

**University of Waterloo
SENATE
Notice of Meeting**

Date: Monday 15 May 2017
Time: 3:30 p.m.
Place: Needles Hall, room 3407

OPEN SESSION		
3:30	<p><u>Consent Agenda</u> Motion: To approve or receive for information by consent items 1-5 below.</p> <ol style="list-style-type: none"> 1. Minutes of the 17 April 2017 Meeting 2. Reports from Committees and Councils <ol style="list-style-type: none"> a. Graduate & Research Council b. Undergraduate Council 3. Report of the President <ol style="list-style-type: none"> a. Recognition and Commendation 4. Reports from the Faculties 5. Committee Appointments 	Decision Information Information Information Information Decision
3:35	<p><u>Regular Agenda</u></p> <ol style="list-style-type: none"> 6. Business Arising from the Minutes 	Information
3:40	<ol style="list-style-type: none"> 7. Presentation – Sally Gunz, President, Faculty Association 	Information
3:55	<ol style="list-style-type: none"> 8. Reports from Committees and Councils <ol style="list-style-type: none"> a. Graduate and Research Council b. University Committee on Student Appeals 	Decision Information
4:05		
4:15	<ol style="list-style-type: none"> 9. Report of the President 	Information
4:30	<ol style="list-style-type: none"> 10. Q&A Period with the President 	Information
4:40	<ol style="list-style-type: none"> 11. Report of the Vice-President, Academic & Provost <ol style="list-style-type: none"> a. Roster of Graduands 	Decision
4:50	<ol style="list-style-type: none"> 12. Report of the Vice-President, University Research 	Information
5:05	<ol style="list-style-type: none"> 13. Other Business 	
CONFIDENTIAL SESSION		
5:10	<ol style="list-style-type: none"> 14. Minutes of the 17 April 2017 Meeting 	Decision
5:15	<ol style="list-style-type: none"> 15. Business Arising from the Minutes 	
5:20	<ol style="list-style-type: none"> 16. Other Business 	Decision

University of Waterloo
SENATE
Minutes of the Monday 17 April 2017 Meeting

Present: Jean Andrey, Sandra Banks, Hannah Beckett, Carmen Bruni, Lutz-Alexander Busch, Jeff Casello, Andrew Clubine, Tara Collington, Mario Coniglio, Simon Courtenay, Eric Croiset, David DeVidi, George Dixon, Bernard Duncker, Fraser Easton, David Edwards, Mavis Fenn, Paul Fieguth, Sacha Forstner, John Garcia, Mark Giesbrecht, Robert Gorbet, Sally Gunz, Feridun Hamdullahpur, Alison Hitchens, Dennis Huber, Marios Ioannidis, Craig Janes, Maureen Jones, Scott Kline, Greta Kroeker[^], Robert Lemieux, Christos Lolos, Barb Moffatt, Michele Mosca, Richard Myers, Mohammad Nasif[^], Daniel O'Connor, Ian Orchard, Diana Parry, Douglas Peers, Angela Pereira, David Perrin, David Porreca, Tristan Potter, Christopher Pugh, Neil Randall, James Rush, Mark Seasons, Samantha Shortall, Joanne Shoveller, James Skidmore, Richard Staines, Gordon Stubble, Thomson Tran, Johanna Wandel, Stephen Watt, Ross Willard, Dan Wolczuk, Alexander Wray

[^]telephone

Guests: Bruce Campbell, Peggy Eichinger, Donna Ellis, Rocco Fondacaro, Julia Goyal, Andrea Kelman, Jennifer Kieffer, Derek Madge, Cathy Newell Kelly, Chris Read, Ian Rowlands, Franco Solimano, Allan Starr, Jeremy Steffler, Brandon Sweet, Marilyn Thompson, Sarah Wiley

Secretariat: Mike Grivicic, Karen Jack, Emily Schroeder

Absent: Katherine Bergman*, Catherine Booth*, Jessica Brake*, Robert Bruce*, Jeffrey Bunn*, Brian Cepuran*, Jennifer Clapp*, Douglas Cowan, Rick Culham, Michael Drescher*, Samir Elhedhli, Marlene Epp*, Wendy Fletcher*, Murray Gamble*, Shikha Gandhi*, Mike Hudson*, Pallavi Hukerikar*, Tom Jenkins*, Beth Jewkes*, Spiro Karigiannis*, Karim S. Karim*, Alysia Kolentis*, Shoufa Lin*, Mungo Marsden*, Robin Mazumder, Paul Murphy, Jim Pankratz*, Bruce Richter*, Michael Stork*, Neil Thomson*, Hamid Tizhoosh*, William Watson*

*regrets

OPEN SESSION

The chair noted the 2017 spring convocation honorands report at members' places and acknowledged and thanked Senators who are stepping down following today's meeting: John Garcia, AHS faculty senator, Neil Thomson, engineering faculty senator, Michele Mosca, mathematics faculty senator, Paul Murphy, science faculty senator, Lutz-Alexander Busch, faculty-at-large, Michael Drescher, faculty-at-large, Samir Elhedhli, faculty-at-large, Mike Hudson, faculty-at-large, Shoufa Lin, faculty-at-large, Doug Cowan, Renison senator, Robert Bruce, GSA president, Jessica Brake, graduate student senator, Robin Mazumder, graduate student senator, Chris Lolos, FEDS president, Pallavi Hukerikar, undergraduate student senator, Tristan Potter, undergraduate student senator, Sacha Forstner, undergraduate student senator, Shikha Gandhi, alumni senator, Catherine Booth, governor, Murray Gamble, governor, Michael Stork, governor, William Watson, Board chair.

Consent Agenda

Senate heard a motion to approve or receive for information the items on the consent agenda, items 1-5 below.

Pugh and Busch.

1. MINUTES OF THE 27 MARCH 2017 MEETING

Senate approved the minutes of the meeting.

2. REPORTS FROM COMMITTEES AND COUNCILS

Graduate & Research Council

Senate received the report for information.

Undergraduate Council

Senate received the report for information.

3. REPORT OF THE PRESIDENT

Recognition and Commendation. Senate received the report for information.

4. REPORTS FROM THE FACULTIES

A question was asked of the Dean of Environment about teaching plans in the Department of Knowledge Integration in light of two faculty members taking sabbaticals next fall to which Andrey responded that a one-year definite appointment was hired and funds are in place for two sessional instructors in anticipation of these sabbaticals.

Senate received the reports for information.

5. REPORT OF THE VICE-PRESIDENT, ACADEMIC & PROVOST

Senate received the report for information.

The question was called, and the motion carried unanimously.

Regular Agenda

6. BUSINESS ARISING FROM THE MINUTES

Gender Report. The chair reminded members that a commitment was made at the January meeting for the creation of the report distributed with the agenda. He advised that good progress is being made and invited questions. A senator asked whether the University has numbers with respect to progress made by female faculty hires through the system, the percentage of those in tenure track positions, and retention rates, to which the president responded that his experience with tenure and promotion matters does not give rise any concerns in these areas. Members heard that hard data can be produced by gender re: those who turn down opportunities to work at the University.

7. PRESENTATIONS

CHRIS LOLAS, PRESIDENT, FEDERATION OF STUDENTS

Lolas informed Senators about the Federation of Students, its history, structure, and initiatives. Key activities of the past year included involvement with the SLC/PAC expansion; partnering with Counselling Services on the Mentor Assistance Through Education and Support (MATES) program; new food and beverage offerings; involvement with external housing matters; work with administration on providing more predictability for international tuition fees; involvement with Advocan, a U15 student-led advocacy group focused on undergraduate research and indigenous access issues. Lolas concluded with the work on the docket for the next president. In response to questions, Lolas indicated that progress has been made re: student space concerns, but the work continues, and he spoke to the balancing act the Fed's president has with respect to managing school and work responsibilities. The president thanked Lolas for his hard work over the last two years.

Slides used in the presentation may be seen here:

https://uwaterloo.ca/secretariat/sites/ca.secretariat/files/uploads/files/feds_1.pdf

The presentation by the Graduate Student Association was deferred.

8. REPORTS FROM COMMITTEES AND COUNCILS

a. Executive Committee

Elections to Committees and Councils and to the Board of Governors.

Senate heard a motion to acclaim the membership of Senate committees and councils and the Board of Governors as follows:

- **Executive Committee.** 2017-18 – Richard Staines (applied health sciences), James Skidmore (arts), Paul Fieguth (engineering), Simon Courtenay (environment), Mark Giesbrecht (mathematics), Barbara Moffatt (science), Wendy Fletcher (AFIW), Antonio Brieva (undergraduate student), Tia Driver (graduate student), Angela Pereira (alumna).
- **Senate Finance Committee.** 2017-18 – Craig Janes (applied health sciences), Daniel O’Connor (arts), Eric Croiset (engineering), Jennifer Clapp (environment), Spiro Karigiannis (mathematics), Michael Balogh (science), Katherine Bergman (AFIW), Matthew Gerrits and Grant Mitchell (undergraduate students), Julia Goyal (graduate student), Shikha Gandhi (alumna).
- **Senate Long Range Planning Committee.** 2017-18 – Diana Parry (applied health sciences), Neil Randall (arts), Marios Ioannidis (engineering), Mark Seasons (environment), Ross Willard (mathematics), David Edwards (science), Richard Myers (AFIW), Bilal Akhtar and Hannah Beckett (undergraduate students).
- **Senate Nominating Committee for Honorary Degrees.** 2017-18 – Katie Misener (applied health sciences), Tara Collington (arts), Gordon Stublely (engineering), Johanna Wandel (environment), Chris Bauch (mathematics), Mungo Marsden (science), Jim Pankratz (AFIW), Matthew Gerrits and Grant Mitchell (undergraduate students), Julia Goyal (graduate student).
- **Senate Graduate & Research Council.** 2017-19 – Jeremy Bergen (AFIW).
- **Senate Undergraduate Council.** 2017-19 – Katherine Acheson (arts), Kofi Campbell (affiliated university).
- **University Committee on Student Appeals.** 2017-19 – Goretty Dias (environment), David Wagner (mathematics), Christine Dupont (science), Andrea Chappell (staff member), Tomson Tran (applied health sciences student), Hannah Beckett (arts student), Lindsay Daniels (mathematics graduate student).
- **Board of Governors.** 2017-18 – Hannah Beckett and Antonio Brieva (undergraduate students).

Orchard and Pugh. Carried unanimously.

Members understood an election would occur following the meeting for the faculty representatives to Board. [Secretary’s note: Subsequent to the meeting, the following representatives were elected: Jennifer Clapp, Shannon Dea, George Freeman, Bruce Richter, Mark Seasons.]

b. Graduate & Research Council

Faculty of Arts, Psychology. Senate heard a motion to approve the update of research areas in the Master of Arts in Psychology, effective 1 May 2017.

Casello and Peers.

Following Casello’s confirmation that the motion should read “Master of Applied Sciences,” not “Master of Arts”, the motion was approved unanimously.

c. **Undergraduate Council**

Co-operative Education, Co-op Certificates. Following a brief introduction of the item by Coniglio, Senate heard a motion to approve the creation of co-op certificates.

Coniglio and Wolczuk.

In discussion: in response to a question regarding the motivation for the certificates and a request for clarity about them, a response by Rocco Foncardaro of CECA that the goal is to align actions with the University's strategic plan regarding research experience, that this is the start, and the initiative contributes to the University's differentiation efforts; support from a student member for the initiative; clarification that a framework exists to approve positions before anyone starts work.

The question was called and the motion carried unanimously.

Faculty of Science, Physics and Astronomy. Senate heard an omnibus motion to approve a new minor plan in astrophysics effective 1 September 2018, and to inactivate the honours physics (astrophysics specialization), honours co-operative physics (astrophysics specialization), honours mathematical physics (astrophysics specialization), honours co-operative mathematical physics (astrophysics specialization) plans effective 1 September 2018.

Coniglio and Lemieux. Carried unanimously.

Co-operative Education, Co-op Degree Designation. After Coniglio noted the slightly revised report at members' places, Senate heard a motion to approve amendments to the co-op degree designation effective 1 September 2018, and subject to approval by Senate Undergraduate Council on 11 September.

Coniglio and Orchard.

In response to a question, Coniglio confirmed that Senate Undergraduate Council had approved the submission at its meeting on 11 April and Senate understood the motion to be therefore changed to "approve amendments to the co-op degree designation effective 1 September 2018". The question was called and the motion carried unanimously.

Faculty of Mathematics, Computing Technology Option. Senate heard a motion to amend the plan name of the "computing technology option" to "computing option" effective 1 September 2018.

Coniglio and Watt. Carried unanimously.

Faculty of Mathematics, Mathematics / Business. Senate heard a motion to amend the mathematics/financial analysis and risk management plan effective 1 September 2018.

Coniglio and Watt.

Watt confirmed that the "money" in question with respect to this motion is indeed virtual money and agreed to consider the suggestion that a risk assessment be undertaken for any external firm engaged on this activity.

The question was called and the motion carried unanimously.

Faculty of Science. Senate heard a motion to inactivate the joint honours bachelor of science and bachelor of independent studies plan effective 1 September 2018.

Coniglio and Lemieux. Carried with one abstention.

9. REPORT OF THE PRESIDENT

Hamdullahpur provided a report on recent activity, highlighting work involving government relations (“Naylor Report” findings and outcomes; continuing work on the strategic mandate agreement with the province), and an update on mental health considerations (the President’s Advisory Committee on Student Mental Health has been launched, report timelines, the commitment for open houses and engagement, a dedicated website is in place).

Slides used in the presentation may be seen here:

https://uwaterloo.ca/secretariat/sites/ca.secretariat/files/uploads/files/president_7.pdf

The president invited the Dean of Mathematics to inform Senate about a naming opportunity. Watt advised that the Faculty of Mathematics wishes to honour the contributions of Dr. William Tutte to the University of Waterloo and his incredible involvement at Bletchley Park as a cryptographer during the second world war by naming the road adjacent to the mathematics buildings after him. Senators understood the matter would be presented to the Board Executive Committee for final approval following the meeting.

In discussion: Casello agreed to look at and produce data re: the difference between domestic enrollments in professional and research based masters; agreement that way-finding on the main campus warrants attention and is receiving it, but that there is no linkage with that issue and the Tutte naming; work is being done by the provost and deans re: enrollment planning and exploration of other factors beyond entering average to assess Waterloo’s applicants; reassurance that the enrollment management structure is being looked at carefully.

10. REPORT OF THE VICE-PRESIDENT, ACADEMIC & PROVOST

The Vice-President, Academic & Provost had no report.

11. REPORT OF THE VICE-PRESIDENT, UNIVERSITY RESEARCH

Dixon advised that recent NSERC results were positive and in line with last year’s success rates and suggested members review the Naylor report in detail.

12. OTHER BUSINESS

Senator Forstner remarked upon his departure from Senate and offered kudos to the president for a productive and collegial year.

Senate convened in confidential session.

27 April 2017

Karen Jack
Secretary to Senate

CONFIDENTIAL SESSION

Confidential minutes have been removed.

The meeting was adjourned at 4:56 p.m.

27 April 2017

Karen Jack
Secretary to Senate

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
8 May 2017

Senate Graduate & Research Council met on 10 April 2017, and on behalf of Senate approved curricular submissions, three new graduate awards and one final assessment report. Council agreed to forward these items to Senate for information. Council recommends that these items be included in the consent agenda.

Further details are available at: <https://uwaterloo.ca/secretariat/committees-and-councils/senate-graduate-research-council>

FOR INFORMATION

CURRICULAR SUBMISSIONS

On behalf of Senate, new courses, course revisions, course inactivations, four minor plan changes and three minor program revisions were approved for the Faculties of applied health sciences (School of Public Health and Health Systems), arts (fine arts; Germanic and Slavic; sociology), engineering (electrical and computer engineering), environment (School of Environment, Enterprise and Development; School of Environment, Resources and Sustainability; School of Planning) and science (biology; earth and environmental sciences; collaborative program in nanotechnology).

GRADUATE AWARDS

On behalf of Senate, council approved the Ellsworth and Karen LeDrew International Experience Award, the Graduate Professional Communication Award and the English Rhetoric Essay Award.

ACADEMIC PROGRAM REVIEW REPORTS

a. Final Assessment Report – Computational Mathematics (MA) [Attachment #1].

/ar Jeff Casello
 Associate Provost, Graduate Studies

George Dixon
Vice President, University Research



Final Assessment Report

Computational Mathematics (MA)

November 2016

Summary of the Program Review:

In accordance with the University Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the MMath program delivered by the Centre for Computational Mathematics in Industry and Commerce (CCMIC). A self-study (Volume I) was submitted to the Associate Provost, Graduate Studies Office on November 16, 2015. The self-study presented the program descriptions and learning outcomes, an analytical assessment of this one program, and program data including the data collected from a student survey along with the standard data package prepared by the Office of Institutional Analysis & Planning (IAP). Appended were the course outlines for all courses in the program and the CVs (Volume II) for each full-time faculty complement hired for CCMIC.

Two arm's-length external reviewers (Volume III), (Dr. Antoine Deza, Professor and Canada Research Chair, McMaster University and Dr. Steve Ruuth, Professor of Applied and Computational Mathematics, Simon Fraser University) were chosen by the Associate Provost, Graduate Studies, in addition one internal reviewer (Dr. Tara Collington, Associate Professor) was selected by the Associate Provost, Graduate Studies.

They reviewed the self-study documentation and then conducted a site visit to the University April 26-27 2016. The visit included interviews with the Vice-President, Academic & Provost; Associate Provost, Graduate Studies; Dean of Math; Math Associate Dean of Graduate Studies, Director of the Centre for Computational Mathematics in Industry and Commerce (CCMIC), a Graduate Officer, Faculty Members, staff and meetings with a group of current graduate students.

This final assessment report is based on information extracted, in many cases verbatim, from the self-study, the external reviewers' report and the program response.

Program characteristics:

The Faculty of Mathematics has significant strength in numerous areas of computational mathematics and scientific computing across its five academic units, including discrete and continuous optimization, numerical methods for partial differential equations, numerical linear

algebra, computational statistics, symbolic computation and cryptography. In January 2005, the Faculty of Math established the Centre for Computational Mathematics in Industry and Commerce (CCMIC) to provide educational opportunities for students in the Faculty as well as to serve as a forum for collaborative research activity within the Faculty and the University in all areas of Computational Mathematics.

Soon after the creation of the undergraduate Honours program in Computational Mathematics, it was felt that there was a need to expand Computational Mathematics on the graduate level. The program received approval in 2007 from the Ontario Council on Graduate Studies (OCGS) and the first cohort of graduates began in Fall 2008.

Summary of strengths, challenges and weaknesses based on self-study:

Strengths

- Breadth of program
- Diverse choice of courses and diverse topics of research to choose from
- Degree is unique in Canada; other similar programs do not offer the same broad spectrum of computational mathematics subjects that Waterloo's Faculty of Math is able to
- Short in length; only a year-long program is very popular with the students, as many do not wish to spend an additional two years before entering the workforce.
- Affiliation with Faculty members from Mathematics, Engineering and Science

Challenges/Weaknesses

- Funding for students less than other programs in Faculty of Math; especially true for international students who pay higher tuition fees
- Short length of program prevents students from learning more about subjects they are interested in; can also prevent from doing any substantial research development
- Decreasing number of domestic applicants as well as women
- Popularity of online courses, which are currently not offered as part of the Masters program
- Lack of co-operative (co-op)stream or internships
- Difficult for students to differentiate computational mathematics from mathematics and computer science
- Lack of space; no room for Teaching Assistant (TA) office hours or to mark assignments
- Lack of control over offering and scheduling of graduate courses; all graduate courses offered through other departments/schools

- Support staff position is part-time contract position; turnover is very high and hiring and training takes a long time

Opportunities

- Grow program through increased enrollment
- Adding a coursework option
- Adding specializations to the program
- Creation of a PhD program

Summary of key findings from the external reviewers:

Dr. Deza and Dr. Ruuth found the Computational Mathematics program to be an “outstanding, interdisciplinary program that addresses the needs of industry and academia for advanced computational and mathematical training.” They believe that the University of Waterloo is “an ideal host institution due to its excellence in the computational and mathematical sciences, and its established links with co-operative education and industry.” They also found the CM-affiliated members to be very enthusiastic about the program.

Program response to external reviewer recommendations:

Recommendations

1. *The reviewers support the ongoing initiatives to create course-based, and co-op Master’s programs.*

Response

Pending approval, starting Fall 2017 incoming graduate students will have the opportunity to enroll in the program as course-work students. This means they will take 8 courses instead of the regular 6, and they will not be required to do a project. In addition, pending approval, starting Fall 2017 students will be able to enter into the co-op option. Strong students, as determined by their grades, will be allowed to enroll in co-op starting January 1st. The grade cut-off is expected to be around 80%, but the precise cut-off will depend upon the amount of demand by the students in the program. They would be expected to start their work term either in the Summer term, or for an 8-month work term for the Summer and Fall term, followed by a term back on campus. At the request of CECA, the program is committed to accepting no more than 10 co-op students into the program. It was felt by CCMIC and CECA that 10 students could be accommodated by the existing demand by employers, and any more than that would require job development on the part of CECA. The plan is that this number will

be increased slowly over time, as CCMIC and CECA better understand the demand from students and employers.

- 2. We recommend that the half-time administrative position be made permanent in order to achieve stability and institutional memory. Staff is a critical point of contact for such a non-departmental based program.*

Response

The current staff contract position is expected to expire in July 2017. There are currently ongoing discussions between the Director for the Centre for Computational Mathematics in Industry and Commerce (Kevin Hare) and the Dean of Math (Stephen Watt) about how to better serve the needs of the Centre. It is expected that a plan on how to solve this issue will be in place before July 2017.

- 3. We recommend enhancement of the visibility of the program at the Faculty level, and increased efforts to highlight the program in promotional material and outreach activities.*

Response

The Centre intends to do more targeted recruiting and will plan outreach activities targeting their own undergraduates for recruitment. The graduate committee is also investigating how to better recruit students from outside of University of Waterloo. One option is to specifically target undergraduate conferences typically attended by students that may be interested in the program. The Centre also anticipates that the introduction of co-op will make the program more attractive to higher quality students. Recruitment will be an ongoing project for the Centre.

- 4. We recommend increasing flexibility within the curriculum by adding one more course to the list of core courses, leading to a choice of 4 courses for 6 possibilities.*

Response

The Graduate Committee met February 8th, 2017 to discuss this recommendation. The final opinion of the committee was that there are currently no courses that could be added to the program that would not compromise the breadth of the program. All other courses within the program (in the list B) are too specialized, or too tangential to the core of computational mathematics to be considered breadth. It was decided that we would not increase the list of core courses from 5 to 6.

- 5. We recommend exploring the possibility of adding specializations to the program to improve job placement in a competitive environment. The Director and Graduate Officer should*

follow up with the Associate Dean and take any necessary steps to approve changes in the program description in the calendar to allow for this.

Response

The Centre is supportive of the idea of allowing specialization within the program. However, due to recent changes to the program, it is felt that it would be better to wait and see how the new co-op and course work Master's programs proceed before adding new specializations. This suggestion will be revisited for discussion after the first year of the course work/co-op offering of the Master's program. It is expected that a decision and plan of action will be developed by Spring 2018.

6. *We recommend involving Computational Mathematics in Faculty or University-wide computation-intensive initiatives.*

Response

The Centre agrees in principle that it would be good to be involved in faculty or university-wide computational initiatives. Those involved plan to meet over the next two years to determine how the Centre can play a more active role within university initiatives.

Recommendations that were not selected for implementation: 1. *We recommend continued work on strengthening the interaction with industry.*

Response

The Centre agrees that there should be better connections with industry. However, there is currently a lack of support from the affiliate members for the Centre to play an active role in making connections to industry. Additionally, the Centre does not have plans to market itself to industry as a potential research collaborator as it is felt that this is best done through the Office of Research, and through the individual faculty member.

7. *We recommend that the position of Graduate Officer be recognized and incentivized. This might involve a partial course release or stipend.*

Response

The current Graduate Officer believes that the workload is not sufficient to justify further compensation. However, this should be monitored in the future, as this may change due to the introduction of co-op and coursework students. This would change should a PhD program be created.

*Recommendation of creation of a PhD is not listed as one of the formal recommendations listed at the end of the report. The reviewers state that there is “*considerable support expressed by CM [Computational Mathematics]-affiliated members for the development of a PhD program in Computational Mathematics...we believed that this is in the long-term interest of the unit and the Faculty to have discussions on the possibility of a PhD in Computational Mathematics. However, in the near-term the programmatic focus for Computational Mathematics should be on the introduction of its new course-based Master’s and its new co-op programs.*”

Response

The Centre responded that although they are very supportive of the idea of creating a PhD program, it is felt that it would be best to wait and see how the new co-op and course work Master’s programs work before adding new programs to the Centre.

Implementation Plan:

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
1.	Course based & Co-op Masters	Create and run the course based and co-op masters	Director of CCMIC	Creation – Completed Students to start in Fall 2017
2.	Support Staff	Decision to be made concerning ongoing support for the centre	Director of CCMIC and Dean of Mathematics	July 2017
3.	Enhanced visibility of the program	Investigation to be made by graduate committee on how to do this	Graduate Committee of CCMIC	Ongoing
4	Increased flexibility of the core	Discussions of issue, and implementation if appropriate	Graduate Committee of CCMIC	not pursuing
5	Adding specialization to the CM program	Discussions of issue, and implementation if appropriate	Graduate Committee of CCMIC	Spring 2018
6	Involvement of CM in University wide computation-intensive initiatives	Investigation to be made by the Steering Committee on how to do this	Steering Committee of CCMIC	Spring 2018



The Department Chair/Director, in consultation with the Dean of the Faculty shall be responsible for monitoring the Implementation Plan.

Date of next program review: _____ **2022** _____
Date

Signatures of Approval:

Chair/Director _____ Date

AFIW Administrative Dean/Head (For AFIW programs only) _____ Date

Faculty Dean _____ Date

Associate Vice-President, Academic _____ Date
(For undergraduate and augmented programs)

Associate Provost, Graduate Studies _____ Date
(For Graduate and augmented programs)

University of Waterloo
SENATE UNDERGRADUATE COUNCIL
Report to Senate
15 May 2017

Senate Undergraduate Council met on 11 April 2017, and on behalf of Senate approved course submissions, minor plan changes, and Faculty regulation changes. Council agreed to forward the following items to Senate for information. Council recommends that these items be included in the consent agenda.

Further details are available at: <https://uwaterloo.ca/secretariat/committees-and-councils/senate-undergraduate-council>

FOR INFORMATION

CURRICULAR MODIFICATIONS

Course submissions and minor plan changes were approved for the Faculties of applied health sciences (kinesiology; recreation and leisure studies; School of Public Health and Health Systems), arts (anthropology; classical studies; drama & speech communication; East Asian studies; economics; English language & literature; history; Italian studies; psychology; religious studies; sociology and legal studies; studies in Islam; women's studies), engineering (mechanical and mechatronics engineering), environment (aviation; diploma in ecological restoration and rehabilitation; environment, resources & sustainability; environmental studies; geography & environmental management; planning; tourism option), and science (aviation; biology; materials and nano-sciences; pharmacy).

NEW UNDERGRADUATE AWARDS

Attachment #1 to this report contains a listing of newly-approved entrance scholarships/awards/bursaries, upper-year scholarships/awards/bursaries, international experience awards and athletic awards.

/mg

Mario Coniglio
Associate Vice-President, Academic

NEW UNDERGRADUATE AWARDS**for addition to the 2017/18 Undergraduate Calendar website***- submitted for April 11, 2017 meeting of Senate UG Council -***ENTRANCE SCHOLARSHIPS/AWARDS/BURSARIES:****Admanski Entrance Scholarship**

One scholarship, valued at \$2,500, is awarded annually to a full-time undergraduate student entering Year One in the Faculty of Mathematics on the basis of academic excellence. This fund is made possible by a donation from John Admanski (BMath '06) to recognize the outstanding achievement of a student entering the Faculty of Mathematics.

Method of Financing: annual donation (5-year pledge)

Jerome Bolce Entrance Award

One award, valued at \$1,200, is provided annually to a full-time undergraduate student entering Year One of an Engineering, Mathematics, or Science program on the basis of academic excellence and demonstrated financial need. To be considered, students must apply to the Entrance Bursary program by April 15. This fund is made possible by a donation from Jerome Bolce, BSc, Applied Mathematics, and Waterloo retiree of Information Systems and Technology (formerly the Computing Services Department).

Method of Financing: endowment

Recreation and Leisure Studies Founders Entrance Scholarship

One scholarship, valued at \$1,000, is awarded annually to a full-time undergraduate student entering Year One in the Department of Recreation and Leisure Studies on the basis of academic achievement combined with recreation-based community involvement and leadership as assessed through the Admission Information Form. This fund was established to honour the founders of the Department of Recreation and Leisure Studies: Jack Pearce, Chuck Griffith, and David Ng.

Method of Financing: combination of endowment and annual donation

UW Alumni @ Ernst & Young Scholarship

One scholarship, valued at up to \$2,000, is awarded annually to an outstanding student entering Year One of an accounting program in the Faculties of Arts or Mathematics. This fund is made possible by a donation from University of Waterloo alumni employed at Ernst & Young LLP.

Method of Financing: endowment

Paul Koenderman Engineering Scholarship

Two scholarships, valued at \$3,000 each, are awarded annually to full-time undergraduate students entering Year One in the Faculty of Engineering: one to a student in Civil, Environmental, or Geological Engineering and one to a student in Mechanical or Mechatronics Engineering. Selection is made on the basis of academic achievement, demonstrated leadership qualities, and participation in extracurricular activities as assessed through the Admission Information Form. This fund is made possible by donations from Aecon Group Inc. and friends of Paul Koenderman in his memory.

Method of Financing: combination of endowment and annual donation

Linamar Scholarship in Accounting and Finance

One scholarship, valued at up to \$2,000, is awarded annually to a full-time undergraduate student entering Year One in Accounting and Financial Management in the Faculty of Arts. Selection will be made on the basis of academic excellence and participation in volunteer activities as assessed through the Admission Information Form. In addition, the recipient may be offered a co-op employment interview with Linamar. This scholarship is made possible by a donation from Linamar Corporation.

Method of Financing: endowment

NEW UNDERGRADUATE AWARDS
for addition to the 2017/18 Undergraduate Calendar website
- submitted for April 11, 2017 meeting of Senate UG Council -

Jennifer Nguyen Entrance Scholarship for Women in Math

One scholarship, valued at \$2,000, is awarded annually to an outstanding full-time female undergraduate student entering Year One in the Faculty of Mathematics in a program wherein women are underrepresented. Selection is based on academic achievement, performance on the Euclid Mathematics Contest, and extracurricular achievements as assessed through the Admission Information Form. Preference will be given to students who graduated from a Region of Waterloo high school. This fund is made possible by a donation from Jennifer Nguyen, BMath '12 to inspire and reward female students to pursue higher education in the Faculty of Mathematics.

Method of Financing: annual donation (5-year pledge)

Benjie Thomas Scholarship in Accounting and Finance

One scholarship, valued at \$1,000, will be awarded annually to a full-time undergraduate student entering Year One in Accounting and Financial Management in the Faculty of Arts. Selection to be based on demonstrated academic excellence and participation in volunteer activities as assessed through the Admission Information Form. This scholarship is made possible by School of Accounting and Finance alumnus and friend, Benjie Thomas (PhD '98, Accounting).

Method of Financing: combination of endowment and annual donation

Yorkville International Academy Entrance Scholarship

Four scholarships, valued at \$1,000 each, are awarded annually to full-time undergraduate students enrolled in Year One in the School of Pharmacy on the basis of academic excellence. Preference will be given to students who reside in the Markham/Richmond Hill area. This fund is made possible by a donation from Yorkville International Academy.

Method of Financing: annual donation (5-year pledge)

UPPER-YEAR SCHOLARSHIPS/AWARDS/BURSARIES:

Randy Bauslaugh Arts Entrepreneurship Award

One award, valued at \$2,000, is provided annually to a full-time undergraduate student enrolled in Year Two, Three, or Four in the Faculty of Arts who is pursuing an entrepreneurial endeavour. Selection will be made on the basis of good academic standing (minimum 70% average) and a letter (two pages maximum) describing the student's passion for entrepreneurship (e.g., involvement in Velocity Residence, Velocity start-ups, GreenHouse, etc.). Preference will be given to students with financial need. Interested students should submit a Full-Time Bursary application and letter by October 1. This fund is made possible by a donation from alumnus Randy Bauslaugh, (BA '77, History) who experienced firsthand how an arts education can provide a solid foundation for career success and who believes in supporting entrepreneurship at the University of Waterloo.

Method of Financing: annual donation (5-year pledge)

NEW UNDERGRADUATE AWARDS
for addition to the 2017/18 Undergraduate Calendar website
- submitted for April 11, 2017 meeting of Senate UG Council -

Howard and Marita Boyd Scholarship

Two scholarships, valued at \$1,500 each, are awarded annually to full-time undergraduate students entering Year Two, Three, or Four in the Faculty of Mathematics and/or the Faculty of Engineering (excluding Architecture) on the basis of academic excellence (minimum 80%) and demonstrated commitment to volunteerism. Preference will be given to students who have been involved in Scouts Canada, Scottish dance, or the Royal Canadian Air Force, cadets, or any other military service. Interested students should submit an application by October 1. This fund is made possible by a donation from Howard Boyd (BMath '76) in memory of his wife, Marita Boyd. Marita had a passion for volunteerism as shown through her service of over 40 years with Scouts Canada. She also loved all things Scottish, expressed through her active membership in the Royal Scottish Country Dance Society. In 2012, Marita was awarded the Queen's Silver Jubilee medal by His Excellency the Right Honourable Governor General, David Johnston, for her commitment to community service.

Method of Financing: annual donation (5-year pledge)

Collective Movement Award

One award, valued at up to \$1,200, is provided annually to a full-time undergraduate student enrolled in Year Two, Three, or Four in any faculty. Selection will be made on the basis of academic achievement (minimum cumulative average of 70%) and an essay (1,000 words maximum) describing the positive impact they have had to the African, Caribbean, or Black communities within Canada through extracurricular or volunteer involvement. Interested students should submit an application by October 15. This fund is made possible by donations from individuals and corporations who are part of the African, Caribbean, or Black communities in Canada, or who are advocates for these communities.

Method of Financing: annual donation (5-year pledge) plus pooled donations with intention to eventually create an endowment

Gaskin and Claudine Dey Upper-Year Scholarship

One scholarship, valued at \$2,000, is awarded annually to a full-time undergraduate student enrolled in Year Two, Three, or Four in the Department of Biology in the Faculty of Science. Candidates must have demonstrated community service and athletic participation, either on intramural or varsity teams. Interested students should submit an application by October 15. This fund is made possible by a donation from Dr. Quaison Dey, BSc '91, in honour of his parents Gaskin and Claudine Dey.

Method of Financing: annual donation (5-year pledge)

Brian Le Lievre Scholarship

Two scholarships, each valued at \$2,537.70, are awarded annually to full-time undergraduate students who have completed 2B in the Civil and Environmental Engineering programs on the basis of academic achievement (minimum 80%). This fund is made possible by a donation from Brian Le Lievre.

Method of Financing: annual donation (one-time donation)

Stephen Huss Memorial Scholarship

Two scholarships, valued at \$1,000 each, are awarded annually to full-time undergraduate students enrolled in Year Four in the Department of Psychology in the Faculty of Arts. Selection will be made on the basis of academic excellence (minimum 80% average) and extracurricular involvement in the area of mental health. Interested students should submit an application by February 15. This fund is made possible by a donation from alumni Dennis and Elizabeth Huss in loving memory of their son Stephen, who struggled with mental illness. Despite these challenges, Stephen courageously lived life to the fullest, inspiring listeners the world over with his music and visual creations.

Method of Financing: annual donation (5-year pledge)

NEW UNDERGRADUATE AWARDS
for addition to the 2017/18 Undergraduate Calendar website
- submitted for April 11, 2017 meeting of Senate UG Council -

School of Accounting and Finance Volunteer Award

One award, valued at \$2,500, is provided annually to a full-time undergraduate student enrolled in Year Two, Three, or Four in any program in the School of Accounting and Finance in the Faculties of Arts, Mathematics, or Science on the basis of academic achievement (minimum 75%) and participation in volunteer activities. Interested students should submit an application along with a one-page letter explaining why volunteering is important to them and the impact of their volunteer involvement by October 1.

Method of Financing: annual donation (4-year pledge)

MAcc Class of 1986 Scholarship

One scholarship, valued at up to \$1,200, is awarded annually to a full-time undergraduate student enrolled in Year Two or Three in Accounting and Financial Management in the Faculty of Arts on the basis of academic excellence (minimum 80% average) and participation in volunteer activities. Interested students should submit an application by October 1. This fund is made possible by the Master of Accounting class of 1986 in honour of their 30th anniversary reunion.

Method of Financing: endowment

Karen Padham Taylor Scholarship for Women in Computer Science

Two scholarships, valued at \$7,500 each, are awarded annually to full-time female undergraduate students enrolled in Year Three of Honours Computer Science (co-op) or Software Engineering in the David R. Cheriton School of Computer Science. Selection will be made on the basis of academic excellence. This fund is made possible by a donation from Karen Padham Taylor, BMath '03, to encourage female students to continue to pursue Computer Science at the University of Waterloo.

Method of Financing: annual donation (4-year pledge)

David Shepherd Upper-Year Scholarship in Mathematics

Three scholarships, valued at \$5,000 each, will be awarded annually to full-time undergraduate students enrolled in Year Two, Three, and/or Four in the Faculty of Mathematics. Selection will be made on the basis of academic achievement and demonstrated extracurricular participation in volunteer activities, mentorship, sports, and/or public service. Interested students should submit an application by October 15. This fund is made possible by a donation from Krysia Piorczynski in memory of her husband, David Shepherd, BMath '75.

Method of Financing: annual donation (5-year pledge)

ATHLETIC AWARDS:

Slater and Amoroso Family Swimming Excellence Awards

One or more awards, valued at up to \$4,500 each, are given to members of the varsity swimming team. These awards recognize athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by Waterloo alumni Jeff Slater and Marissa Amoroso.

Method of Financing: annual donation and matching funds (five-year pledge)

John L. Bertoia Football Excellence Award

One award, valued at \$4,500, is given to a member of the varsity football team. This award recognizes athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by Kevin Bertoia, brother of Warrior football head coach Chris Bertoia, in memory of their father.

Method of Financing: annual donation and matching funds (four-year pledge)

NEW UNDERGRADUATE AWARDS
for addition to the 2017/18 Undergraduate Calendar website
- submitted for April 11, 2017 meeting of Senate UG Council -

Barbad Bidarian Athletic Excellence Awards

Two awards, valued at \$4,500 each, are given to members of the varsity men's basketball team and the men's or women's varsity track and field teams, with preference given to students enrolled in the Faculty of Mathematics. This award recognizes athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by Waterloo alumnus Nakisa Bidarian, in memory of his brother Barbad Bidarian. Barbad, who attended Ohio State University, was a successful student and athlete with numerous interests, including a passion for basketball, track and field, music, art, and computer science.

Method of Financing: annual donation and matching funds (three-year pledge)

Cherrey Bus Lines Athletic Excellence Awards

Two awards, valued at \$4,000 each, are given to one member of any men's varsity team and one member of any women's varsity team. These awards recognize athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by Cherrey Bus Lines Inc.

Method of Financing: annual donation and matching funds (two-year pledge)

Catherine and Feridun Hamdullahpur Athletic Excellence Awards

Two awards, valued at \$2,500 each, are provided annually to student athletes who are members of any women's varsity team. These awards recognize athletic talent, contribution to Warrior Athletics, and contribution to the team and school. This fund is made possible by a donation from Catherine and Feridun Hamdullahpur, President and Vice-Chancellor of the University of Waterloo.

Method of Financing: annual donation and matching funds (five-year pledge)

St. Paul's University College Women's Basketball Excellence Awards

One or more awards, valued at up to \$4,500, are given to members of the varsity women's basketball team. These awards recognize athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by St. Paul's University College.

Method of Financing: annual donation and matching funds (two-year pledge)

Steeves Family Warrior Recreation Award

One award, valued at \$2,000, is given to a second- or third-year undergraduate student who has made significant contributions to Warrior Recreation in the past 12 months and who best displays the values and mission of the Department of Athletics and Recreation. Successful candidates must demonstrate how their involvement with Warrior Recreation has impacted their student experience, how they have had an impact on the participation/involvement of others in Warrior Recreation, and how they have served as a positive role model within Warrior Recreation. Interested students should submit an application by November 1. This fund is supported by University of Waterloo staff Adam Steeves and Donna Rheams.

Method of Financing: annual donation and matching funds (five-year pledge)

Track and Field Alumni Excellence Awards

One or more awards, valued at \$1,000 each, are given to members of the varsity track and field team. This award recognizes athletic talent and contribution to Warrior Athletics, their team and the school. This fund is supported by Warrior track and field alumni Justin Conlon and Chantel Pilon.

Method of Financing: annual donation and matching funds (five-year pledge)

NEW UNDERGRADUATE AWARDS

for addition to the 2017/18 Undergraduate Calendar website

- submitted for April 11, 2017 meeting of Senate UG Council -

Warrior Men's Volleyball Alumni Adventure Challenge Award

One or more awards, valued at up to \$4,500, are given to members of the varsity men's volleyball team. This award recognizes athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by Warrior men's volleyball alumni and friends through fundraising efforts of the participants in the annual Warrior Men's Volleyball Alumni Adventure Challenge.

Method of Financing: annual fundraising and matching funds (on-going pledge)

Welmar Recreational Products Men's and Women's Hockey Awards

Two awards, valued at \$2,000 each, are given to a member of each of the varsity men's and women's hockey teams. This award recognizes athletic talent and contribution to Warrior Athletics, their team, and the school. This fund is supported by the Welmar Group.

Method of Financing: annual donation and matching funds (three-year pledge)

INTERNATIONAL EXPERIENCE AWARDS:

Patrick Hofmann International Experience Award

Up to five awards, normally valued at \$1,000 each, are provided to full-time students enrolled in any year in the Faculty of Arts (excluding Accounting and Financial Management) who are participating in an eligible exchange/study abroad program, or an eligible international co-op work term outside of Canada. Preference will be given to students with financial need for the term(s) abroad. Students should apply as soon as they are able to confirm the details of their intended experience by one of the following deadlines: July 15, November 15, or March 15. This fund is made possible by a donation from Patrick Hofmann in support of Waterloo's efforts to educate globally literate and world-ready graduates.

Method of Financing: annual donation and matching funds (two-year pledge)

Ellsworth and Karen LeDrew International Experience Award

Up to five awards, normally valued at \$1,000 each, are provided annually to undergraduate and graduate students enrolled full-time in any year in the Faculty of Environment. Students must be participating in an eligible exchange/study abroad program, an eligible international co-op work term, an international internship opportunity, or be conducting research relevant to their program outside of Canada. Preference will be given to students with financial need for the term(s) abroad. Students should apply as soon as they are able to confirm the details of their intended experience by one of the following deadlines: July 15, November 15, or March 15. This fund is made possible by a donation from Ellsworth and Karen LeDrew in support of Waterloo's efforts to educate globally literate and world-ready graduates.

Method of Financing: annual donation and matching funds (two-year pledge)

Ronald C. Johnson International Experience Award

Up to five awards, normally valued at \$1,000 each, are provided annually to undergraduate and graduate students enrolled full-time in any year in any faculty. Students must be participating in an eligible exchange/study abroad program, an eligible international co-op work term, an international internship opportunity, or be conducting research relevant to their program outside of Canada. Preference will be given to students with financial need for the term(s) abroad. Students should apply as soon as they are able to confirm the details of their intended experience by one of the following deadlines: July 15, November 15, or March 15. This fund is made possible by a donation from Catherine and Feridun Hamdullahpur, President and Vice-Chancellor of the University of Waterloo, in support of Waterloo's efforts to educate globally literate and world-ready graduates and in memory of Catherine's father, Ronald C. Johnson.

Method of Financing: annual donation and matching funds (five-year pledge)

University of Waterloo
SENATE
Report of the President
15 May 2017

FOR INFORMATION

Recognition and Commendation

In late March, the United Way held their annual Community Spirit Awards at St. George Banquet Hall. The University of Waterloo was well-represented: Leadership Award - University of Waterloo; Individual Campaign Champion Award – **James Skidmore**, Campaign Co-Chair, faculty member in Germanic & Slavic Studies; Individual Impact Award – **Doris Jakobsh**, faculty member in Religious Studies. We have another reason to celebrate: we beat our 2016 goal for the United Way campaign! Thanks to all of you, we raised more than \$275,000. (Adapted from the *Daily Bulletin*, 23 March 2017.)

The fifth annual Three Minute Thesis (3MT) final competition was held at University of Waterloo in late March. **Emmanuel Alabi**, a PhD student from the School of Optometry and Vision Science emerged as the first place winner as well as winner of the People’s Choice award. Emmanuel delivered a poised and entertaining presentation on his graduate research, which focuses on developing an objective method to measure pain. Emmanuel is supervised by Trefford Simpson, a Professor in the School of Optometry and Vision Science. **Andria Bianchi**, a PhD student in Philosophy was named runner-up for her powerful and engaging presentation on how applied philosophy can help us better navigate tricky questions around sexual consent in people with dementia. Andria is supervised by Patricia Marino, a Professor in the Department of Philosophy. The 3MT competition challenges graduate students to articulate the breadth and significance of their research to a non-specialist audience in 3 minutes, using only one static slide. The university final saw fifteen students compete for the first place \$1000 prize. In addition to winning the monetary prize, Emmanuel Alabi will advance to the Ontario Provincial 3MT competition in April, where he will compete from the top contenders from across Ontario. (Adapted from the *Daily Bulletin*, 27 March 2017.)

Two teams of engineering students at the University of Waterloo have been awarded \$50,000 each to turn their fourth-year projects into startup companies after graduation. The funding is provided by celebrated Waterloo Engineering graduates Chamath Palihapitiya and his wife Brigitte Lau, founders of Social Capital, a Silicon Valley venture capital fund dedicated to solving some of the world’s most difficult problems. Established in 2014, the Palihapitiya/Lau Venture Creation Fund at Waterloo backs students with promising Capstone Design projects who want to try to commercialize their ideas post-graduation. This year’s winning projects involve concepts for an endoscope for use in arteries and a much smaller, lighter device for people requiring portable oxygen therapy. The endoscope – called SWIRVE, an acronym for ‘short wave infrared vascular endoscope’ – is the brainchild of mechanical engineering students **Phil Cooper**, 22, of Pembroke, Ontario, and **Michael Phillips**, 22, of Sussex, New Brunswick, who plan to call their startup Vena Medical. They are developing a system involving a fibre optic bundle and infrared light that would allow surgeons to see inside arteries while positioning catheters for interventional procedures. Capable of seeing through blood, it would replace the two-dimensional x-ray images now used to snake guidewires through arteries. “Navigation is our objective,” said Phillips. “We want doctors to be in the right spot.” The other project is the work of nanotechnology engineering students **Mostafa Saquib**, 21, of Kitchener, **John Grousopoulos**, 22, of Kitchener, and **Chris Hajduk**, 22, of Guelph. **Pablo Enrique** was also a member of the student team, but will not be part of the startup, which is called VivaSpire. It seeks to replace heavy, bulky devices to supply oxygen to people with conditions including chronic pulmonary obstructive disease, cystic fibrosis and lung cancer when they leave home. Its “secret sauce” is a nanoscale powder (a nanometre is one billionth of a metre) that absorbs oxygen from unpressurized air and releases it again when heated, eliminating the need for heavy compressors and batteries to power them. To be eligible for support from the fund, Waterloo Engineering teams must commit to working full-time on commercialization of their student projects in Kitchener-Waterloo for at least four months after graduation. (Adapted from the *Daily Bulletin*, 30 March 2017.)

A Waterloo student who is helping to educate people about a serious medical condition is among six students the University is recognizing for their outstanding achievements in co-operative education. **Natalya O’Neill** is the winner of the Faculty of Science’s Co-op Student of the Year Award. She spent two work terms with the hematology unit at St. Michael’s Hospital in Toronto, where she created a medical alert card and educational booklet for patients with asplenia, or abnormal spleen function, and at high risk of infection. In addition to winning her Faculty’s Co-op Student of the Year Award, she also received an honourable mention for the Education at Work Ontario (EWO) Co-op Student of the Year Award. The following are the recipients of the 2016 University of Waterloo Co-op Student of the Year Awards for their contributions to co-operative education and their community. This is Waterloo’s top award for students in a co-op program. **Pearl Zaki** – Health Studies (Faculty of Applied Health Sciences), **Adnan Khan** – Accounting and Financial Management (Faculty of Arts), **Baraa Hamodi** – Mechatronics Engineering (Faculty of Engineering), **Regan Zink** – Urban Planning (Faculty of Environment), **Alister D’Costa** – Bioinformatics (Faculty of Mathematics), **Natalya O’Neill** – Materials and Nanosciences (Faculty of Science). In addition, **John Pagado** (Applied Health Sciences), **Jona Cho** (Arts), **Karan Bir** (Engineering) and **Stephanie Chan** (Science) received honourable mention. (Adapted from the *Daily Bulletin*, 31 March 2017.)

St. Paul’s GreenHouse held its Winter Social Impact Showcase recently, announcing the winners of the Big Ideas Challenge and the recipients of the Social Impact Fund, as well as celebrating the successes of past Social Impact Fund recipients such as Richard Yim of Landmine Boys and Tina Chan of PASS. The Big Ideas Challenge is a social venture competition, with winners receiving GreenHouse Fellowships during the summer months. This year, five social enterprises received Fellowships totalling \$9,500 and the possibility of accessing \$15,000 more through the Social Impact Fund. They are: **MapleKey**, a modular sleeping pod service; **Soleful**, a technology to reduce falls among older adults; **Cultured**, a plant-based approach to culturing meat; **SEED**, an innovative approach to burial; and **Arawelo**, a cross-cultural women’s health platform. Other winners at the Showcase included the recipients of the Social Impact Fund, which provides startup support to developing GreenHouse ventures. This term, **Nicole Yang** and **Anna Chang** were the recipients of \$2,500 and \$1,000 respectively. Nicole’s venture, rePUBLIC, aims to create more engaging public spaces through art installations paired with an app, and Anna’s venture, Midori, will investigate how to alleviate textile waste by repurposing used textiles into eco-friendly clothing. (Adapted from the *Daily Bulletin*, 13 April 2017.)

University of Waterloo
REPORT OF THE DEAN OF APPLIED HEALTH SCIENCES TO SENATE
May 15, 2017

FOR INFORMATION

A. APPOINTMENTS

Probationary-term Reappointments

WALLACE, James, Assistant Professor, School of Public Health and Health Systems, July 1, 2017 – June 30, 2020. [BMath (Computer Science), University of Waterloo, 2004; MSc (Human-Computer Interaction), Dalhousie University, 2006; Ph.D. (Systems Design Engineering), University of Waterloo, 2012].

BOLUK, Karla, Assistant Professor, Department of Recreation and Leisure Studies, July 1, 2017 – June 30, 2020. [BA, Honours, Brock University, 2005, PhD, University of Otago, New Zealand, 2010].

Definite-term Reappointment

WILSON, Wade, Lecturer, Department of Kinesiology, May 1, 2017 – April 29, 2019. BA (Sports Psychology), Laurentian University, 2005, Master of Human Kinetics (MHK), University of Windsor, 2007, PhD, Recreation and Leisure Studies, University of Waterloo, 2015.

Adjunct Appointments

Graduate Instruction

KACZYNSKI, Andrew, Lecturer, School of Public Health and Health Systems, May 1, 2017 – August 31, 2017.

Graduate Supervision

PREMJI, Stephanie, Assistant Professor, School of Public Health and Health Systems, March 1, 2017 – February 28, 2019.

Change in Appointment

RAFFERTY, Zara, from Lecturer, September 1, 2015 – August 31, 2016 to Continuing Lecturer, effective September 1, 2017, Department of Recreation and Leisure Studies. [B.Ed. Wilfrid Laurier University, 2010; MA, Recreation and Leisure Studies, University of Waterloo, 2010; B.A., Recreation and Leisure Studies, University of Waterloo, 2007].

Postdoctoral Fellow to Research Appointments

ALENABI, Seyedeh Talia, Department of Kinesiology, March 1, 2016 – February 28, 2018.

GOODWIN, Shane, School of Public Health and Health Systems, April 1, 2017 – March 31, 2018.

KENNEDY, Ashleigh, Department of Kinesiology, February 21, 2017 – October 31, 2017.

MOHAMMED, Abdul Hai Zahid, School of Public Health and Health Systems, April 1, 2017 – September 30, 2018.

For Approval by the Board of Governors

B. SABBATICAL

BIGELOW, Philip, Associate Professor, School of Public Health and Health Systems, January 1, 2018 – December 31, 2018, one year at full salary.



James W.E. Rush, Dean
Faculty of Applied Health Sciences

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF THE FACULTY OF ARTS TO SENATE
May 15, 2017

FOR INFORMATION

A. APPOINTMENTS

Adjunct Appointments – Instruction

GORDON, Brian, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

KAPOOR, Akash, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

KEIRSTEAD, Helena, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

SIMEONI, Laura, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

TANGUAY, Greg, Lecturer, Department of Economics, May 1, 2017 to August 31, 2017.

Adjunct Reappointments – Instruction

AYTENFISU, Million Tadesse, Lecturer, Department of Economics, May 1, 2017 to August 31, 2017.

D’AMATO, John, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

DE ROOIJ-MOHLE, Margreet, Lecturer, Department of Germanic and Slavic Studies, May 1, 2017 to August 31, 2017.

FATIMA, Nafeez, Lecturer, Department of Economics, May 1, 2017 to August 31, 2017.

HUNTER, Natalie, Lecturer, Department of Fine Arts, May 1, 2017 to August 31, 2017.

JAIMES-DOMINGUEZ, James, Lecturer, Department of Spanish and Latin American Studies, May 1, 2017 to August 31, 2017.

KUMASE, Wokia, Lecturer, Department of Economics, May 1, 2017 to August 31, 2017.

LIAQAT, Zara, Lecturer, Department of Economics, May 1, 2017 to August 31, 2017.

LIN, David, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

LONEY, Grace, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

MEINYKEVYCH, Viktoriya, Lecturer, Department of Germanic and Slavic Studies, May 1, 2017 to August 31, 2017.

NABERT-CHUBB, Rebecca, Lecturer, Department of Political Science, May 1, 2017 to August 31, 2017.

NEEDHAM, Brent, Lecturer, Department of Political Science, May 1, 2017 to August 31, 2017.

RAHMAN, Fiona, Lecturer, Department of Economics, May 1, 2017 to August 31, 2017.

RAY, Nicholas, Lecturer, Department of Philosophy, May 1, 2017 to August 31, 2017.

ROGOZYNSKI, Daniel, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

RUFFUDEEN, Zamal, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

SCHWEITZER, David, Lecturer, Department of History, May 1, 2017 to August 31, 2017.

SHIELDS, Tobin, Lecturer, School of Accounting and Finance, May 1, 2017 to August 31, 2017.

SIEBEL-ACHENBACH, Sebastian, Lecturer, Faculty of Arts, May 1, 2017 to August 31, 2017.

WARRINER, G. Keith, Professor, (Professor Emeritus), Department of Sociology and Legal Studies, May 1, 2017 to August 31, 2017.

Graduate Students Appointed as Part-Time Lecturers

BIANCHI, Andria, Department of Philosophy, May 1, 2017 to August 31, 2017.

CARROLL, James Ryan, Department of Germanic and Slavic Studies, May 1, 2017 to August 31, 2017.

DEVRIES, Sandra, Department of Philosophy, May 1, 2017 to August 31, 2017.

JORDAN, William, Department of Philosophy, May 1, 2017 to August 31, 2017.

MASSIA, Kyle, Department of Germanic and Slavic Studies, February 20, 2017 to March 17, 2017.

MELITZER, Alissa, Department of Germanic and Slavic Studies, February 20, 2017 to March 17, 2017.

SCHIRM, Ronald Sam, Department of Germanic and Slavic Studies, May 1, 2017 to August 31, 2017.

SWYERS, Erica, Department of Germanic and Slavic Studies, February 20, 2017 to March 17, 2017.

SULLIVAN, Alexander, Department of Germanic and Slavic Studies, February 20, 2017 to March 17, 2017.

WEAVER, Sara, Department of Philosophy, May 1, 2017 to August 31, 2017.

B. ADMINISTRATIVE APPOINTMENTS

COLLINGTON, Tara, Associate Chair, Undergraduate Studies, Department of French Studies, July 1, 2017 to June 30, 2018.

LEPAGE, Élise, Associate Chair, Graduate Studies, Department of French Studies, July 1, 2017 to June 30, 2018.

C. RESIGNATIONS

HAMPTON, Clark, Assistant Professor, School of Accounting & Finance, effective June 30, 2017.

LIBBY, Theresa, Professor, School of Accounting & Finance, effective July 31, 2017.

D. SABBATICAL LEAVES

Approved by the Board of Governors:

CARRINGTON, Peter, Professor, Department of Sociology & Legal Studies, January 1, 2018 to June 30, 2018, six months at 85% salary.

CARVALHO, Emanuel, Associate Professor, Department of Economics, September 1, 2017 to August 31, 2018, twelve months at full salary.

XU, Dinghai, Associate Professor, Department of Economics, September 1, 2017 to August 31, 2018, twelve months at 85% salary.

For approval by the Board of Governors:

NIMUBONA, Alain-Désiré, Associate Professor, Department of Economics, September 1, 2017 to February 28, 2018, six months at 85% salary.

SHEN, Winny, Assistant Professor, School of Accounting & Finance, September 1, 2017 to February 28, 2018, six months at full salary.



Douglas M. Peers
Dean, Faculty of Arts

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF ENGINEERING TO SENATE

May 15, 2017

For information:

A. APPOINTMENTS

Probationary Term Appointments

MCLACHLIN, Stewart, Assistant Professor, Department of Mechanical & Mechatronics Engineering, July 1, 2017 – June 30, 2020. PhD University of Western Ontario 2013; MEng University of Western Ontario 2008; BEng University of Western Ontario 2006. Dr. McLachlin's field of research is in orthopedic spinal biomechanics. Biomechanics, human assistive robotics, and wearable devices are among the department's key research areas for expansion.

New Definite Term Appointments – full-time

BASHA, Mohamed, Research Associate Professor, Department of Electrical & Computer Engineering, February 21, 2017 – February 20, 2018. PhD University of Waterloo 2007; MSc University of Waterloo 2002; BSc Mansoura University, Mansoura, Egypt 1996. Dr. Basha works in silicon waveguides and phased array antennas. He is being hired as to contribute to the Centre for Intelligent Antennas and Radio Systems (CIARS), headed by Prof. Ali Safavi-Naeini.

Continuing Lecturer Appointment

GROVE, Jason, Lecturer, Department of Chemical Engineering, May 1, 2017. PhD University of Waterloo 2005; MEng University of Oxford (New College), Oxford, UK 2001. Dr. Jason Grove brings with him a wealth of teaching experience from conventional teaching to innovative experiential learning activities. He is also the Outcomes Based Accreditation champion in the Chemical Engineering Department, which will go for the first time through this accreditation process in a couple of years. Finally, thanks to his past experience as engineering consultant, Jason is able to bring real examples to the classrooms, as well as in 4th year capstone projects.

Visiting Appointments

ABDALLA, Mahmoud Abdelrahman Abdelfattah, Scholar, Department of Electrical & Computer Engineering, March 20, 2017 – September 19, 2017.

ISLAM, Md Moinul, Assistant Professor, Department of Electrical & Computer Engineering, March 13, 2017 – December 30, 2017.

LEI, Halibo, Associate Professor, Department of Chemical Engineering, August 1, 2017 – July 31, 2018.

MA, Junhong, Professor, Associate Professor, Department of Chemical Engineering, March 1, 2017 – August 31, 2017.

QIN, YeChen, Scholar, Department of Mechanical & Mechatronics Engineering, June 15, 2017 – June 14, 2018.

SAGHAFIAN, Mohsen, Scholar, Department of Mechanical & Mechatronics Engineering, September 1, 2017 – May 31, 2018.

TANG, Xiaolin, Scholar, Department of Mechanical & Mechatronics Engineering, August 1, 2017 – July 31, 2018.

WEN, Chenyang, Researcher, Department of Mechanical & Mechatronics Engineering, July 1, 2017 – August 31, 2017.

XIE, Yahong, Associate Professor, Department of Chemical Engineering, March 1, 2017 – August 31, 2017.

Visiting Reappointments

ABEDI, Daryoush, Scholar, Department of Chemical Engineering, March 20, 2017 – March 19, 2019.

Special Appointments – Undergraduate Instruction

ARLOS, Maricor Jane, Lecturer, Department of Civil & Environmental Engineering, May 1, 2017 – August 31, 2017.

CHEN, Wei-Ting Scott, Lecturer, Department of Electrical & Computer Engineering, May 1, 2017 – August 31, 2017.

DALGIC, Ozden, Lecturer, Department of Management Sciences, May 1, 2017 – August 31, 2017.

GOORTS, Kevin, Lecturer, Department of Civil & Environmental Engineering, April 1, 2017 – August 31, 2017.

KHANIYEV, Taghi, Lecturer, Department of Management Sciences, May 1, 2017 – August 31, 2017.

MEUNIER, Sarah, Lecturer, Department of Chemical Engineering, May 1, 2017 – August 31, 2017.

MORENO, Carlos, Lecturer, Department of Electrical & Computer Engineering, May 1, 2017 – April 30, 2018.

REHBEIN, Peter, Lecturer, Department of Civil & Environmental Engineering, September 1, 2017 – December 31, 2017.

SAAD, John, Lecturer, Department of Electrical & Computer Engineering, May 1, 2017 – August 31, 2017.

USMAN, Taimur, Lecturer, Department of Civil & Environmental Engineering, May 1, 2017 – August 31, 2017.

Special Reappointments – Undergraduate Instruction

BALESHTA, James, Lecturer, Department of Mechanical & Mechatronics Engineering, January 1, 2017 – April 30, 2017.

WASEF, Albert, Lecturer, Department of Electrical and Computer Engineering, May 1, 2017 – August 31, 2017.

Special Reappointments – Graduate Instruction

ALLARAKHIA, Minna, Lecturer, Department of Management Sciences, May 1, 2017 – August 31, 2017.

SHAH, Muhammad Umair, Lecturer, Department of Management Sciences, May 1, 2017 – August 31, 2017.

Adjunct Appointments – Research

CONLE, Albrecht, Professor, Department of Civil & Environmental Engineering, March 1, 2016 – February 28, 2019.

Adjunct Appointments – Graduate Supervision

RASHEED, Sarbast, Professor, Department of Systems Design Engineering, January 1, 2017 – December 31, 2019.

Adjunct Appointments – Graduate Supervision and Research

TRIVETT, Andrew, Professor, Department of Mechanical & Mechatronics Engineering, January 1, 2017 – December 31, 2019.

B. ADMINISTRATIVE APPOINTMENTS

EVANS, Stephen, Professor, Director of Geological Engineering, Department of Civil & Environmental Engineering, March 1, 2017 – February 28, 2020.

ALREADY APPROVED BY THE BOARD OF GOVERNORS

C. SABBATICAL LEAVES

YANG, En-hui, Professor, Department of Electrical & Computer Engineering, September 1, 2017 – August 31, 2018, twelve months at 85% salary.



J. Richard Culham
Acting Dean, Faculty of Engineering

University of Waterloo
REPORT OF THE DEAN OF ENVIRONMENT TO SENATE
May 15, 2017

FOR INFORMATION

A. APPOINTMENTS

Adjunct Appointments

Graduate Supervision

BEAULIEU, Michel, Associate Professor, School of Environment, Resources and Sustainability, February 15, 2017 to March 31, 2020.

CHAPMAN, Michael, Professor, Department of Geography and Environmental Management, February 1, 2017 to January 31, 2021.

CUKIER, Judith, Associate Professor (Emerita), Department of Geography and Environmental Management, April 1, 2017 to March 31, 2020.

CUMMINGS, Harry, Professor, School of Planning, March 1 2017 to February 28, 2018.

McCARTHY, Lynda, Professor, School of Environment, Resources and Sustainability, February 1, 2017 to December 31, 2020.

Special Appointments

Instruction

LÉTOURNEAU, Marcus, Lecturer, School of Planning, May 1, 2017 to August 31, 2017.

MacDONALD, Patricia, Lecturer, School of Environment, Enterprise and Development, May 1, 2017 to August 31, 2017.

O'CONNELL, Erin, Lecturer, School of Environment, Enterprise and Development, May 1, 2017 to August 31, 2017.

Cross Appointments

McLEVEY, John, Assistant Professor, Department of Knowledge Integration to the Department of Geography and Environmental Management, March 1, 2017 to June 30, 2019.

THISTLETHWAITE, Jason, Assistant Professor, School of Environment, Enterprise and Development to the Department of Geography and Environmental Management, April 1, 2017 to March 31, 2020.

B. ADMINISTRATIVE APPOINTMENT

FRAYNE, Bruce, Director, School of Environment, Enterprise and Development, July 1, 2017 to June 30, 2021.

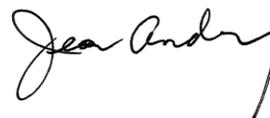
ADMINISTRATIVE REAPPOINTMENT

WOUDSMA, Clarence, Director, School of Planning, July 1, 2017 to June 30, 2020.

C. SABBATICAL LEAVE

For Approval by the Board of Governors

YOUNG, Steven, Associate Professor, School of Environment, Enterprise and Development, September 1, 2017 to August 31, 2018, at 97.5% salary.



Jean Andrey
Dean

University of Waterloo
REPORT OF THE DEAN OF MATHEMATICS TO SENATE
May 15, 2017

FOR INFORMATION

A. APPOINTMENTS (for approval by the Board of Governors)

Tenured

NAMACHCHIVAYA, Sri (BTech, 1979, Indian Institute of Technology; MAsc, 1981; PhD, 1984, both from the University of Waterloo), Professor, Dept. of Applied Mathematics, January 1, 2018. Dr. Sri Namachchivaya is a world-renowned researcher and full professor at the University of Illinois at Urbana-Champaign. He is internationally renowned for his scholarly contributions to the fields of nonlinear systems, random dynamical systems, estimation and filtering theory. He has presented over 150 invited talks, including numerous keynote lectures. Dr. Namachchivaya has also been the recipient of numerous awards and recognitions, including the NSF Presidential Young Investigator Award (1990, President George H. W. Bush), Xerox Award for research by an assistant professor (1989, National award) senior Xerox Award for research by an associate professor (1993, National award), Mathematical Sciences Research Institute (MSRI) Research Professorship (2007) and Russell Severance Springer Distinguished Professorship (2011) both at the University of California, Berkeley.

Probationary-Term Appointments

BÉLIVEAU, Audrey (BSc, 2010; MSc, 2012 both from the Université de Montreal; PhD, 2016, Simon Fraser University), Assistant Professor, Dept. of Statistics and Actuarial Science, January 1, 2018 – June 30, 2021. Dr. Audrey Béliveau is currently a Post-Doctoral Fellow at the University of British Columbia. Her research interests include survey sampling, meta-analysis and applications in ecology and epidemiology. More specifically she has a number of interdisciplinary research collaborations with fisheries biologists. With her interest and experience with applications and her research focus. Dr. Béliveau complements the department's existing strength in biostatistics and greatly expands our scope for ecology related statistical research.

PERKINS, William (BA, 2003, Yale University; PhD, 2011, New York University), Assistant Professor, Dept. of Combinatorics and Optimization, July 1, 2018 – June 30, 2021. Dr. Perkins is currently Birmingham Fellow (equiv. Assistant Professor) at the University of Birmingham, England. His research focuses on Probability, Statistics, Algorithms and Combinatorics. He has worked on a wide variety of problems, including the component structure in random graph processes, computational questions such as the power of “statistical algorithms” and more recently questions related to statistical physics models such as the hard-core model.

SHUM, Park Heng (MMath, 2006, University of Warwick; DPhil, 2012, University of Oxford), Assistant Professor, Dept. of Applied Mathematics, July 1, 2017 – June 30, 2020. Dr. Henry Shum held a prestigious Alan Tayler scholarship during his PhD studies at Oxford University and was a postdoctoral researcher at Oxford. He is currently a postdoctoral researcher at the University of Pittsburgh. Shum has a solid research record and is an enthusiastic and very effective speaker. His research interests are broad, ranging from mathematical modeling of micro-organism motility, elasto-hydrodynamics, advection-diffusion-reaction systems, pattern formation to electrokinetic phenomena.

Visiting Appointments

HERZBERG, Amir (Bar-Ilan University), Professor, David R. Cheriton School of Computer Science, October 1, 2017 – September 30, 2018.

LUO, Mengzhuo (Guilin University of Technology), Research Associate, Dept. of Applied Mathematics, September 1, 2017 – August 31, 2018.

NGUYEN, Van Thinh (Seoul National University), Researcher, Dept. of Applied Mathematics, July 1, 2017 – August 31, 2018.

SALVY, Bruno (École normale supérieure de Lyon), Associate Professor, David R. Cheriton School of Computer Science, May 3, 2017 – June 30, 2019.

Adjunct Reappointments

Instructor

HAQUE, Sajed Lecturer, David R. Cheriton School of Computer Science, May 1, 2017 – August 31, 2017.

ALREFAI, Ahmad Salam, Lecturer, David R. Cheriton School of Computer Science, May 1, 2017 – August 31, 2017.

SHARMA, Puneet, Lecturer, Dept. of Applied Mathematics, May 1, 2017 – August 31, 2017.

SMITH, Taylor, Lecturer, David R. Cheriton School of Computer Science, May 1, 2017 – August 31, 2017.

ZILLE HUMA, Kamal, Lecturer, David R. Cheriton School of Computer Science, May 1, 2017 – August 31, 2017.

Cross Reappointments

HEWITT, Conrad (Associate Professor, Office of the Dean), in Physics and Astronomy, January 1, 2017 – December 31, 2017.

Postdoctoral Fellows appointed as Part-time Lecturers

AHMADZADEGAN, Aida, Dept. of Applied Mathematics, October 1, 2017 – September 30, 2018.

BAILEY, Michael, Dept. of Pure Mathematics, September 1, 2017 – August 31, 2018.

COUDRON, Matthew, Dept. of Combinatorics & Optimization, September 8, 2017 – September 7, 2019.

GAO, Niushan, Dept. of Statistics and Actuarial Science, September 1, 2017 – August 31, 2018.

HORVATH, Tamas, Dept. of Applied Mathematics, September 1, 2017 – August 31, 2018.

WANG, Fei, Dept. of Combinatorics and Optimization, March 1, 2017 – August 31, 2017.

ZHAO, Yuqian, Dept. of Statistics and Actuarial Science, January 1, 2018 – December 31, 2018.

B. ADMINISTRATIVE REAPPOINTMENTS

FUKASAWA, Ricardo, Associate Chair for Undergraduate Studies, Dept. of Combinatorics and Optimization, July 1, 2017 – June 30, 2019.

C. SABBATICALS (for approval by the Board of Governors)

CHENOURI, Shojaeddin, Associate Professor, Dept. of Statistics and Actuarial Science, September 1, 2017 – August 31, 2018 with 100% salary.



Stephen M. Watt
Dean

UNIVERSITY OF WATERLOO
REPORT OF THE DEAN OF SCIENCE TO SENATE
May 15, 2017

For information:

A. APPOINTMENTS

New Definite Term – Full-Time

DELANEY, Keith B., Lecturer, Department of Earth and Environmental Sciences, May 1, 2017 to April 30, 2018. [B.A., University of Guelph (2003); MS, University of Waterloo (2006); Ph.D., University of Waterloo (2014).] The Department of Earth and Environmental Sciences is delighted welcome Dr. Keith Delaney for a 1-year, definite term as Lecturer. Over the last 3 years, Dr. Delaney has worked as a Post Doctoral Fellow and teaching sessional within the Department and his skills are very wide ranging including classical geology, environmental geology, engineering geology, hydrology and natural hazards. He is capable of teaching both the classroom and laboratory components of all of our introductory courses and many of our second and third year courses. He is an exceptionally talented and well-rated instructor and provides the Department with teaching versatility during sabbatical leaves. He is able to assist in expansion of our curriculum offerings and is interested and experienced in the development of on-line courses, which we are currently developing.

Adjunct Appointments

Graduate Supervision

MACHAN, Carolyn M., Assistant Professor, School of Optometry and Vision Science, March 1, 2017 to February 29, 2020.

ROGERS, Michael, Associate Professor, School of Pharmacy, March 1, 2017 to February 29, 2020.

Other

INNOCENTE, Steve, Associate Professor, Department of Chemistry, March 1, 2017 to August 31, 2020.

Graduate Supervision and Research

CRAIG, Jennifer P., Associate Professor, School of Optometry and Vision Science, April 1, 2017 to March 31, 2020.

Adjunct Reappointments

Graduate Supervision

BARKER, James, (Professor Emeritus) Professor, Department of Earth and Environmental Sciences, January 1, 2017 to December 31, 2019.

GOULD, William D., Professor, Department of Earth and Environmental Sciences, February 1, 2017 to January 31, 2020.

VALLIS, Lori A., Associate Professor, School of Optometry and Vision Science, April 1, 2017 to March 31, 2020.

Other

THIESSEN, Jake J., Professor, School of Pharmacy, April 1, 2017 to March 31, 2020.

Research and Other

BIRKS, Jean, Assistant Professor, Department of Biology, April 1, 2017 to March 31, 2020.

MUNKITTRICK, Kelly R., Professor, Department of Biology, March 1, 2017 to February 29, 2020.

Cross Appointment

HEWITT, Conrad, Associate Professor, Centre for Education in Mathematics and Computing, cross appointed to Department of Physics and Astronomy, January 1, 2017 to December 31, 2020.

Cross Reappointment

CAMPBELL, Melanie, Professor, Department of Physics and Astronomy, cross appointed to School of Optometry and Vision Science, June 1, 2017 to May 31, 2020.

Change in Appointment

WU, Lingling, Assistant Professor, Department of Earth and Environmental Sciences, second probationary appointment extended one year in accordance with Policy 76 due to maternity leave, new end date June 30, 2019.

Special Appointment

Undergraduate Instruction

PATEL, Chintankumar, Clinical Lecturer, School of Pharmacy, May 1, 2017 to December 31, 2017.

B. ADMINISTRATIVE APPOINTMENT

EVANS, Stephen, Director, Geological Engineering Program, joint between the Faculties of Science and Engineering, March 1, 2017 to February 29, 2020.

FOR APPROVAL BY THE BOARD OF GOVERNORS

C. SABBATICAL LEAVE

BLAY, Jonathan, Professor, School of Pharmacy, January 1, 2018 to June 30, 2018, 100% salary arrangement.

STRICKLAND, Donna, Associate Professor, Department of Physics and Astronomy, July 1, 2017 to December 31, 2017, 100% salary arrangement.

A handwritten signature in black ink, appearing to read 'R.P. Lemieux', with a long horizontal line extending to the right.

R.P. Lemieux
Dean

University of Waterloo
SENATE
Report to Senate
15 May 2017

FOR APPROVAL

Senate Committee and Board of Governors Appointments

Motion: To approve the following appointments:

- **Senate Executive Committee:** Robert Bruce (president, Graduate Student Association) as graduate student representative, term 1 May 2017 to 30 April 2018.
- **Senate Undergraduate Council:** Russ Tupling as faculty representative (applied health sciences), term 1 May 2017 to 30 April 2019.
- **University Committee on Student Appeals:** John Mielke as faculty representative (applied health sciences), term 1 May 2017 to 30 April 2019.
- **Board of Governors:** Robert Bruce, (president, Graduate Student Association) as graduate student representative on the Board of Governors, term 1 May 2017 to 30 April 2018.

University of Waterloo
SENATE GRADUATE & RESEARCH COUNCIL
Report to Senate
8 May 2017

Senate Graduate & Research Council met on 10 April 2017, and considered one proposal to establish a new research centre, two major program modifications and one plan inactivation. Council agreed to forward the following items to Senate for approval. Council recommends these items be included in the regular agenda.

Further details are available at: <https://uwaterloo.ca/secretariat/committees-and-councils/senate-graduate-research-council>

FOR APPROVAL

NEW RESEARCH CENTRE

Waterloo Centre for Microbial Research

1. **Motion:** To approve the establishment of the Waterloo Centre for Microbial Research, as described in attachment 1.

Rationale: The Waterloo Centre for Microbial Research will provide a structure for collaborative activities that involve microbial research on campus, and will also promote national and international research initiatives.

NEW ACADEMIC PLANS

Faculty of Applied Health Sciences
School of Public Health and Health Systems

2. **Motion:** To approve a new plan, the Collaborative Master of Science Program in Public Health and Health Systems – Water within the School of Public Health and Health Systems, effective 1 September 2017. (underline = new text)

Current Graduate Studies Academic Calendar Content:	Proposed Graduate Studies Academic Calendar Content:
<i>No current content</i>	<p><u>Master of Science (MSc) in Public Health and Health Systems – Water</u></p> <p><u>Program information</u></p> <ul style="list-style-type: none"> • <u>Admit term(s)</u> <ul style="list-style-type: none"> ○ <u>Fall</u> • <u>Delivery mode</u> <ul style="list-style-type: none"> ○ <u>On-campus</u> • <u>Program type</u> <ul style="list-style-type: none"> ○ <u>Collaborative</u> ○ <u>Master's</u> ○ <u>Research</u> • <u>Registration option(s)</u> <ul style="list-style-type: none"> ○ <u>Full-time</u> ○ <u>Part-time</u>

	<ul style="list-style-type: none">• <u>Study option(s)</u><ul style="list-style-type: none">○ <u>Thesis</u> <p><u>Admission Requirements</u></p> <ul style="list-style-type: none">• <u>Minimum requirements</u><ul style="list-style-type: none">○ <u>Successful completion of a four-year Honours Bachelor's degree (or equivalent) with a minimum 75% average. The Bachelor's degree will normally be in the biological sciences, behavioural health, health, public health, or social sciences.</u>○ <u>A letter indicating reasons for pursuing graduate studies.</u>○ <u>For students applying to the School of Public Health and Health Systems (SPHHS), the undergraduate experience including coursework in one or more of the behavioural, biological, developmental, health, or social sciences is advantageous, given the multidisciplinary nature of the program. Students should also have a suitable background in research design and statistics to meet prerequisite standards for all graduate level courses.</u>• <u>Application materials</u><ul style="list-style-type: none">○ <u>Résumé</u>○ <u>Supplementary information form</u>○ <u>Transcript(s)</u>○ <u>Writing sample</u><ul style="list-style-type: none">▪ <u>Students must submit one copy of a term paper written during the last two years of their undergraduate education.</u>• <u>References</u><ul style="list-style-type: none">○ <u>Number of references: 2</u>○ <u>Type of references: preferably from faculty members</u>• <u>English language proficiency (ELP) (if applicable)</u>
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	<p><u>Degree Requirements</u></p> <ul style="list-style-type: none">• <u>Thesis option:</u><ul style="list-style-type: none">○ <u>Graduate Academic Integrity Module (Graduate AIM)</u>• <u>Courses</u><ul style="list-style-type: none">○ <u>The normal minimum requirement will be 5 required one-term (0.50 unit weight) graduate courses (or approved equivalents):</u><ul style="list-style-type: none">▪ <u>Required courses:</u><ul style="list-style-type: none">• <u>HLTH 601 Lifespan Approaches to Disease Prevention and Health Promotion</u>• <u>WATER 601 Integrated Water Management</u>• <u>WATER 602 Integrated Water Management Project</u>▪ <u>The Water courses are designed to provide foundational multidisciplinary knowledge and experiences to complement the student's specialized courses and water-related research.</u>▪ <u>2 of the following:</u><ul style="list-style-type: none">• <u>HLTH 605 Regression Models (or equivalent) or HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data*</u>• <u>AHS 600 Foundations of Qualitative Research Methodologies</u>
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	<p>(or equivalent) or <u>HLTH 704</u> <u>Advanced</u> <u>Qualitative</u> <u>Methods for</u> <u>Health Research*</u></p> <ul style="list-style-type: none">• <u>HLTH 606</u> <u>Epidemiological</u> <u>Methods (or</u> <u>equivalent) or</u> <u>HLTH 706</u> <u>Advanced</u> <u>Epidemiological</u> <u>Methods*</u>• <u>HLTH 619</u> <u>Fundamental</u> <u>Research</u> <u>Methods in</u> <u>Health</u> <u>Informatics (or</u> <u>equivalent) or</u> <u>HLTH 719</u> <u>Advanced</u> <u>Research</u> <u>Methods in</u> <u>Health</u> <u>Informatics*</u>• <u>*It is highly</u> <u>recommended</u> <u>that MSc students</u> <u>with a strong</u> <u>background or</u> <u>previous training</u> <u>in one of these</u> <u>areas take the</u> <u>700-level</u> <u>equivalent in</u> <u>place of the 600-</u> <u>level course</u> <u>requirement (e.g.,</u> <u>those with a</u> <u>strong statistical</u> <u>background may</u> <u>opt to take HLTH</u> <u>705). Such</u> <u>decisions should</u> <u>be made in</u> <u>collaboration</u> <u>with the</u> <u>supervisor.</u> <p>○ <u>At a minimum, students must</u> <u>obtain an average of 75% or</u></p>
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	<p><u>higher in aggregate on the courses presented in fulfilment of the degree requirements. Grades on all courses presented to fulfill the degree requirements must be 70% or higher. A grade below 70% in any course or failing to maintain an average of 75% will necessitate a review of the student's status by the School and may result in a student being required to complete additional coursework or being required to withdraw from the program. The School reserves the right to stipulate additional coursework if it is necessary for the student's preparation.</u></p> <ul style="list-style-type: none">• <u>Link(s) to courses</u><ul style="list-style-type: none">○ <u>Health Studies (HLTH) courses</u>○ <u>Graduate course search</u>• <u>Academic Integrity Workshop</u>• <u>Graduate Studies Seminar 1</u><ul style="list-style-type: none">○ <u>The Fall term segment of the seminar will provide a weekly opportunity for MSc students in their first term of study to attend research seminars led by SPHHS faculty members and senior graduate students. In addition, opportunities will be arranged for students to participate in workshops relating to research methods, presentation skills, grantsmanship, or to attend guest lectures delivered by scholars from outside SPHHS.</u>• <u>Graduate Studies Seminar 2</u><ul style="list-style-type: none">○ <u>The Winter term segment of the seminar will provide a weekly opportunity for MSc students in their second term of study to participate in a journal club led by members of their cohort. Each student will be responsible for selecting one article, providing an electronic copy to the instructors to allow for placement on the</u>
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	<p><u>course website, and then leading discussion around the article's purpose, content, strengths, and limitations. In addition, students will be expected to read through the articles chosen by their colleagues, and actively participate in the discussion held each week.</u></p> <ul style="list-style-type: none"> • <u>Master's Thesis</u> <ul style="list-style-type: none"> ○ <u>For the Master's thesis, an approved topic is required and will be defended in an oral examination. The MSc thesis committee consists of a minimum of supervisor, appointed in the School, and at least one other member of the School of Public Health and Health Systems faculty. One committee member may be from outside the School (whether from within the university or from another university). The composition of the Thesis Advisory Committee must be approved by the School's Graduate Committee.</u>
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Rationale: The Collaborative Water Program was established at the University of Waterloo to promote interdisciplinary research and learning in the area of water. The program is currently jointly delivered by ten departments and schools across five academic faculties, with the Water Institute providing program support and co-ordination. A number of SPHHS faculty members currently participate in the program and it is expected that new and current graduate students will be interested in the Master of Science program.

3. **Motion:** To approve a new plan, the Collaborative PhD Program in Public Health and Health Systems – Water within the School, effective 1 September 2017.
 (underline = new text)

Current Graduate Studies Academic Calendar Content:	Proposed Graduate Studies Academic Calendar Content:
<i>No current content</i>	<p><u>Doctor of Philosophy (PhD) in Public Health and Health Systems – Water</u></p> <p><u>Program information</u></p> <ul style="list-style-type: none"> • <u>Admit term(s)</u> <ul style="list-style-type: none"> ○ <u>Fall</u> • <u>Delivery mode</u> <ul style="list-style-type: none"> ○ <u>On-campus</u>

	<ul style="list-style-type: none">• <u>Program type</u><ul style="list-style-type: none">○ <u>Collaborative</u>○ <u>Doctoral</u>○ <u>Research</u>• <u>Registration option(s)</u><ul style="list-style-type: none">○ <u>Full-time</u>○ <u>Part-time</u>• <u>Study option(s)</u><ul style="list-style-type: none">○ <u>Thesis</u> <p><u>Admission Requirements</u></p> <ul style="list-style-type: none">• <u>Minimum requirements</u><ul style="list-style-type: none">○ <u>Students applying to the program are required to complete a Master of Science (MSc) degree (or its equivalent) with content related to health, public health, health systems, or areas relevant to the impacts of water on human health with a minimum 75% average in master's level coursework.</u>○ <u>Completion of a master's thesis.</u>○ <u>Submit a letter indicating reasons for pursuing graduate studies and a written statement outlining research interests.</u>• <u>Application materials</u><ul style="list-style-type: none">○ <u>Résumé/Curriculum vitae</u>○ <u>Supplementary information form</u>○ <u>Transcript(s)</u>○ <u>Writing sample</u><ul style="list-style-type: none">▪ <u>Students must submit a copy of previous academic work, such as copies of preprints, reprints, or master's thesis, or other evidence of written scholarly work.</u>• <u>References</u><ul style="list-style-type: none">○ <u>Number of references: 3</u>○ <u>Type of references: academic</u>• <u>English language proficiency (ELP) (if applicable)</u>
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	<p><u>Degree Requirements</u></p> <ul style="list-style-type: none">• <u>Thesis option:</u>• <u>Graduate Academic Integrity Module (Graduate AIM)</u>• <u>Courses</u><ul style="list-style-type: none">○ <u>9 one-term graduate courses beyond the Bachelor's degree, including at least 4 courses beyond the Master's degree, is the normal minimum requirement.</u>○ <u>Required courses (4)</u><ul style="list-style-type: none">▪ <u>HTLH 701 Interdisciplinary Seminar in Public Health and Health Systems</u>▪ <u>WATER 601 Integrated Water Management</u>▪ <u>WATER 602 Integrated Water Management Project</u>○ <u>The Water courses are designed to provide foundational multidisciplinary knowledge and experiences to complement the student's specialized courses and water-related research.</u>○ <u>1 of the following required methods courses:</u><ul style="list-style-type: none">▪ <u>HLTH 704 Advanced Qualitative Methods for Health Research</u>▪ <u>HLTH 705 Advanced Statistical Methods for Analyzing Public Health and Health Systems Data</u>▪ <u>HLTH 706 Advanced Epidemiological Methods</u>▪ <u>HLTH 719 Advanced Research Methods in Health Informatics</u>○ <u>At a minimum, students must obtain an average of 75% or higher in aggregate on the courses presented in fulfilment of the degree requirements. Grades on all courses</u>
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	<p><u>presented to fulfill the degree requirements must be 70% or higher. A grade below 70% in any course or failing to maintain an average of 75% will necessitate a review of the student's status by the School and may result in a student being required to complete additional coursework or being required to withdraw from the program. The School reserves the right to stipulate additional coursework if it is necessary for the student's preparation.</u></p> <ul style="list-style-type: none">• <u>Link(s) to courses</u><ul style="list-style-type: none">○ <u>Health Studies (HLTH) courses</u>○ <u>Graduate course search</u>• <u>Academic Integrity Workshop</u>• <u>PhD Comprehensive Examination</u><ul style="list-style-type: none">○ <u>Candidates must complete a PhD Comprehensive Examination within seven terms of first registration. The comprehensive examination requirement is based on providing written responses to three questions and successfully completing an oral defense. The purpose of the comprehensive examination is to test the breadth and depth of the candidate's comprehension of the methodological and theoretical aspects of their field of study. The process is designed to enable candidates to acquire a solid grounding in their core area of public health research that will provide a foundation for undertaking dissertation research. The examination will also test the candidate's ability to critically evaluate the literature and synthesize information from sources to identify knowledge gaps and recommend solutions.</u>• <u>PhD Thesis</u><ul style="list-style-type: none">○ <u>A PhD thesis on an approved topic is required, which is to be defended in an oral examination. The research</u>
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	<p><u>is to be conducted under the supervision of the student's supervisor and the advisory committee. The PhD thesis advisory committee consists of at least three members, with the supervisor and at least one other committee member being faculty from within the School of Public Health and Health Systems. The proposal will be defended before the thesis committee; however, upon completion of the thesis, the final document will be defended before a five-person Examination Board.</u></p>
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Rationale: The Collaborative Water Program was established at the University of Waterloo to promote interdisciplinary research and learning in the area of water. The program is currently jointly delivered by ten departments and schools across five academic faculties, with the Water Institute providing program support and co-ordination. A number of SPHHS faculty members currently participate in the program and it is expected that new and current graduate students will be interested in the Master of Science program.

PLAN INACTIVATION

Faculty of Environment School of Environment, Enterprise and Development

4. **Motion:** To approve the inactivation of the Social Innovation Graduate Diploma, effective 1 May 2017.

Rationale: The graduate diploma in social innovation was approved in May 2011 by the Ontario Council on Graduate Studies. The objective of the program was to educate professional participants from the public, private and social sectors, on the concepts and theories that frame established and emerging ideas related to social innovation. The design and delivery was led by the Waterloo Institute for Social Innovation and Resilience and faculty associated with the Social Innovation generation national project. The program was housed in the School of Environment, Enterprise and Development (SEED).

The program was designed to run for three years with funding support from the J.W. McConnell Family Foundation. The funding provided by the McConnell Foundation supported the initial design phase in 2010 (\$133,000) and the implementation of the program, first year - \$764,750, second year - \$668,150 and third year - \$652,050. The funding enabled the program to recruit widely across the country and to provide financial support for students enrolled in the program. The financial support also enabled the program to recruit leading social innovation practitioners to act as mentors for the students.

The inaugural class launched in September 2011 with a class of 33 students (18 not for profit (NFP), 10 government and 5 private). In the second year, the program admitted 30 students (15 NFP, 10 government and 5 private) and the third and final year in September 2013, we admitted 33 students (21 NFP, 5 government, and 7 private).

As the intent of the program was to provide training and mentoring for emerging leaders working in critical problem domains in Canada, the goal was to facilitate a network across sectors of professionals

equipped to transform these problem domains and build social resilience. It was felt that this could best be achieved through a focused three-year window.

Much of the curriculum developed with the Social Innovation Graduate Diploma is in the process of being diffused in other SEED and Faculty of Environment programs, and has been developed for some online delivery formats. There remains a string research focus in these areas through the continued work of the Waterloo Institute for Social Innovation and Resilience.

The program has been closed to admissions since September 2014, and it is now thought to be appropriate to close the program effective Spring 2017. This decision was taken in consultation with the McConnell Foundation and the key faculty and staff involved in the program.

/ar Jeff Casello
Associate Provost, Graduate Studies

George Dixon
Vice President, University Research



UNIVERSITY OF WATERLOO
FACULTY OF SCIENCE

Office of the Dean

TO: George Dixon, Vice-President, University Research

FROM: Bob Lemieux, Dean of Science

A handwritten signature in black ink, appearing to read 'Bob Lemieux'.

DATE: March 10, 2017

RE: Waterloo Centre for Microbial Research

I write to confirm my enthusiasm for the establishment of Waterloo Centre for Microbial Research (WCMR). The Faculty of Science will contribute \$41,000 per year for five years to WCMR provided that it receives Senate approval.

WCMR will provide a structure for collaborative activities that involve microbial research on campus, and will also promote national and international research initiatives. I am pleased that so many researchers from across campus have agreed to participate as founding members.

MEMORANDUM

To: George Dixon, Vice President, University Research

From: Anwar Hasan, Assoc. Dean, Research & Ext. Partnerships, Faculty of Engineering

cc: Trevor Charles, Professor, Department of Biology

Date: March 8, 2017

Re: Waterloo Centre for Microbial Research

On behalf of the Faculty of Engineering, I am writing to express our enthusiastic support for the establishment of Waterloo Centre for Microbial Research (WCMR). I am also pleased to inform that the Faculty will contribute \$17K/year for five years to WCMR provided that that it receives Senate's approval.

WCMR would provide a framework for collaborative microbiology research on campus and I am pleased that several Engineering professors have agreed to join the centre as founding members.

I would like to take this opportunity to wish WCMR success in fulfilling its mission.

Sincerely,



Anwar Hasan



March 21, 2017

To Whom It May Concern:

I am pleased to offer the support of the Faculty of Mathematics for the proposed Waterloo Center for Microbial Research (WCMR). This interdisciplinary centre will provide valuable support for the research groups of Dr. Dan Brown (Computer Science) and Dr. Brian Ingalls & Dr. Matt Scott (Applied Math), among others. Dr. Brown's research includes analysis of bacterial evolution, including phylogenetic tree discovery and extensions to tree models to handle bacterial gene exchange. Because his research is computational, it benefits the work to be able to collaborate with active microbiology labs such as those connected to this proposal.

Drs. Scott and Ingalls are directly engaged in microbial research. Their experimental lab in the Applied Mathematics department is equipped to carry out manipulation of microbial genetics and characterization of features of suspended microbial populations. They are investigating regulation of bacterial physiology, mechanisms of antibiotic resistance and strategies to suppress resistance in pathogen populations, and stochastic variability in isogenic populations. This work will act as a focus and a catalyst for work with other researchers who will be active in the WCMR. Moreover, the proposed WCMR experimental facilities will allow extension of their studies to longer temporal scales, wider population variability, and more realistic population environments.

Interdisciplinary centres provide valuable avenues to enhance the University's research profile through increased inter-faculty collaborations. The WCMR presents an opportunity to capitalize on existing research strengths and expand on current collaborative efforts. The proposal has the Math Faculty's strong support.

Sincerely,



Stephen M. Watt
Dean, Faculty of Mathematics



Subject: RE: Request for support -- proposed Waterloo Centre for Microbial Research

From: Jean Andrey <jandrey@uwaterloo.ca>

Date: 2017-03-10 05:28 PM

To: Trevor Charles <trevor.charles@uwaterloo.ca>

CC: Maren Oelbermann <moelbermann@uwaterloo.ca>, Tara Thompson <tara.thompson@uwaterloo.ca>

Hi Trevor,

The Faculty of Environment is pleased to commit \$8500 annually for each of the next five years. Thanks for your leadership on this initiative.

Jean Andrey

From: Trevor Charles [mailto:trevor.charles@uwaterloo.ca]

Sent: Tuesday, March 7, 2017 2:21 PM

To: Jean Andrey <jandrey@uwaterloo.ca>

Cc: Maren Oelbermann <moelbermann@uwaterloo.ca>

Subject: Request for support -- proposed Waterloo Centre for Microbial Research

Dear Jean:

As we have discussed, a number of researchers on campus whose programs include some aspects of - or are related to - microbiology have developed a vision for *Waterloo Centre for Microbial Research*. This new entity would provide a framework for collaborative microbiology research on campus. I have attached a near final draft of the proposal that will be presented to SGRC. We are requesting each of the faculties with members in WCMR to contribute towards the initial \$75K per year funding (for 5 years) in proportion to membership, as follows.

Applied Health Science \$3,500

Engineering \$17,000

Environment \$8,500***

Mathematics \$5,000

Science \$41,000

Total \$75,000

If you agree, and are supportive, it would be very helpful if you could provide a brief memo to this effect, that will accompany our submission to SGRC.

I would be happy to answer any questions or consider any suggestions that you might have.

With appreciation,

Trevor

Trevor C. Charles, Ph.D.
Professor, Department of Biology
University of Waterloo

Request for support -- proposed Waterloo Centre for Microbial Research

James Rush



To: Trevor Charles

Cc: Richard Staines

Inbox

March 27, 2017 10:30

Hi Trevor,

Confirming AHS support for this initiative at the level you indicate; \$.3.5 k/yr for five years.

I am copying Richard Staines on this email, for internal coordination with the AHS researchers and for any follow up necessary for the application to SGRC.

All the best with this initiative,

Jim

James W.E. Rush, PhD
Professor and Dean
Faculty of Applied Health Sciences
University of Waterloo
200 University Ave. W.
Waterloo, ON
CANADA N2L3G1
phone: (519) 888-4567, ext. 32126
e-mail: jwerush@uwaterloo.ca

Proposal to Establish

The Waterloo Centre for Microbial Research
(WCMR)

at the

University of Waterloo

March 29, 2017

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1. Name

The Waterloo Centre for Microbial Research (WCMR)

2. Overview

2.1 Rationale and Background

By virtue of their ubiquity, metabolism, and myriad roles in catalyzing critical biogeochemical cycles, microbes are essential keystone players that maintain the productivity and health of terrestrial, aquatic, and host-associated environments. In addition, microorganisms are major sources of drugs, enzymes, and processes related to human health and disease. Despite decades of study, the vast majority of microbial species that exist within Earth's ecosystems, including those associated with engineered environments and the bodies of multicellular organisms (e.g., "the human microbiome"), remain completely unknown. In addition, many ecosystems are becoming increasingly threatened due to anthropogenic activities, with enormous implications for food and water security. At this critical time of global change, microbes may be used to monitor and mitigate these changes, serving as both canaries in the coalmine and ecosystem engineers for habitat restoration.

The Waterloo Centre for Microbial Research (WCMR) at the University of Waterloo will combine interdisciplinary research and academic programs that explore and exploit microbial communities and their collective genomic potential within Earth's myriad habitats. Thus, the proposed Centre will be named for the study of microbes ("microbial" refers to eukaryotes, bacteria, archaea, and viruses), which includes analyses of their biomarkers (e.g., DNA, RNA, proteins, metabolites) and studies of the role of microbes in natural or engineered habitats. As such, the WCMR will be home to all "microbiome" research on campus, which focuses on microbial communities and their shared metagenomic (i.e., community genome) contributions. The WCMR will bring together shared computational and multi-omic infrastructure and methodology, with research themes and leadership spanning microbiology, genomics, computational biology, bioinformatics, earth science, environment and ecology, and engineering. Importantly, the WCMR will support coordinated interdisciplinary microbiome research spanning the full spectrum from basic research discovery to the application of microorganisms to solve problems of economic and environmental impact.

2.2 Mission

The WCMR will unify, catalyze, and promote multidisciplinary research at the University of Waterloo that explores and exploits microbes.

Under this mission, the broad goal of the WCMR will be to help leverage cutting-edge molecular and computational tools to better understand Earth's microbial biodiversity, its relation to ecosystem function, and how manipulating microbes and their communities can benefit humans through novel or improved biotechnology and industrial applications. In addition, WCMR has specific microbiology-related goals for research, partnership, and reputation strengthening.

The Centre's *research* goals:

1. Facilitate fundamental and applied research
2. Catalyze and foster collaborative partnerships
3. Enrich and support interdisciplinary research training of highly qualified personnel

The Centre's *partnership* goals:

4. Recognize and foster collaborations among researchers
5. Facilitate partnerships between students, researchers, and external partners

The Centre's *reputation-strengthening* goals are:

1. Increase the visibility and relevance of microbiology to the University of Waterloo
2. Establish the University of Waterloo as a world leader in microbial sciences

In order to accomplish these goals and remain committed to its Mission, the WCMR will formalize, establish, facilitate, and promote research and education in the application of microbiology principles and techniques to environmental, industrial, and human health challenges. Benefitting from coordination and shared infrastructure, WCMR members will be engaged in research and interdisciplinary collaborations in which microbes, as part of aquatic, terrestrial, host-associated, and engineered environments, are explored through computational analysis of sequence data, identification of constituent species, annotation and identification of novel molecular activities, development of synthetic biology applications, engineering of microbial processes for industrial applications, and participation in international sharing and standardization of big data.

3. Constitution

Waterloo Centre for Microbial Research

University of Waterloo

STRUCTURE AND CONSTITUTION

Mission of WCMR

The Waterloo Centre for Microbial Research (WCMR) at the University of Waterloo was formed in 2017 to promote research and education in the application of microbiology principles and techniques to address environmental, industrial, and human health challenges. The WCMR promotes synergy among its researchers, provides efficient access to shared central services, such as equipment and technical support for research, and serves as a focal point for research interactions with industry, government, biomedical, and other external organizations.

3.1 Membership in WCMR

There are two types of academic memberships in WCMR, *Regular Members* and *Student Members*. Membership as Regular Members is open and will be granted to faculty members in the Faculties of Science, Engineering, Environment, Mathematics, and Applied Health Sciences who have research interests related to microbiology. Membership of faculty members outside of these Faculties is encouraged strongly, and these memberships will be granted by approval of the Director or one of the Associate Directors. Again, these memberships are highly encouraged and expected to be virtually automatic. Student Memberships are also highly encouraged and will be granted upon the endorsement of a Regular Member of the WCMR.

3.2 Obligations of Membership and Financial Support

In order to launch WCMR, the Centre will be supported by seed funds requested from the Deans of Science, Engineering, Environment, Mathematics, and Applied Health Sciences, according to relative levels of membership in the Centre. After five years, the goal will be that seed funding be decreased because of indirect support by corporate partners and associates and service fees associated with shared infrastructure. In the first five years, indirect support is seen as general income to WCMR from sources such as corporate associates and partners, and other activities promoted by WCMR.

There are three other forms of WCMR membership. *Institutional Associates* are representatives of entities such as professional schools, research institutes, and government bodies. *Corporate Associates* are firms or agencies active in the research, development, or application of WCMR research and, for a nominal per year fee (established by the Board of Directors), obtain notices of seminars, VIP invitations to research symposia, and research results updates. A third category recognizes *Key Partners* who are noted for their extraordinary contribution to the Centre in one

or a combination of financial support, facility support, or educational support. Key Partners receive similar Centre services as institutional and corporate partners but may receive special mention on the WCMR website or advertising materials.

3.3 Role of Groups

Synergy is the major motivating factor for WCMR. Intellectual synergy is facilitated by the open individual membership in WCMR and its promotion of a healthy research environment. Part of this process is the initiation of research collaborations of a transitory nature, where research synergy extends over limited time frames such as the conduct of a single project or the creation of one research paper. In other circumstances, the “organizational synergy” required to acquire and manage laboratories with large specialized requirements for hardware and technical support results in the emergence of more formal entities such as research clusters.

The mandate of WCMR is admittedly broad and as such there is a need for research groups in specific topic areas. A formal entity within WCMR is possible for groups primarily concerned with research in a specific topic area, wishing to have formal recognition and designation of such. Such groups are called **Federated Groups of WCMR**. This status is conferred by decision of the Board of Directors on a three-year renewable basis.

There is a clear need to coordinate the activities and interactions of research clusters, as formal entities, in areas such as the cooperative acquisition, administration, and central facility support. In this way, WCMR can provide efficient access to many services by eliminating duplication. Such shared services might be document preparation, report distribution, advice on grant applications and proposals, and a public relations interface both on and off the campus.

WCMR should be able to provide such services in a more cost-effective way than could be achieved through fragmented local development. Viewed in this way, the relations between research groups within partnered Faculties and WCMR may be as close or as distant as seems appropriate to the group concerned. The federation of the groups with WCMR and individual membership in WCMR are separate issues.

In its current conception, the Centre is not expected to provide seed research funding to its members, but rather to facilitate members in obtaining funding from other sources. Should the Centre reach a point where it can offer funding or grants to its members, a proposal process will be established whereby members apply formally for funding and proposals are reviewed by a selection committee.

Non-federated research groups within the University should have access to WCMR services or facilities on a fee-for-service basis, negotiable with the Director of WCMR and the appropriate WCMR researchers where relevant.

3.4 Governance

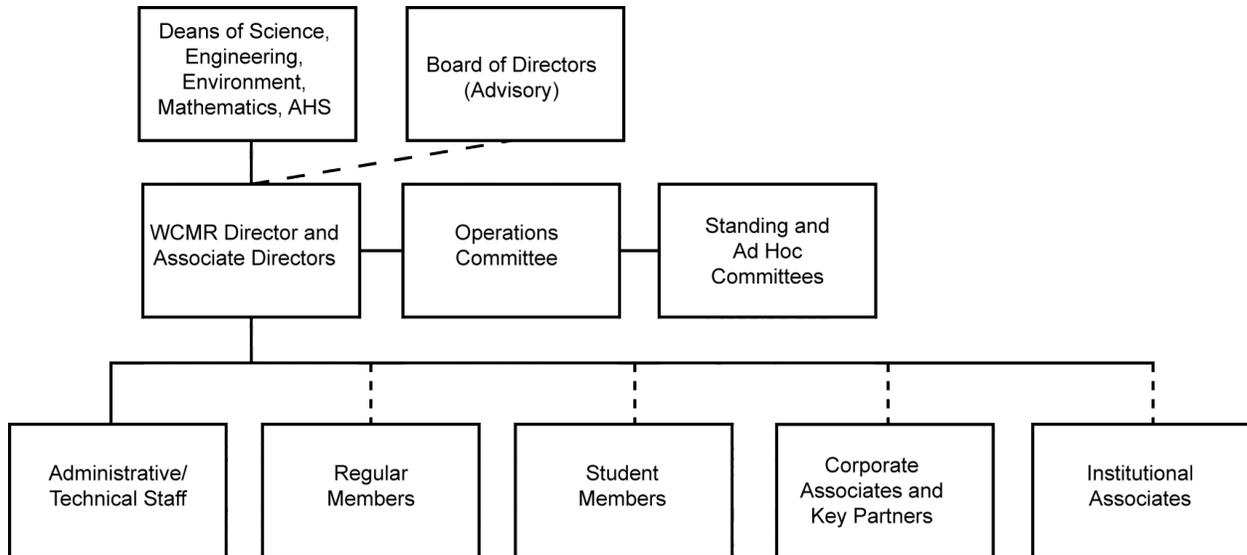


Figure 1. WCMR Administrative Structure

The Board of Directors decides on policy and matters such as new members, new groups, and core facility instrument acquisitions and management. Only the WCMR Board of Directors may propose amendments to this Constitution. A two-thirds majority vote by the WCMR membership is required to ratify amendments to the constitution.

The composition of the Board of Directors is:

- Dean of Science or a delegate
- Dean of Engineering or a delegate
- Dean of Environment or a delegate
- Dean of Mathematics or a delegate
- Dean of Applied Health Sciences or a delegate
- Director of WCMR
- Director of Centre for Bioengineering and Biotechnology (CBB)
- Associate Directors (2)
- Theme leads from Science, Engineering, Environment, Mathematics, AHS.
- Three representatives from the WCMR Key Partners, Corporate Associates, or Institutional Associates
- Three representatives from the regular membership
- Three representatives from the student membership

A member of the Board of Directors will be appointed Chair by the Vice President Academic. Board meetings will be announced at least one month in advance with an agenda indicating all decision items and background material.

The Director of the WCMR is accountable to the Board of Directors for the operational management of WCMR, preparation of its annual budget, supervision of staff members, and guiding the research and outreach agenda, consistent with policies established by the Board and with input from the Centre's membership. The membership of the Director of CBB on the Board of Directors is meant to solidify the collaborative relationship between CBB and WCMR.

3.5 Other Positions and Committees

Associate Directors

The Director will be assisted by the two Associate Directors who will each be responsible for the detailed direction and support of the Centre's research activities, including research-related workshops, seminars, and public lectures.

Administrative Assistant

An administrative assistant will be hired to manage the Centre's operations, provide organizational and logistical support, and serve as the initial point of contact between the Centre and internal/external individuals and organizations. Although this position will be part time initially, external funding may enable the role to be expanded to full time.

Technician

A technician will be hired to manage the Centre's core facility infrastructure, process samples for analysis, and assist with preliminary data analysis. Although this position will be part time initially, external funding, fee for service and contract work may enable the role to be expanded to full time.

Operations Committee

The five Area Leads plus the Associate Directors comprise the Operations Committee. The Director shall seek advice from the Operations Committee about initiatives involving WCMR members.

Standing and Ad Hoc Committees

Standing and Ad Hoc Committees are established by the Board to provide advice to the Board and to the Director on policy and operational matters respectively.

3.6 Procedure for Board Appointments

- a) For the three regular members and three student members, the term shall be two years with staggered yearly elections to ensure continuity. No members of the WCMR shall stand for election if they expect to be away from campus for sabbatical or other reasons for a large portion of their term in office. No two regular faculty members nor two student members should be from the same faculty at a given time, such that representation is ensured among faculties.

Election is held by secret mail ballot.

- b) The representatives of the WCMR Partners, Corporate Associates, and Institutional

Associates shall be selected by a nominating committee and approved by the representatives of the Partners, Corporate Associates, and Institutional Associates by secret mail ballot. The term shall be for two years, staggered to ensure continuity.

- c) The Associate Directors will be appointed by the Director in consultation with the Operations Committee.
- d) The procedure for nominating the Director of WCMR shall be adapted from UW policy #40 dealing with the term and appointment of a Chair. This adaptation is included at the end of this document for reference.

3.7 Term of Office

The terms of office for the Director and Associate Directors will normally be for an initial period of three years, renewable for an additional term of three years. Unless warranted by exceptional circumstances, a director shall not serve for more than two terms consecutively.

3.8 Appointment of Director

The appointment of the director will be determined in accordance with an adaptation of Policy #40 of the University of Waterloo for the appointment of department chairs. This adaptation of Policy #40 is included in the Appendix.

3.9 Peremptory Removal of a Director

Peremptory removal of the Director will occur in accordance with the adaptation of Policy #40 included in the Appendix.

3.10 Conflict of Interest

All Centre activities are subject to UW conflict of interest policies as specified in Policy #69.

4. Management

The University Officer with financial responsibility of WCMR is the Dean of Science or their delegate. The operations are to be supervised and conducted by the WCMR Director, assisted by an Associate Director and an administrative assistant, subject to the constitution.

5. Listing of Proposed Members

The Appendix gives the names of proposed founding WCMR members. Although the WCMR home is in Science, membership will be open to faculty members in other Faculties at UW. In addition, affiliated memberships will be possible for external qualified collaborators.

Director:

Dr. TBD

Associate Director:
Dr. TBD
Associate Director:
Dr. TBD
Administrative Assistant:
TBD
Technician:
TBD
Operations Committee:
Director and Associate Directors
Area Lead (Science):
Dr. TBD
Area Lead (Engineering):
Dr. TBD
Area Lead (Environment):
Dr. TBD
Area Lead (Mathematics):
Dr. TBD
Area Lead (Applied Health Sciences):
Dr. TBD

6. Research/Educational Component

6.1 Research

Modern techniques for biomarker sequencing and analysis have evolved to the point where complex microbial communities associated with environmental samples can be characterized comprehensively. More than ever before, microbes can be manipulated genetically and exploited for the many genes and functions that they encode. To fully harness novel technologies for understanding how microbial communities adapt to environmental changes and discovering novel microbial processes and players, we propose to leverage microbiology and computational biology strengths at the University of Waterloo to build a cross-Faculty Centre that unites multiple research projects and programs to facilitate the discovery and exploitation of microbes and microbial processes. In doing so, we will formalize and establish interdisciplinary collaborations in which microbes, as part of aquatic, terrestrial, host-associated, and engineered environments, are explored through computational analysis of sequence data, identification and cultivation of constituent species, annotation and identification of novel molecular activities, development of synthetic biology applications, engineering of microbial processes for industrial applications, and participation in international sharing and standardization of big data.

It should be noted that although microbiology research and Centre membership spans faculties, microbiology is an explicit strategic research cluster for the Department of Biology. This has been strengthened by recent faculty hires. It is anticipated that hiring will continue in this area to further build on this existing strength.

Waterloo's unique contribution will stress three aspects: a) modeling microbiological communities in relation to changing physical and chemical conditions, b) investigating the

molecular activities derived from environmental genomes, c) identifying and implementing microbiological solutions to ecosystem and biotechnological challenges.

The goal of these areas of research is to be able to identify patterns of microorganisms within any ecosystem, whether it be environmental or within an organism. The ability to monitor microbes, not just statically but as a function of time as conditions change, either naturally or through following anthropogenic impacts, will be critical in many areas. These areas of research and application will impact our understanding of climate change, assist with monitoring the effects of human development and activity, and contribute to the development of precision agriculture. It will also contribute to study of the effects of commercial processes, such as energy development, and examination of the outcomes of bioremediation strategies. With the technical developments underway, we will be able to identify ecosystem changes as soon as they happen; we will no longer be limited by technology. There are even key applications in medicine. The complex communities of bacteria, archaea, and viruses, and their collective genomes, that exist in the human body, the “human microbiome”, are important contributors to aspects of human health, such as nutrition and immunity. The same area of ecosystem research is applicable to monitoring the human microbiome under different conditions of health, disease, nutrition, and physical circumstances.

Genomics-based research is an international activity, with a need to unite across traditional boundaries and borders with fewer administrative burdens. Indeed, recognizing critical mass and uniting expertise will help ensure that Waterloo establishes an international leadership position in microbiome research. In addition, with Waterloo’s unique combination of computer programming and infrastructure, we are in an excellent position to assume a leadership role in forming and implementing computational solutions to big data challenges that are arguably greatest in the microbiological sciences. Such efforts can build on access to shared infrastructure, such as SHARCNET.

Genomic analyses are just the beginning. The next major area of impact, where Waterloo is positioned to be at the leading edge, is in the determination of how microbial genomes are expressed; that is, what proteins are actually made, at what levels and in what locations, and what actions they carry out. Proteomics, transcriptomics and metabolomics represent the next major challenges in the field and have been relatively neglected in comparison to large-scale data gathering activities. The WCMR will span the full range of omics approaches from sample collection to DNA, RNA, protein, and metabolite activities. In addition, research within the Centre will leverage existing research synergies related to synthetic biology, where modifications to existing genes and genomes can be used to engineer microorganisms with unique capabilities useful for various applications.

As critical mass develops, these constituent groups may form new thrust areas, replace the existing thrust areas, or spin-off into independent research groups. WCMR would provide an umbrella organization with a core facility for its members to promote and facilitate synergy among them and encourage a healthy research and academic environment. Specialized units and/or individuals within each of the groups are expected to evolve.

6.2 Education

At present, undergraduate and graduate courses relevant to microbiology are already offered in departments of WCMR-associated Faculties at the University of Waterloo. For this reason, WCMR does not intend to offer undergraduate or graduate courses. Instead, WCMR intends to serve the microbiology student communities as the focal point for work in these areas, presenting opportunities where students interested in these areas can interact with each other, with faculty and other partners. As one example of this, the UW iGEM team (the Waterloo International Genetically Engineered Machines team) provides opportunities for students across faculties to work collaboratively on synthetic biology research initiatives, and this could be supplemented by a seminar series, Centre events, and contact with WCMR corporate and institutional associates. Another example is the University of Waterloo Student Chapter of the American Society of Microbiologists, which gives undergraduate students with interests in microbiology a forum for networking and enrichment.

A seminar series will augment the communication network at WCMR, and provide educational opportunities to faculty and students. In addition, cooperation with colleagues from across campus will enhance the nature and scope of WCMR activities.

For professionals, special workshops and short courses may be offered as required. These workshops or short courses are intended to educate professionals on new research or technologies and may be offered for a nominal fee. This fee will be used to offset the costs of running the workshops and to support Centre activities.

6.3 Commercial Rights to Research Findings

Intellectual property arising from the work of the Centre's regular and student members is governed by university policy #73.

7. Facilities

The objective is to work towards ensuring that existing resources of laboratory facilities and personnel are acceptable for the WCMR objectives, especially considering the central location of the Biology "Core Facility", with a MiSeq (Illumina) for DNA sequencing of amplicons and individual microbial genomes. Expanded facility infrastructure funding through CFI and/or other sources will be sought to support establishment of a Waterloo MicroBiome Innovation Facility (WatMicroBio), which will be a high throughput microbiology research core facility that will support researchers on campus for whom the study of microbiology and microbial communities is a part of their research programs. The facility will be based in or near Biology, either in one of the two Biology buildings, or in the planned adjacently located Science Research Complex, if this option is offered and the timing appropriate.

The goal will be to have WatMicroBio available to all researchers on campus with an interest in experimental or computational microbiology, regardless of membership in WCMR. Currently, microbiology research is performed across campus, in Science, Engineering, Environment, Mathematics, and Applied Health Sciences. The goal will be for WatMicroBio to enable and centralize University of Waterloo microbiology research capabilities and will be one of the top facilities of its type in Canada. As planned, WatMicroBio will consist of an integrated high

throughput screening and analysis system, a microbial culture lab, a biochemical analytical lab, a structural biology and biophysical analysis lab, and a computational core. The facility will be designed with an eye towards future upgrades as technology advances.

8. Budget

For the first five-year operation of WCMR, financial seed support will be requested from the Deans of the Faculties of Engineering, Environment, Mathematics, and Science. In addition, teaching-release time of one course per year will be accorded to the WCMR Director. The primary expenditure will be the salary of a WCMR manager. Within the five-year period, additional revenue is expected from WCMR-managed group research grants, corporate partners, and fee-for-service activities such as contract research, workshops, boot camps, and short-courses. Applications for CFI funding will be important for obtaining shared common facility infrastructure support for proteomic, metabolomic, DNA sequencing, and bioinformatic equipment. External donations and sponsorships are also expected from the WCMR networking connections.

Source	Year 1 (\$)	Year 2 (\$)	Year 3 (\$)	Year 4 (\$)	Year 5 (\$)
Dean of Applied Health Science	3,500	3,500	3,500	3,500	3,500
Dean of Engineering	17,000	17,000	17,000	17,000	17,000
Dean of Environment	8,500	8,500	8,500	8,500	8,500
Dean of Mathematics	5,000	5,000	5,000	5,000	5,000
Dean of Science	41,000	41,000	41,000	41,000	41,000
Corporate and other sources (anticipated)		10,000	15,000	20,000	25,000
Total	75,000	85,000	90,000	95,000	100,000

9. Statement of Sanction and Commitment

No special library or IST requirements are needed by WCMR members. Regular faculty entitlements are expected.

10. Appendix A: Founding Members

Table 1. List of founding WCMR members (Science 24, Eng 10, Environment 5, Math 3, AHS 2)

Anderson	William	Chemical Engineering	Engineering
Aucoin	Marc	Chemical Engineering	Engineering
Blowes	David	Earth and Environmental Sciences	Science
Brown	Dan	Cheriton School of Computer Science	Mathematics
Charles	Trevor	Biology	Science
Chou	Perry	Chemical Engineering	Engineering
Dmitrienko	Gary	Chemistry	Science
Doxey	Andrew	Biology	Science
Duncker	Bernie	Biology	Science
Glerum	Moira	Biology	Science
Gu	Frank	Chemical Engineering	Engineering
Guillemette	Guy	Chemistry	Science
Holyoak	Todd	Biology	Science
Honek	John	Chemistry	Science
Huck	Peter	Civil and Environmental Engineering	Engineering
Hug	Laura	Biology	Science
Ingalls	Brian	Applied Mathematics	Mathematics
Lee	Hyung-Sool	Civil and Environmental Engineering	Engineering
Legge	Raymond	Chemical Engineering	Engineering
Ma	Kesen	Biology	Science
Majowicz	Shannon	School of Public Health and Health Systems	AHS
McConkey	Brendan	Biology	Science
Macrae	Merrin	Geography and Environmental Management	Environment
Moresoli	Christine	Chemical Engineering	Engineering
Müller	Kirsten	Biology	Science
Neufeld	Josh	Biology	Science
Oelbermann	Maren	School of Environment, Resources and Sustainability	Environment
Oremus	Mark	School of Public Health and Health Systems	AHS
Palmer	Michael	Chemistry	Science
Parker	Wayne	Civil and Environmental Engineering	Engineering
Prouzet	Eric	Chemistry	Science
Ptacek	Carol	Earth and Environmental Sciences	Science
Ren	Carolyn	Mechanical and Mechatronics Engineering	Engineering
Rose	David	Biology	Science
Schiff	Sherry	Earth and Environmental Sciences	Science
Scott	Matthew	Applied Mathematics	Mathematics
Slavcev	Roderick	School of Pharmacy	Science
Strack	Maria	Geography and Environmental Management	Environment
Trant	Andrew	School of Environment, Resources and Sustainability	Environment
Tang	Shirley	Chemistry	Science
Van Cappellen	Philippe	Earth and Environmental Sciences	Science
Warner	Barry	Earth and Environmental Sciences	Science
Wolfe	Sarah	School of Environment, Resources and Sustainability	Environment
Wu	Lingling	Earth and Environmental Sciences	Science

11. Appendix B: Centre Affiliations

On-campus connections

Water Research Institute
Water Network NCE
SERC in Water Research
CBB
QNC
WISE
UW iGEM

Off-campus connections

Environment Canada
Agriculture and Agri-Foods Canada
Ontario Agri-Foods Technologies
OMAFRA
Grand River Conservation Authority
Provincial Government
Municipalities
Earth Microbiome Project
IBM
Ontario Federation of iGEM Teams

Members from Outside UW

Key Partners

Wilfrid Laurier University
Conestoga College

Academic Members

Peter Madziak, Professor, Conestoga College

Institutional Members

TBD

Potential corporate members who have expressed interest

Novozymes	Contact (support letter)
Germiphene Corporation	Contact (support letter)
Genemis Laboratories	Contact (support letter)
Algae Dynamics	Contact (support letter)
Algaeneers	Contact (support letter)
Metagenom Bio Inc.	Contact (support letter)
A&L Labs, Microbiology Division	Contact (support letter)

Advocacy Support Letters

Ontario Genomics

Industry Canada
American Institute for Medical and Biological Engineering

Other initiatives

There are several research proposals and initiatives underway that would be relevant to WCMR. These include:

NSERC CREATE for translational bioinformatics, led by Brendan McConkey

NSERC CREATE for metagenomics and enzyme function, led by Trevor Charles

12. Appendix C: Activities to date

December 2015	Initial cross-faculty meeting with Ontario Genomics representatives to discuss strategy re. synthetic biology and WCMR
February 2016	Potential founding members planning meeting
March 2016	Completed founding member survey requesting input on strategy
July 2016	Draft WCMR proposal completed by incorporating survey feedback

13. Appendix D: Adapted Policy 40 - The Centre Director

1. Qualifications, Duties and Responsibilities

The Centre Director will be a person of academic stature, appointed for her/his intellectual and administrative abilities, devotion to education and research, and qualities of leadership. The Centre Director will be a tenured Associate or Full Professor in the Faculty of Science who has the ability to create an environment conducive to the growth of intellectual life within members of the Centre and to maintain the confidence and co-operation of her/his colleagues.

The Centre Director has the dual role of representing the centre's policies and points of view, and, as an officer of the Centre, making independent judgments on total Centre matters. The Centre Director will report directly to the Dean of the Faculty of Science.

Within the Centre, the Centre Director is responsible for providing academic and administrative leadership. In providing this leadership the Centre Director shall consult with the members of the Centre, providing them with an adequate basis of information concerning its operations, and ascertaining their views and ideas concerning the various aspects of Centre operations. The principal duties of a Centre Director shall include the advancement of the research mission of the Centre, the upholding of the highest academic standards, the management of the Centre budget, the implementation of Centre activities, and the oversight of the Centre's support staff. The procedures followed by the Centre Director in all matters shall of course be governed by prevailing Faculty practices and University policies. Significant changes to Centre practices or procedures should not be made without wide consultation.

The Centre Director may recommend the appointment of one or more Associate Directors to assist in these tasks.

2. Term of Office

The first term of office for the Centre Director is up to three years, renewable for up to three years, to a maximum of six years.

Reappointment beyond a second consecutive term should be considered unusual and will occur only if there are compelling reasons, as specified by the nominating committee, along with strong support throughout the Centre.

The Centre Director's performance is reviewed annually by the Dean. With the prior knowledge of the Centre Director, the Dean may seek confidential input from the faculty and staff of the Centre by any means she/he deems appropriate.

In the event of the Centre Director's absence for any prolonged period, arrangements should be made for the Dean to appoint an Acting Centre Director for a period of no more than one year.

If the office of the Centre Director becomes unexpectedly vacant, through death, resignation, or other causes, it is the Dean's responsibility to appoint, after appropriate consultation, an interim Centre Director and to initiate the process of filling the vacancy as prescribed in Section 3. The term of office of the interim Centre Director should be of sufficient length for the nominating committee to complete its task and, normally, should not exceed one year.

The appointment of an untenured faculty member to an acting or interim position would be unusual but is not ruled out.

3. Appointment and Reappointment Procedures

A. Appointment of a Nominating Committee

When appointment or reappointment of a Centre Director is required, as through notice of resignation, death, removal from office or the approaching end of a term, the Dean will form a nominating committee. The nominating committee shall normally be formed no earlier than 18 months and no later than one full calendar year prior to the end of the term of office of the incumbent. The majority of the voting members of the committee shall be elected by and from the regular faculty and staff members of the centre.

The nominating committee shall consist of:

- The Dean of the Faculty of Science, who shall chair the committee.
- A minimum of three regular faculty members elected by and from the regular faculty members of the Centre.
- One regular staff member, elected by and from the regular staff members of the Centre.
- The Vice-President, Academic & Provost or delegate, ex officio, non-voting.
- One representative from corporate partners, key partners, or institutional partners, chosen by the Dean. Normally, the Dean shall consult with the Centre to determine this representative.

A reasonable gender balance should be maintained on nominating committees, whenever feasible. Membership on nominating committees shall be conditional on each person agreeing to maintain in confidence the information discussed by the committee except on points where the committee subsequently agrees otherwise, and to exercise authority and responsibility as an individual in order that decisions may be taken at the time and place of the committee meetings.

In voting, the "double majority" rule shall be enforced such that a successful candidate must have majority support from all voting members of the committee as well as majority support from the faculty and staff representatives of the Centre in the committee.

If any member of the nominating committee becomes, or seeks to become, a candidate for the Office of Centre Director, the member shall resign from the committee. In the event of a perceived conflict of interest that could compromise or be seen to compromise the member's judgment of the candidates, he/she shall disclose the nature of the conflict to the committee in sufficient detail to enable the committee to determine whether the member must resign from the committee.

If the association of any members of the nominating committee with the University is terminated or in any way significantly altered, or if for any reason, including resignation, any member is unable to carry out responsibilities on the committee, the nominating committee will request a replacement member, unless the committee has reached the stage in its deliberations where it deems such a replacement inadvisable.

B. Terms of Reference

It is understood that the committee shall be responsible for soliciting the views of those affected, by ballot or otherwise, including part-time and non-regular faculty members, staff and student members of the Centre.

Reappointment of Incumbent. The first charge to the Nominating Committee will be to solicit, with the prior knowledge of the incumbent and by whatever means it may decide, the opinion of

members of the Centre, with respect to the reappointment of the incumbent. If the incumbent is found by the Nominating Committee to be generally acceptable by means of separate secret mail ballots of regular faculty and staff members of the Centre, the Dean shall then determine the incumbent's willingness to accept reappointment.

If the Centre wishes reappointment and the incumbent wishes to continue, the Dean shall forward a recommendation for reappointment to the Vice-President, Academic & Provost who, if he/she approves, will forward the recommendation to the President. The President shall forward it to the Board of Governors for information.

New Appointments. If the incumbent is not to be recommended for reappointment at the end of a first term, or if the incumbent is nearing the end of a second term, or if the incumbent has died, resigned or been removed, then the following procedure shall be followed. The committee will invite nominations, by whatever means it considers appropriate, from any person or group; it will advertise the position, internally and externally; and it will establish criteria against which nominations and applications may be measured. There may be circumstances where the appointment of an external candidate would present significant resource challenges for the unit and the Faculty of Science. In such situations, or when the Dean feels there are compelling reasons for an internal appointment, the Dean will determine in consultation with the Nominating Committee and the Vice-President, Academic & Provost whether to restrict the search to internal candidates. When external candidates are included in the search, the procedures are to be consistent with those for faculty hiring in general (see Policy 76).

The committee shall invite the members of the Centre and other interested persons to submit nominations, and it shall be responsible for the initial selection of suitable candidates. These candidates will be invited to meet with the committee at the committee's discretion, and to make themselves available to members of the Centre. After screening candidates, the committee shall select the person it regards as most suitable for the position, and shall submit its recommendation for the appointment of that candidate to the Centre. However, if the committee feels that two or more of the candidates are well qualified, it may choose to submit the choice between these to the members of the Centre.

The regular faculty and staff members of the Centre will then have the opportunity to indicate the acceptability of each candidate, and their choice among candidates, in separate secret mail ballots which shall be returned to the Chair of the nominating committee. The results of the ballots shall be made known to the nominating committee, who shall decide what constitutes an acceptable level of support, subject to the expectation that a candidate normally will be acceptable to a majority of voting regular faculty members as well as a majority of voting staff members of the Centre.

If the Committee concludes that no candidate is acceptable, it shall resume its screening activities. Otherwise, the nominating committee shall recommend the appointment of a candidate to the Vice-President, Academic & Provost. If the Centre generally approves a candidate, the nominating committee shall recommend the appointment of the candidate to the Vice-President, Academic & Provost. When more than one candidate is generally acceptable and the ballot results indicate no clear preference, the nominating committee shall select the person it regards as most suitable for the position and recommend the appointment to the Vice-President, Academic & Provost.

The Vice-President, Academic & Provost, if he/she approves, will forward the recommendation

to the President. The President shall forward it to the Board of Governors for information. If the Vice-President, Academic & Provost does not concur with the recommendation, he/she will meet with the nominating committee and/or the Centre, to provide reasons.

Note: If, in the opinion of the Dean of the Faculty and the Vice-President, Academic & Provost, the Centre is in such a state that reasonable doubt arises concerning the capacity of the Centre to render a judgment in the selection of a Centre Director which reflects a mature and experienced scholarly perspective, a procedure of selection alternative to the one cited above shall be employed. In such cases, the precise procedure employed shall be at the discretion of the Dean of the Faculty and the Vice-President, Academic & Provost, involving appropriate consultation with members of the Centre.

It is expected that the circumstances which would warrant the resort to such extraordinary procedures will occur only rarely.

4. Removal of the Office Holder Before Expiration of Term

A. General Principles

A Centre Director may only be removed from office for cause. Cause is to be understood in relation to the duties of the Centre Director as indicated by all relevant University policies. Causes for removal include negligence, incompetence, unprofessional conduct, and inability to maintain the confidence of the members of the Centre. Dismissal for cause from an administrative position is not to be confused with the dismissal for cause of a tenured faculty member. The criteria used and the procedures to be followed are different.

B. Reconciliation

In cases where a Dean becomes aware of serious problems in a Centre, for example through individual submissions or a general petition of regular Centre members, the Dean will, where appropriate and with the support of the Vice-President, Academic & Provost, seek to mediate the situation as early as possible. Especially in cases of widespread disaffection or dissatisfaction with the Centre Director, the process of reconciliation may involve the holding of a Centre meeting, normally chaired by the Dean, for a full and frank discussion of concerns.

C. The Setting-Up of a Formal Inquiry

If the process of reconciliation fails or is inappropriate, the Dean should determine whether there is sufficient evidence to warrant an inquiry into whether there is cause for removal. The Centre Director will be informed in writing of the Dean's decision and the basis for it, and be given an opportunity to respond. The Dean will then bring the evidence, together with the Centre Director's response, before the Vice-President, Academic & Provost. If the Vice-President, Academic & Provost believes that formal proceedings are necessary, he or she will set up a formal inquiry. At the same time, the Vice-President, Academic and Provost may choose to suspend the Centre Director, without prejudice, financial or otherwise, for the period of the inquiry, if this is warranted by the general interests of the Centre and of the individuals involved, and is compatible with principles of natural justice. In the case of suspension, the Vice-President, Academic & Provost will appoint an Acting Centre Director so as to facilitate the operation of the Centre during this period.

D. Formal Inquiry

The Vice-President, Academic & Provost, will appoint a committee of three senior faculty

members from outside the Centre concerned and inform the Centre Director. The Centre Director may challenge, in writing, a member or members of the committee for bias, apprehension of bias or conflict of interest.

The committee shall determine its own procedures. However, in all its proceedings it shall be guided by principles of natural justice. In particular, it shall make sure that the Centre Director has full knowledge of every charge, and has every opportunity to respond to these charges. On completion of its work the committee shall report to the President with a recommendation, supported by reasons, that the Centre Director either (1) continue in office (or be reinstated if temporary suspension has occurred), or (2) be removed for cause. The President will then take appropriate action. The report of the committee shall be made available to the Centre Director, the Dean, and, at the discretion of the committee, to other concerned parties within the Centre.

University of Waterloo
UNIVERSITY COMMITTEE ON STUDENT APPEALS (UCSA)
REPORT TO SENATE
15 May 2017

FOR INFORMATION

In accordance with Policy 71 – Student Discipline, the UCSA is to provide an annual report to Senate on the number of cases heard at the University and Faculty levels, their nature and such recommendations as it sees fit to make with respect to matters under its jurisdiction. Provided in this report is the required information for September 2011 to August 2016.

There have been a number of reasons for the delay in the presentation of this report, including: the high turnover of committee secretaries and support staff since 2011 (four secretaries and four assistants during this reporting time period); a loss of historical memory during the course of the turnovers; and changes in the management of the process of obtaining the necessary information to complete the reports from in-house Secretariat management to the use of data provided the Campus Incident System. The numbers reported in the charts below include findings of guilt and findings of no-guilt at the University and Faculty levels.

In an attempt to preserve confidentiality, cases are not reported by Faculty, unit or program. Annual summaries (with identifying student and Faculty names removed) of discipline cases, grievances and appeals is posted to the Secretariat’s website: <https://uwaterloo.ca/secretariat/committees-and-councils/university-committee-student-appeals>

Summary of Student Discipline Cases – Guilty Findings

DISCIPLINE OFFENCE	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
ACADEMIC					
Academic or admission fraud	0	8	0	1	81
Altering of or falsifying a relevant document	13	25	21	0	29
Cheating	295	152	227	543	512
Contravention of statute	0	4	0	3	0
Impersonation	19	21	27	9	0
Misrepresentation	61	36	51	65	96
Other	0	1	3	8	4
Obtaining confidential academic materials	7	4	4	0	0
Plagiarism	529	492	694	729	853
Theft of intellectual property	14	17	4	22	16
Unauthorized aids or assistance	46	69	28	53	47
Unauthorized co-operation or collaboration	500	355	743	1179	772
Unauthorized resubmission of work	41	23	57	48	41
Violation of examination regulations	61	52	20	33	15
NON-ACADEMIC					
Contravention of a statute	0	0	8	14	7
Disruptive, dangerous, aggressive or threatening behaviour	3	11	46	51	39

Infringing unreasonably on the work of others	0	0	0	6	9
Mischief	4	1	0	0	2
Misuse of University resources	1	2	4	10	8
Other	0	8	5	13	11
Theft	4	12	5	20	11
Unauthorized use of equipment	0	0	0	8	4
Unethical behaviour	4	10	11	23	52

Summary of Student Discipline Cases – Not-Guilty Findings

DISCIPLINE OFFENCE	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
ACADEMIC					
Academic or admission fraud	0	1	0	1	0
Altering or falsifying a relevant document	1	0	0	1	2
Cheating	22	12	7	14	30
Contravention of statute	0	0	0	0	0
Impersonation	0	0	0	0	1
Misrepresentation	3	0	6	5	4
Other	0	0	0	0	0
Obtaining confidential academic materials	0	2	0	0	0
Plagiarism	16	11	33	6	33
Theft of intellectual property	1	0	1	2	0
Unauthorized aids or assistance	10	13	1	1	2
Unauthorized co-operation or collaboration	3	9	12	8	18
Unauthorized resubmission of work	1	2	0	1	2
Violation of examination regulations	0	1	1	1	2
NON-ACADEMIC					
Contravention of a statute	0	0	3	0	0
Disruptive, dangerous, aggressive or threatening behaviour	1	1	4	1	4
Infringing unreasonably on the work of others	0	0	0	0	0
Mischief	1	0	0	0	0
Misuse of University resources	0	0	0	0	0
Other	0	1	1	1	0
Theft	0	0	0	0	0
Unauthorized use of equipment	0	0	0	0	0
Unethical behaviour	0	1	2	1	0

30 March 2017
/ns

Mario Coniglio
Chair

University of Waterloo
SENATE
15 May 2017

FOR APPROVAL

Roster of Graduands

Since the roster of graduands will not be available until after the regular meeting of Senate in May and approval is required before the June meeting, the following motion is proposed:

Motion:

That Senate delegate such approval to its Executive Committee for its 5 June 2017 meeting.

George Dixon Report to Senate May 2017

FANS

NSERC RTI results.

18 RTI grants out of 44 (about 41%)

1 of 8 of the new RTI Operations and Maintenance of \$150,000 each year for two years

Total amount = \$2.27M

Institutional

In terms of recently submitted applications, the following CRCs were submitted for the April 2017 competition:

1. 8 CRC applications for a total of \$7,600,000 submitted on April 25, 2017
 - 4 Tier 1s; total requested amount = \$5,600,000
 - For the Tier 1 applications: 1 = advancement; 1 = renewal; 2 = new
 - 4 Tier 2s; total requested amount = \$2,000,000
 - For the Tier 2 applications: 1 = new; 3 = renewal.

2. CRC results from October 2016 (total 14 funded for total of \$10,200,000):
 - 13/14 applications successful = 92.9% success rate; 94.8% funding rate
 - o Tier 1: 3/3 funded; \$4,200,000 requested/funded = 100% funding and success rate
 - o Tier 2: 10/11 funded; \$5,500,000 requested and \$5,000,000 funded = 90.9% funding and success rate
 - 1 international nomination submitted (out of cycle) – \$500,000 requested/funded = 100% funding and success rate

3. 2 affiliated CFI-JELFs submitted for a total of = \$593,643 (total CFI-JELF envelope requested = \$234,000)

Research Partnerships

David Blowes – Earth Sciences – “Valuing Diversity in Agro-Ecosystems: The Interplay of Natural Habitat, Integrated BMPs and Field Cropping Systems on GHG Emissions and Carbon Stocks” – 5 year project

- Agriculture and Agri-Food Canada

Partners include: University of Ottawa, Carleton University and the University of British Columbia

Total Value: \$1,877,420 cash and \$559,000 in-kind

Sanjeev Bedi – Mechanical & Mechatronics Engineering – “NSERC Chair in Immersive Design Engineering Activities (IDEAs)” – 5 year project

- NSERC - \$1,000,000
- Desire to Learn - \$125,000 and \$125,000 in-kind
- Skyjack - \$125,000 and \$182,000 in-kind
- ANSYS - \$125,000 and \$111,250 in-kind
- Rockwell Automation - \$125,000 and \$125,000 in-kind
- Quanser - \$32,500 and \$92,000 in-kind

Total Value: \$1,532,500 cash and \$635,250 in-kind

Amir Khajepour – Mechanical & Mechatronics Engineering – ‘NSERC Industrial Research Chair – “Holistic Vehicle Control” – 5 year project

- NSERC - \$1,000,000
- General Motors - \$1,000,000 cash and \$3,000,000 in-kind

Total Value: \$2,000,000 cash and \$3,000,000 in-kind

Weihua Zhuang – Electrical & Computer Engineering – NSERC CRD “Software-Defined Networking for Service-oriented 5G Networks” – 3 year project

- NSERC - \$386,550
- Huawei Technologies - \$385,515 cash and \$90,000 in-kind

Total Value: \$772,065 cash and \$90,000 in-kind

Duane Cronin – Mechanical & Mechatronics Engineering – NSERC DND “Transparent Armour Ballistic Performance Modeling and Optimization” – 3 year project

- NSERC - \$326,000
- DRDC - \$90,000 and \$121,850 in-kind
- General Dynamics Land Systems - \$50,700 and \$39,000 in-kind
- NRC - \$50,700 and \$60,000 in-kind
- Preclo Inc. - \$50,700 and \$45,000 in-kind

Total Value: \$568,100 cash and \$265,850 in-kind

Jonathan Blay – School of Pharmacy – “Studies on botanical oils from Algae Dynamics” – 3 year project
Algae Dynamics Corp. - \$390,000 and \$140,000 in-kind