmental impacts, and mitigation measures. Journal of Environmental Science and Pollution Research, volume 29, pp. 46509–46526.

<u>Dziedzic</u>, R., <u>Amador</u>, L., An, C., Chen, Z., Eicker, U., <u>Hammad</u>, A., <u>Nasiri</u>, F., <u>Nik-Bakht</u>, M., Ouf, M. and <u>Moselhi</u>, O. (2021) "A framework for asset management planning in sustainable and resilient cities", IEEE International Symposium on Technology and Society (ISTAS), 2021, pp. 1-10, doi:10.1109/ISTAS52410.2021.9629158.,

Hosny, M. <u>Nik-Bakht</u>, O. <u>Moselhi</u>, "Physical Distancing Analytics for Construction Planning using 4D BIM", Journal of Computing in Civil Engineering, ASCE (Accepted for publication–January 2022)

Igwe, C., <u>Nasiri</u>, F., <u>Hammad</u>, A. (2022). Construction workspace management: critical review and roadmap. *International Journal of Construction Management*, 22 (10), 1960-1973.

Mukhtarli, K., <u>M. Nik-Bakht</u>, <u>L. Amador Jimenez</u>, "Data-driven Homogeneous Pavement Families – Soft Versus Hard Clustering", International Journal of Pavement Research and Technology, (May 2022) DOI: https://doi.org/10.1007/s42947-022-00186-7

<u>Soliman</u>, A., Hafeez, G, Erkmen, E., <u>Ganesan</u>, R., Ouf, M., <u>Hammad</u>, A., Eicker, U and <u>Moselhi</u>, O. (2022), " Innovative construction material technologies for sustainable and resilient civil infrastructure" Materials Today: Proceedings, https://doi.org/10.1016/j.matpr.2022.01.248.

Valinejadshoubi, <u>M., Bagchi</u>, A. and <u>Moselhi, O.</u> (2022), "Damage Detection for Prefabricated Building Modules during Transportation" Automation in Construction, accepted June 30, 2022

Valinejadshoubi, M., <u>Moselhi, O.</u>, and <u>Bagchi, A.</u> (2022),"Integrating BIM into Sensor-based Facilities Management Operations" Journal of Facilities Management, Vol. 20, No. 3, 385–400, DOI: 10.1108/JFM-08-2020-0055

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Abdelkader, E. M., <u>Moselhi, O.</u>, <u>Marzouk, M.</u>, and Zayed, T. (2021), "An Integrative Evolutionary-based Method for Modeling and Optimizing Budget Assignment of Bridge Maintenance Priorities", ASCE, Journal of Construction Engineering and Management, Vol. 147, No. 9, 04021100, https://doi.org/10.1061/(ASCE)CO.1943-7862.0002113

Abdelkader, E. M., <u>Moselhi, O.</u>, <u>Marzouk, M.</u>, and Zayed, T. (2021), "Hybrid Elman Neural Network and Invasive Weed Optimization Method for Bridge Defects Recognition", Transportation Research Record, Vol. 2675, No. 3, 167–199.

Chan, E., M. <u>Nik-Bakht</u>, S. H. <u>Han</u> (2021). "Sources of Ambiguity in Construction Contract Documents, Reflected by Litigation in Supreme Court Cases", ASCE J. of Legal Affairs and Dispute Resolution in Engineering and Construction, 13(14).

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Igwe, C., Nasiri, F., Hammad, A. (2021). Empirical Study on Non-Physical Waste Factors in the Construction Industry, Engineering, *Construction and Architectural Management.* ISSN: 0969-9988.

Yousefli, Z., Nasiri, F., and Moselhi,O. (2021). Application of Multi-Agent Simulation for Maintenance Work flow Management and Resource Allocation in Hospital Buildings, *ASCE Journal of Architectural Engineering*, 27 (2),04021005.

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Conference papers

2022

Yashar Bezyan, Mazdak Nik-Bakht, Fuzhan Nasiri, Dynamic Fault Detection and Diagnosis, CSCE2023-Construction Specialty Conference.

Dziedzic, R., Schmitt, (2022), K. Social Vulnerability in The Context of Water Infrastructure Management. IEEE International Symposium on Technology and Society (ISTAS) (Accepted)

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Chan, E.E., Han, S.H., and Nik-Bakht, M. (2021). "What modular and offsite construction contract administration can learn from court dispute cases" 2021 Canadian Society for Civil Engineering (CSCE) Conference, Canada.

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Khazen, M., M. Nik-Bakht, O. Moselhi, "Proximity Detection on Construction Sites, Using Bluetooth Low Energy Beacons", CSCE Annual Conference, Niagara Falls [Online], May 2021

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Wang, J., Mohamed, Y., <u>Han, S.H.</u>, Li, X., and <u>Al-Hussein, M.</u> (2021). "Automated ergonomics-based productivity analysis for intelligent manufacturing in industrialized construction" 2021 Canadian Society for Civil Engineering (CSCE) Conference, Canada.

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Eftekharirad, R., <u>M. Nik-Bakht</u>, <u>A. Hammad</u>, "<u>Extending IFC for Fire Emergency Real-Time Management Using Sensors and Occupant Information</u>", ISARC 2018 (International Symposium on Automation and Robotics in Construction), Berlin, Germany, July 2018

Golnaraghi, S., Golkhoo, F., <u>Moselhi, O.</u>, and <u>Alkass, S.</u>, (2018), "Productivity Loss Quantification Using a Novel Artificial Intelligence Approach", AACE International, Annual Meeting, San Diego, CA, USA.

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Igwe, C., <u>Nasiri</u>, F., <u>Hammad</u>, A., and Mohammadi, A. (2018). House of Wastes and its Implication for Project Management. Project Management Symposium, Baltimore, United States.

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2017

Hosny, A., <u>M. Nik-Bakht</u>, <u>O. Moselhi</u>, "Towards Agent-based Modeling for Operational Clash Detection in Construction Operations", 6th CSCE/ASCE/CRC International Construction Specialty Conference, Vancouver, British Columbia, Canada, June 2017

Hosny, A. H., <u>Nik-Bakht, M.</u> and <u>Moselhi, O.</u> (2017). Towards Agent-Based Modeling for Operational Clash Detection through BIM. Leadership in Sustainable Infrastructure, Vancouver, British Columbia.

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2016

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2015

Lei, Z., Han, S.H., Hermann, U., Bouferguene, A., Al-Hussein M. (2015). "4D-based Automation of Heavy Lift Planning in Industrial Construction Projects." CONVR2015, 15th International Conference on Construction Applications of Virtual Reality, Banff, Canada.

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2013

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Han, S.H., Hasan, S., Lei, Z., Altaf, M. S., Al-Hussein, M. (2013). "A Framework for Crane Selection in Large-Scale Industrial Construction Projects" 30th International Symposium on Automation and Robotics in Construction and Mining (ISARC), Montreal, Canada.

2012

Adhikari, R.S., Moselhi, O., Bagchi, A., (2012), "Automated Prediction of Condition State Rating in Bridge Inspection", ISG-ISARC Conference, Eindhoven, Nederland, Gerontechnology 2012; 11(2):81.

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Han, S.H., Hasan, S., Al-Hussein, M., Gökçe, K. U., Bouferguene, A. (2012). "Simulation of mobile crane operations in 3D6 space" Proceedings of the 2012 Winter Simulation Conference, Berlin, Germany.

Hasan, S., Zaman, H., Han, S.H., Al-Hussein, M., Su, Y. (2012) "Integrated Crane Support Reactions in Building Information Model for Critical Lifting Activities in Industrial Projects", Construction Research Congress (CRC) 2012, Indiana, USA.

Inyang, N., Han, S.H., Al-Hussein, M., El-Rich, M. (2012). "A VR Model of Ergonomics and Productivity Assessment in Panelized Construction Production Line", Construction Research Congress (CRC) 2012, Indiana, USA.

Book chapters

Chen, Y., Lei, Z., Han, S.H., Bouferguene, A., Li, H.X., and Al-Hussein M. "Application of discrete event simulation in construction engineering." Advances in Engineering Research. Vol. 21, 2018, Nova Science Publishers Inc., ISBN:978-1-53613-343-1.

Appendix 2: Student co-supervision with members of CICIEM

Graduated

year	Student name	Thesis title	Supervisors	MASc/ PhD
2022	Valinejadshoubi, M.,	Development of BIM-based Automated Methods for Building Management and Structural Safety Assessment	Bagchi and Moselhi	PhD
	Khazen, M. A.	Monitoring Workers on Construction Sites using Data Fusion of Real-Time Workers' Location, Body Orientation, and Productivity State	Nik-Bakht and Moselhi	MASc
2021	Yousefli, Z.	Development of a Multi-Agent System for Automated Resource Allocation in Maintenance of Hospital Buildings	Moselhi and Nasiri	PhD
	Huang, Y.	Providing Proximity Alerts to Workers on Construction Sites Using Bluetooth Low Energy RTLS	Hammad and Zhu	MASc
	Chen, C.	Computer Vision Based Automated Monitoring and Analysis of Excavation Productivity on Construction Sites	Hammad and Zhu	PhD
	Igwe, C.	Integrating last planner with 4D model for equipment workspace planning in urban highway reconstruction projects	Hammad and Nasiri	PhD
2020	AbedKader, E.	An Integrated Method for Optimizing Bridge Maintenance Plans	Moselhi and Marzouk	
	Mohammad Delpasand	Vibration-based Damage Detection in Laminated Composite Beams Using Spectral Finite Element Method and Genetic Algorithm	Erkmen and Ganesan	MASc
	Akbarzadeh, M.	Enhancing Safety on Construction Sites by Detecting Personal Protective Equipment and Localizing Workers Using Computer Vision Techniques	Hammad and Zhu	MASc
	Mukhtarli, K.	Machine Learning for Homogeneous Grouping of Pavements	Amador and Nik-Bakht	

2019	Golnaraghi, S.	Quantifying the Impact of Change Orders on Construction Labor Productivity using System Dynamics	Moselhi and Alkass	
	Fanaei, S.	Performance Measurement, Forecasting and Optimization Models for Construction Projects	Moselhi and Alkass	
	Mohammadi, A.	Asset Evaluation and Optimization for Urban Subway Systems	Amador and Nasiri	PhD
	Eftekharirad, R.	Improving fire emergency management using occupant information and BIM-based simulation	Hammad and Nik-Bakht	MASc
	Azghandi Rashvand, A.	Automated semantic discovery for confusion in Canadian modular construction contracts	Nik-Bakht and Han	MASc
2018	Abaeian, H.	An Integrated Framework for Ergonomic Assessment of Modular Residential Construction Tasks	Moselhi and AlHussein	PhD
2017	Moayeri, V.	Design Change Management in Construction Projects Using Building Information Modeling (BIM)	Moselhi and Zhu	PhD
	Soltani, M.	Neighborhood Localization Method for Locating Construction Resources Using RFID and BIM	Hammad and Zhu	PhD
	Ahmed, M.	Integrated NDE Methods Using Data Fusion For Bridge Condition Assessment	Moselhi and Bhowmick	
2014	Yaghi, S.	Integrated Remote Sensing Technologies for Condition Assessment of Concrete Bridges	Moselhi and Alkass	
	Corrigan, J.	Investigating the Use of RFID Technology in the Reverse Logistics of End-of-Service-Life Helicopters: A Hybrid Approach Based On Design for Six Sigma and Discrete-event Simulation	Hammad and Awasthi	MASc
	Adhikari, R.	Image-based Condition Assessment for Concrete Bridge Inspection	Moselhi and Bagchi	PhD
2012	Adetiloye, K.	Design of RFID-enabled Aircraft Reverse Logistics Network Simulation	Hammad and Awasthi	MASc

Appendix 3: CICIEM Membership Policy

Membership policy

There two types of membership in CICIEM, regular and affiliate.

Both shall be based on either nominations or direct applications, which should generally be accompanied by a brief CV of 2 to 4 pages. The BoD shall adjudicate all received nominations and applications and accordingly grant the appropriate type of membership. Regular members are granted for faculty members at Concordia University, except those who are regular members of other centers within GCS who shall be considered for the "Affiliate" membership category. Prospective members form industry and other universities and research establishments in Canada and abroad shall also be considered under the "Affiliate" category.

We can also have "Student" membership, which can be for GCS PhD and MASc graduate students who are conducting research work within the scope of CICIEM.

The membership shall be automatically renewed annually unless otherwise notified by either party.

Appendix 4: MOU with Construction Innovation Centre, University of Alberta

Memorandum of Understanding

Between

Construction Innovation Centre, University of Alberta

And

Centre for Innovation in Construction and Infrastructure Engineering and Management, Concordia University

PREAMBLE

This Memorandum of Understanding (MOU) is entered into by and between the University of Alberta, Construction Innovation Centre, hereafter "CIC", with a registered address at XXXX Edmonton, Alberta, and Concordia University, Centre for Innovation in Construction and Infrastructure Engineering and Management, hereafter "CICIEM", with a registered address at XXXXX Montreal, Quebec. CIC and CICIEM are referred to collectively, as "Parties" or individually as "Party."

In the spirit of friendship and with mutual interest in cooperation, CIC and CICIEM enter into this Memorandum of Understanding (MOU) to promote joint educational collaboration and agree as follows:

ARTICLE 1: SCOPE OF COLLABORATION

1.1 Areas of collaboration may be proposed by either institution and may include, but are not limited to:

- Jointly conduct training, research, or professional activities;
- Jointly promote training, research, or professional activities;
- Work jointly to identify industry needs;
- Facilitate the mobility of faculty, scholars, and students between centers;
- Jointly create professional development opportunities;
- Provide project management and needed resources in order to produce joint events;
- Sharing and/or creation of professional training materials and resources.
- Initiation of federally funded long-term training, research, or educational projects of benefit to the Canadian construction industry at large.
-

1.2 Any specific activity developed under this MOU shall be detailed in writing to describe the scope of the proposed activity, intended outcomes, budget, and responsibilities of departments or individuals.

1.3 All activities shall be subject to the availability of funds and the approval of each institution's authorized representatives.

ARTICLE 2: NON-DISCRIMINATION

The parties agree not to discriminate on the basis of religion, race, creed, national or ethnic origin, sex, age, handicap, political affiliation, sexual orientation, disability or resident status.

ARTICLE 3: COMPLIANCE WITH LAW

The parties specifically intend to comply with all applicable laws, rules and regulations as they may be amended from time to time. If any part of this Agreement is determined to violate federal, state, or local laws, rules, or regulations, the parties agree to negotiate in good faith revisions to any such provisions.

ARTICLE 4: USE OF NAME

None of the parties shall use the name, logo, likeness, trademarks, image or other intellectual property of either of the other parties for any advertising, marketing, endorsement or any other purposes without the specific prior written consent of an authorized representative of the other party as to each such use.

ARTICLE 5: INDEPENDENCE

Each party is separate and independent and this Agreement shall not be deemed to create a relationship of agency, employment, or partnership between or among them. Each party understands and agrees that this Agreement formalizes a collaborative relationship and that the agents or employees of each respective party are not employees or agents of any other party.

ARTICLE 6: SEVERABILITY

The provisions of this Agreement are severable, and if any provision of this Agreement is found to be invalid, void or unenforceable, the remaining provisions will remain in full force and effect.

ARTICLE 7: ENTIRE AGREEMENT AND AMENDMENTS

This Agreement constitutes the entire agreement and understanding between the parties as to the subject matter hereof and supersedes all prior discussions, agreements and undertakings of every kind and nature between them, whether written or oral, with respect to such subject matter. This Agreement may subsequently be modified only by a written document executed by both parties. Amendments to this MOU may be requested, in writing, by either party and approved by the authorized signatories.

ARTICLE 8: NOTICES

Any consent, waiver, notice, demand, request or other instrument required or permitted to be given under this Agreement or any related agreements shall be in writing and shall be delivered by email.

ARTICLE 9. EFFECTIVE DATE AND TERMINATION

9.1 This MOU shall be effective upon signature of both Parties. It shall be in force from the last signature date. The Parties indicate agreement with this MOU by their signatures.

9.2 Either party may request termination of this agreement, in writing, sixty (60) days prior to the proposed termination date. Any activities in progress at the time of termination shall be permitted to conclude as planned unless otherwise agreed in writing.

For CIC

_____
Director

DATE: _____

For CICIEM

_____
Director

DATE: _____

Appendix 5: Evidence of Visibility (Invitation to CFIA)

July 18th, 2022
CONBIM-25-2022

Ph.D. Osama Moselhi
Director
Centre for Innovation in Construction and
Infrastructure Engineering and Management (CICIEM)
Department of Building

Dear Sir

The Federated College of Engineers and Architects (CFIA) as a governing body in the professional practice of Engineering and Architecture has as its mission: "To ensure the excellence and decorum of our members, for the development of an efficient, responsible and interdisciplinary professional practice of engineering and architecture, to contribute to the safety and sustainable progress of the country".

The Strategic Thinking of the organization is based on fulfilling the defined vision: "By the year 2025, to be a model of professional excellence at international level, based on the ability of CFIA and its members to proactively impact the sustainable development of a country".

With the valuable support of the joint commission in charge of Building Information Modeling (BIM), as a reference and support for the different institutions and/or companies at national level in the public and private sectors, the BIM Congress CFIA - 2022 will be held on Thursday, September 8 and Friday, September 9 at the auditorium of the College.

The congress is one more contribution that CFIA offers to its members and to all the instances and people who seek the continuous improvement of their engineering and architecture processes, adhering to the challenge that digital transformation implies, thus becoming leaders with a vision of the future in the construction sector in Costa Rica.

We are pleased to extend a special invitation to CICIEM. It would be very relevant to have the participation of a specialist of your recommendation as a speaker. This participation can be coordinated virtually.

The coordination is in charge of Mrs. Marianella Ramirez, (marianella.ramirez@cfia.cr; cell phone: 89950425).

We look forward to your participation,

Ing. Guillermo Carazo Ramírez
Chief Executive Officer
CFIA

Arquitecto Rodrigo Martínez Suarez
Coordinator
BIM Permanent Joint Commission

Copia: Archivo

Appendix 5: Construction Day – Workshops & Discussion Panel

Event Organizers:

Workshops by:

Date: 2022-11-11

Mode: Hybrid
Concordia University, SGW Campus
AND
Online Sessions

The event was initiated by CICIEM, planned, coordinated, and executed by AACEI Montréal. Student Committee, based in Concordia University. It was delivered in *hybrid mode*, and consisted of two parts:

(1) Three Workshops in the morning and afternoon; and

(2) Keynotes and a discussion Panel in the evening.

Registration

The event could be attended by registration, and attendants received certification of attendance in the end.

Two major streams of registration were devised:

The Early-bird Registration (before November 1st)
- *Each workshop: $10*
- *Full registration (for the 3 workshops): $15*

Regular Registration (after November 1st)
- *Each workshop: $15*
- *Full registration (for the 3 workshops): $20*

The event was sold out in advance and returned a total amount of **$1,150** less the expenses of catering, IT and honorarium for the speakers.

Workshops

The workshops covered three main streams of the construction industry, i.e.,

- Project Controls: Planning & Scheduling or Change Management, presented by WSP Canada;

- Robotics & AI in Construction, presented by Pomerleau; and

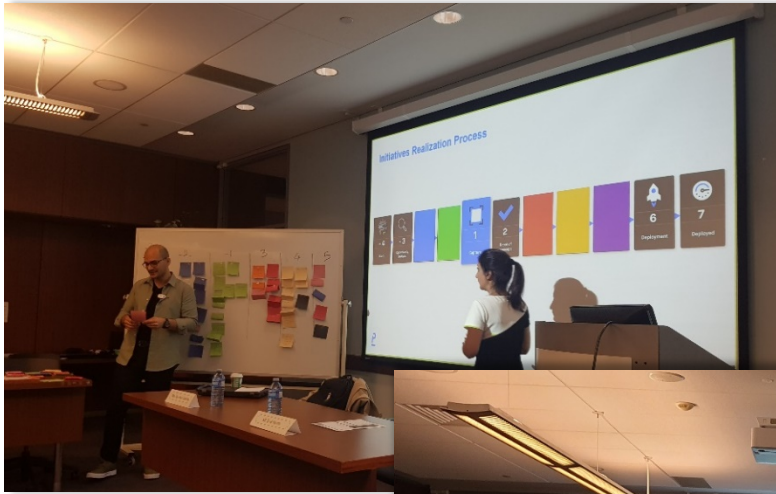- Cost Engineering: Post Contract Cost management, presented by Turner & Townsend.

70⁺ participants, including students and experts from the industry, attended the workshops (sessions running from 9:30 AM to 3:30 PM). This included 35 in-person and 40 online participants.


In each workshop, the industry experts discussed the daily life of professionals in their field of expertise, followed by interactive presentations and hands-on activities to better provide insights about the required expertise and qualifications for the associated positions

WSP
(*on Project Controls: Planning & Scheduling or Change Management*)
☞

Pomerleau
(*on Robotics and AI in construction*)
☞
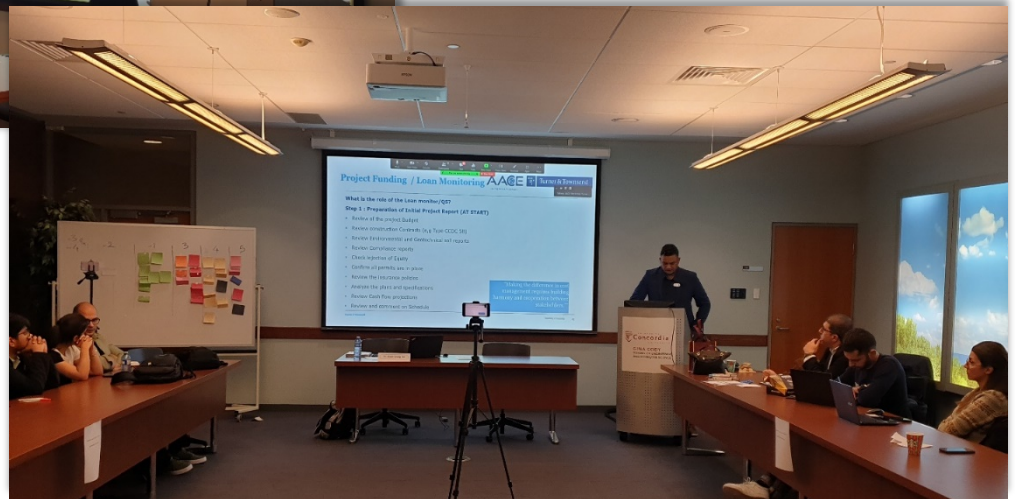
Turner & Townsend
(*on Cost Engineering: Post Contract Cost management*)

☞

Keynotes & Discussion Panel

In the evening, a panel was formed by experts from the three companies, together with representatives from academia. The session started with the video-gallery of the AACEI Mtl. Student Committee. Remarks were provided by Prof. Osama Moselhi, Director of the Concordia CICIEM, Mr. Hagire Emrani, the president of AACE Montreal Section and Dr. Mazdak Nik-Bakht, Communication and Outreach Director of CICIEM and the moderator of the panel.

Then, the invited managers and directors from each of the three companies presented keynotes, highlighting the main trends of change in the industry, from the perspective of their speciality as well as the challenges being faced.

Each keynote took 20 minutes, followed by short Q&A with the audience.

In the last 35 minutes, panel discussion focusing on the need for innovation in the construction industry was organized around three main aspects, i.e., the need for technology development and new *products*, updating and upgrading the current work *processes*, and finally, the approach for evolving the industry *culture* to better adapt to the changes introduced by innovations. In the end, opportunities for industry-academia alliances to support these three aspects were discussed and summarized.

The keynotes and panel discussion are available on YouTube and can be watched at: https://www.youtube.com/watch?v=jfqG1iGQUKo

The detailed schedule

Title	Company	Topic	Presenter	Main Streams
Workshops (9:30 AM-3:30 PM)	WSP (9:30 AM-11:00 AM)	Project Controls: Planning & Scheduling or Change Management	1. Lea Kaddoum, MEng. | Analyst, Project Controls, Transportation and Infrastructure 2. Tala Harb, CPI. | Analyst, Project Controls, Transportation and Infrastructure	• Biography and daily work of an expert in the related topic • Presentation and hands-on experience • Qualifications and required resume
	Pomerleau (11:30 AM-1:00 PM)	Robotics & AI in Construction	1. Sina Karimi |R&D Specialist – Innovation 2. Farzaneh Golkhoo, Ph.D. | R&D Specialist and Practice Lead- Innovation	
	Turner & Townsend (2:00 PM-3:30 PM)	Cost Engineering: Post Contract	Didier Chung Foo | PQS Senior Cost Consultant	

		Cost management		
Discussion Panel (4:00 PM-6:00 PM)	Turner & Townsend (4:15 PM-4:40 PM)	Cost Engineering: Post Contract Cost Management + short Q/A	Stephane Chapuis | Director	• Presentations on high-level strategies and current industry practices • Moderating the session with Q/A around innovation in construction: Products, Processes and Culture
	Pomerleau (4:40 PM-5:05 PM)	Robotics & AI in Construction + short Q/A	1. Yuri Bartzis | Innovation Director 2. Saeed Moradi, Ph.D., PMP | R&D Specialist – AI & Data Analytics	
	WSP (5:05 PM-5:30 PM)	Project Controls+ short Q/A	1. Ali Ashraf P.Eng., M.Sc. | Director, Project Services / Project Manager 2. Sylvie Desrochers | Senior Manager of Project Controls 3. Neil Gore, ing. | Manager, Project Controls, Transportation and Infrastructure	
		Moderating and Closing Session	Dr. Mazdak Nik-Bakht, PhD, PEng| Associate Professor, BCEE and Communication and Outreach Director, CICIEM	

RESEARCH COMMITTEE
REPORT TO SENATE
Dr. Dominique Bérubé (Chair)
November 03, 2023

Meeting of September 29, 2023

1. **University recognition of research units and infrastructure platforms (Renewals)**

    Directors and Co-directors from each of the Research Units below were invited to present their renewal dossiers to Research Committee members. A Q&A followed after each of the presentations, followed by a discussion among committee members.

    1.1. **(TSSE) Thermal Spray and Surface Engineering Research Centre –** *for SRC approval*

    The Committee reviewed the renewal dossier received from the **Thermal Spray and Surface Engineering Research Centre** — Request to renew for six years as an *Established Research Centre (with an Established Infrastructure Platform)*. One committee member recused himself from voting as he himself was a member of TSSE.

    Committee members agreed that the above-mentioned unit met the renewal criteria outlined in the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8) and "under the authority of Senate, through the Senate Research Committee", unanimously approved the renewal of **University-recognized status** for six years.

    1.2. **(CERMM) Centre for Research in Molecular Modeling –** *for SRC approval*

    The Committee reviewed the renewal dossier received from the **Centre for Research in Molecular Modeling** –Request to renew for six years as an *Established Research Centre (with an Established Infrastructure Platform)*.

    Committee members unanimously felt that the above-mentioned unit did not fully meet the renewal criteria as outlined in the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8) and the request for a full renewal of six years was rejected by Committee members. After a discussion and a new motion duly made, committee members agreed to a temporary renewal of **two years**, in order to provide CERMM with additional time before coming back with a full renewal application.   Therefore, "under the authority of Senate, through the Senate Research Committee", Committee members unanimously approved a **two-year** renewal of **University-recognized status** to CERMM**.**

1.3. (CONCOM) Concordia Centre for Composites – *for SRC approval*

The Committee reviewed the renewal dossier received from the **Concordia Centre for Composites** – Request to renew for six years as an *Established Research Centre (with an Established Infrastructure Platform)*.

Committee members agreed that the above-mentioned unit met the renewal criteria outlined in the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8) and "under the authority of Senate, through the Senate Research Committee", unanimously approved the renewal of **University-recognized status** for six years.

1.4. (CSFG) Centre for Structural and Functional Genomics – *for SRC approval*

The Committee reviewed the renewal dossier received from the **Centre for Structural and Functional Genomics** –Request to renew for six years as an *Established Research Centre (with an Established Infrastructure Platform)*.

Committee members agreed (seven – **for**; two – **against**) that the above-mentioned unit met the renewal criteria outlined in the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8) and "under the authority of Senate, through the Senate Research Committee", approved the renewal of **University-recognized status** for six years.

1.5. (CSBN) Centre for Studies in Behavioral Neurobiology – *for SRC approval*

The Committee reviewed the renewal dossier received from the **Centre for Studies in Behavioral Neurobiology** — Request to renew for six years as an *Established Research Centre (with an Established Infrastructure Platform)*.

Committee members agreed that the above-mentioned unit met the renewal criteria outlined in the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8) and "under the authority of Senate, through the Senate Research Committee", unanimously approved the renewal of **University-recognized status** for six years.

2. **(CENPARMI) Centre for Pattern Recognition and Machine Intelligence: Temporary renewal of recognition (2 years)** – *for SRC approval*

Committee members were informed that CENPARMI submitted a renewal dossier to the Office of the Vice-President, Research and Graduate Studies (OVPRGS). The file was reviewed by the OVPRGS and the Gina Cody School of Engineering and Computer Science and it was deemed that it did not fully meet the renewal criteria at this time. However, it was deemed that a shorter term of renewal should provide the Centre with enough time to meet the renewal criteria. It was proposed that CENPARMI be given a two-year extension. Committee members agreed to extend the current University-recognized status of CENPARMI by two years.

3. **University Recognition of New Research Unit** - *for review/approval and recommendation to Senate*

> (CICIEM) Centre for Innovation in Construction and Infrastructure Engineering and Management
> > **(separate Senate document submitted)**

4. **Policy on Research Units and Infrastructure Platforms Moratorium** – *for SRC approval*

> Since the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8) has been in effect since 2014, and given changes to Concordia's research priorities, it was determined that the *Policy* (and its related *Procedures*) should be reviewed.
>
> As a result, it was proposed that a moratorium of two years be implemented as of immediately, for the recognition of new research units and infrastructure platforms and the renewal of the recognition of already-recognized units and platforms. The moratorium would give us time to conduct a thorough review of the Policy and related Procedures, in consultation with the community, research units and infrastructure platforms and the Faculties.
>
> Committee members unanimously agreed to the two-year moratorium (until October 1, 2025) of the *Policy on Research Units and Infrastructure Platforms* (VPRGS-8).

5. **Distinguished Research Professor modifications** – *for review/approval and recommendation to Senate*
> > **(separate Senate document submitted)**